(dollars in thousands)

	FY 2025 Enacted	FY 2026 Enacted	FY 2027 Request	FY 2027 Request vs FY 2026 Enacted	
				$	%
Office of Science					
Advanced Scientific Computing Research	1,036,235	1,116,328	1,104,446	-11,882	-1.06%
Basic Energy Sciences	2,588,285	2,528,486	2,146,137	-382,349	-15.12%
Biological and Environmental Research	870,000	854,000	395,967	-458,033	-53.63%
Fusion Energy Sciences	790,000	805,657	755,251	-50,406	-6.26%
High Energy Physics	1,224,570	1,235,156	1,120,458	-114,698	-9.29%
Nuclear Physics	825,600	866,141	791,434	-74,707	-8.63%
Isotope R&D and Production	169,636	170,000	168,572	-1,428	-0.84%
Accelerator R&D and Production	27,000	–	–	–	–
Workforce Development for Teachers and Scientists	31,000	32,000	30,000	-2,000	-6.25%
Science Laboratories Infrastructure	260,843	225,401	217,172	-8,229	-3.65%
Safeguards and Security	190,000	190,000	202,500	+12,500	+6.58%
Program Direction	226,831	226,831	206,878	-19,953	-8.80%
Total, Office of Science	**8,240,000**	**8,250,000**	**7,138,815**	**-1,111,185**	**-13.47%**

Appropriation Overview

The Office of Science (SC) is the nation's largest Federal supporter of basic research in the physical sciences. The SC portfolio has two thrusts: direct support of scientific research, and direct support of the design, development, construction, and operation of unique, open-access scientific user facilities. The SC basic research portfolio includes grants and contracts supporting over 21,000 researchers located at over 300 institutions and 17 DOE national laboratories, spanning all 50 states, the District of Columbia, and U.S. territories. The SC portfolio of 27 scientific user facilities serve over nearly 40,000 users per year. SC programs fund basic research to advance energy technologies, transform our understanding of nature, and strengthen the connection between advances in fundamental science and technology innovation. SC prioritizes key Administration and Department priorities, emphasizing transformative advancements in artificial intelligence (AI), quantum information science (QIS), fusion energy, high-performance computing, and critical minerals and materials. Through the Genesis Mission, DOE will establish the world's most powerful scientific platform to accelerate discovery, strengthen national security, and drive energy innovation. The Genesis Mission integrates DOE's world-class supercomputing power, unique scientific data, and AI capabilities into a unified system to shrink discovery cycles from years to months. The Genesis Mission will harness scientific datasets to train scientific foundation models and create AI agents for testing hypotheses, automating research workflows, and accelerating scientific breakthroughs. Recent collaborations with industry partners further underscore the commitment to unite government, industry, and academia to redefine American leadership in AI. The FY 2027 Request supports the American Science Cloud, which is the open platform for the Genesis Mission, as well as research on national science and technology challenges through the Transformational AI Models Consortium and program investments. Further investments in AI workforce development will grow the domestic talent to address the Nation's most challenging scientific problems.

The FY 2027 Request in quantum information science drives disruptive innovation in quantum computing, sensing, and communication and advances the use of quantum technologies for fundamental scientific discovery. The convergence of AI, High Performance Computing, and quantum technologies is a strategic investment area for DOE, capitalizing on their synergy for unparalleled scientific breakthroughs. Fusion R&D investments will accelerate efforts to close key science and technology gaps and win the fusion commercialization race. In critical minerals and materials (CMM), research is focused on novel approaches to enhanced recovery, removal, concentration and reuse of critical elements.

These strategic investments are integral to SC's mission to grow the scientific and technical knowledge that spurs discoveries and innovations, explore nature's mysteries from subatomic particles to the building blocks of life, and provide researchers with state-of-the-art scientific user facilities. Through these efforts, SC continues to build the foundations for new technologies, businesses, and industries, contributing significantly to our nation's economy, national security, and quality of life.

Program Highlights

Advanced Scientific Computing Research (ASCR)

ASCR advances science and U.S. competitiveness through investments in computational science, applied mathematics, computer science, networking, and software research as well as development and operation of multiple, large, high performance and leadership computing and high-performance networking user facilities.

The Request funds:

- ASCR’s leadership role in the design, delivery, and continuous improvement of the Genesis Mission platform, including the American Science Cloud, and expanding SC’s ability to leverage next-generation advanced computing, frontier AI models, and data to further research frontiers.
- Critical basic research funding for applied mathematics and computer science to combine the power of exascale computing and artificial intelligence for a new era of American innovation, and next-generation computing paradigms to ensure U.S. leadership at the forefront of computing.
- Extended frontiers in AI for science, security, energy innovation, and technology that leverages the unique capabilities of the DOE ecosystem to expand U.S.’s global domination in AI and advanced computing technologies.
- Advanced research and development (R&D) in quantum information science (QIS) technologies, including quantum computing and networking, for the next generation distributed quantum computing systems.
- Building of scalable integrated national capabilities that accelerate the convergence of quantum, AI, and high-performance classical computing.
- Next-generation user facilities by maintaining facility operations and building upgrade projects to deliver first-of-a-kind high-uptime high-performance computing, data, and networking infrastructure as an integrated ecosystem to meet the requirements of extreme scale DOE science in the AI era.
- Engagement of U.S. microelectronics vendors to advance DOE goals for next generation HPC including continued improvements in performance, usability, and interoperability for a wide range of use cases, including AI.

Basic Energy Sciences (BES)
BES supports fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels to provide the foundations for novel technologies critical to the DOE missions in energy, economic, and national security, including the newly announced Genesis Mission.

The Request funds:

- Core research activities in condensed matter and materials physics, chemistry, geosciences, and aspects of biosciences that establish the foundation of knowledge required to advance Administration and Departmental priorities in AI/ML, critical materials, microelectronics, and QIS.
- Continued support for use-inspired basic research through multi-disciplinary, multi-institutional team science—the Energy Frontier Research Centers, Microelectronics Science Research Centers, Innovation Hub programs, and the computational materials and chemical sciences programs.
- Support for transformational QIS research, including a robust core research portfolio, contributions from selected EFRCs, and complementary multi-disciplinary research at the National QIS Research Centers, to drive disruptive innovation in quantum computing, sensing, and communication, and advance the use of quantum technologies for fundamental scientific discovery.
- Continued research to develop and integrate emerging AI/ML capabilities that will accelerate the pace of fundamental scientific discoveries in materials science and chemistry, enhance operation of scientific user facilities, and advance the interpretation of massive data sets in support of the ambitious goals of the Genesis Mission.
- Operation of BES scientific user facilities: five x-ray light sources, two neutron scattering sources, and five research centers for nanoscale science. The support will balance high priority activities required for safe and reliable operations while maintaining strong user support.
- Four construction projects to advance the state-of-the-art in X-ray and neutron light source and to provide critical supporting infrastructure: the Linac Coherent Light Source-II High Energy, the Second Target Station, the Advanced Light Source Upgrade, and the Cryomodule Repair and Maintenance Facility.

Biological and Environmental Research (BER)
BER supports transformative science and scientific user facilities to achieve a predictive understanding of complex biological and earth systems. Through the Genesis Mission, BER will dramatically accelerate biological discovery and design of new biosystems and will achieve unprecedented environmental predictive skill.

The Request funds:

- Fundamental Genomic Science as the core basic research effort accelerating the development of non-medical plant- and microbial-based biotechnologies, focused on bioenergy, chemical, and biomaterial synthesis, bioproducts, and critical mineral recovery.
- Engagement with Genesis, including a coordinated biological AI-ready data network, automated laboratory systems, and foundational models for predicting behavior and optimizing design of microorganisms and plants.
- Harnessing AI to overcome barriers in predictive skill for coupled earth and energy system models at scales important for enhanced energy operation and expansion.

- Bio-inspired research to design microorganisms and plants with enhanced abilities to extract, separate, and concentrate on critical minerals and materials.
- Explorations in quantum-enabled technology for non-destructive imaging of biological systems and vastly enhanced sensing of biological processes and biochemical reactions.
- Launch of a new Plant Transformation Capability project to rapidly automate plant gene editing and a new grand challenge biotechnology initiative to efficiently incorporate large DNA sequences into plants.
- Continued operation of BER scientific user facilities: the Joint Genome Institute and the Environmental Molecular Sciences Laboratory as central capabilities driving BER science. Continuation of the Microbial Molecular Phenotyping Capability project as a core capability for microbial science and biotechnology.

Fusion Energy Sciences (FES)

FES supports research to understand matter at very high temperatures and to support a competitive fusion power industry in the U.S. The Request is aligned with the recommendations of the recent Fusion Science & Technology Roadmap guided by the Long Range Plan from the Fusion Energy Sciences Advisory Committee (FESAC).

The Request funds:

- Fusion Innovation Research Engine Collaboratives: Multi-institutional, multi-disciplinary R&D centers to address critical science and technology (S&T) gaps outlined in the FESAC LRP, supporting public and private fusion efforts.
- Partnerships with the private sector through the Milestone program, the Innovative Network for Fusion Energy (INFUSE) program, the Private Facilities Research (PFR) program, and the Public-Private Consortium Framework to support public-private partnerships towards developing and building small-to-midscale fusion technology capabilities aligned with the Fusion S&T Roadmap.
- Fusion Nuclear Science: Support small-to-medium scale capabilities, establish a R&D activity in developing low-cost sources of volumetric neutron, and support of tritium-based test beds and loops and blanket test facilities.
- Inertial Fusion Energy (IFE): Support for the IFE STAR Hubs and investment on laser beamlet testbeds.
- DIII-D national fusion facility: To address development of high-confinement, steady-state operating scenarios in support of closing key gaps outlined in the FS&T Roadmap and to support the DOE Genesis Mission.
- National Spherical Torus Experiment-Upgrade: Finalize recovery and repair activities and being commissioning and operations, installation of remaining diagnostics, and alignment to Roadmap and support of the Genesis Mission.
- U.S. Contributions to ITER project focusing on the design, fabrication, and delivery of in-kind hardware components.

High Energy Physics (HEP)
The HEP program is dedicated to unraveling the mysteries of the universe by exploring the fundamental building blocks of matter and energy. Through groundbreaking scientific discoveries in particle physics and the management of top-tier scientific facilities, HEP plays a crucial role in advancing R&D. By ensuring the timely completion of significant projects and maintaining state-of-the-art facilities, HEP contributes to positioning the U.S. as a key player in global particle physics research and collaboration.

The Request funds:

- AI/ML to contribute to the Genesis Mission, curate AI-ready datasets, develop transformative AI models to extract rare particle signatures, operate accelerators and detectors in real-time and high data-rate environments, and create realistic simulations.
- QIS co-development of quantum information experiment, theory, and technology aligned with HEP science drivers, exploring new capabilities in quantum sensing and computing, and continued support for SC-wide National QIS Research Centers.
- Microelectronics to accelerate R&D into sensor materials, detector devices, advances in front-end electronics, including AI-enabled edge computing, and adaptation for high-radiation, cryogenic, or low radioactive background environments, co-supporting cross-SC Microelectronics Science Research Centers.
- Core research activities pursuing the discovery science mission laid out in the 2023 P5 report's six science drivers: Higgs boson, neutrinos, new particles, quantum imprints, dark matter, and cosmic evolution.
- Operations for the Fermilab Accelerator Complex, the Facility for Advanced Accelerator Experimental Tests II, and the Brookhaven Accelerator Test Facility, with 5,600, 2,080, and 2,250 operating hours, respectively, including critical upgrades, improvements, and deferred maintenance. BeamNetUS will provide user access to thirteen U.S. beam test facilities. Support also continues for large-scale experiments and facilities not based at DOE national laboratories, such as U.S. ATLAS and CMS detectors at LHC, Sanford Underground Research Facility, NSF-DOE Vera C. Rubin Observatory, and Dark Energy Spectroscopic Instrument.
- Continuing support for two construction projects: Long Baseline Neutrino Facility/Deep Underground Neutrino Experiment and Proton Improvement Plan II; and three MIE projects: Accelerator Controls Operations Research Network, and the High-Luminosity Large Hadron Collider ATLAS and CMS Detector Upgrade Projects.

Nuclear Physics (NP)
NP supports the Department's and Administration's priorities in AI and quantum that accelerate experimental and theoretical research in the discovery, exploration, and understanding all forms of nuclear matter.

The Request funds:

- High priority world-class nuclear physics research and core competencies in quantum chromodynamics, nuclear structure and nuclear astrophysics, and fundamental symmetries at universities and national laboratories.
- Operations of the three NP user facilities: the 12 GeV Continuous Electron Beam Accelerator Facility; the Argonne Tandem Linac Accelerator System; and the Facility for Rare Isotope Beams, as well as

maintaining mission readiness of the hadron injector complex at Brookhaven National Laboratory to support isotope production and the future Electron-Ion Collider.
- Support for QIS research efforts to create radiation tolerant qubits, enable precision NP measurements, develop quantum sensors based on atomic-nuclear interactions, and advance quantum computing algorithms.
- Expanded support for AI and the Genesis Mission to ensure AI-ready data to enhance user facility availability and performance and accelerate data-analytics-driven discovery.
- Continued support for the Electron-Ion Collider construction project.

Isotope R&D and Production (DOE IP)

The Isotope R&D and Production program advances and sustains a reliable, secure, and innovative domestic supply of critical isotopes to meet U.S. needs in medicine, national security, industry, and research by fostering cutting-edge research, enhancing production capabilities, strengthening strategic partnerships, and developing workforce. IRP is currently the nation's sole domestic provider for approximately 300 isotopes.

The Request funds:
- Driving Innovation for National Priorities: Funds targeted research and development to create novel production and processing technologies. These efforts are essential for establishing secure domestic supply chains of isotopes that directly support Administration priorities, such as enabling breakthroughs in fusion energy research, providing ultra-pure materials for quantum information science, and producing next-generation alpha-emitting radionuclides for advanced cancer therapies.
- Building Sovereign Production Capabilities: Funding continues for two cornerstone construction projects: the Stable Isotope Production and Research Center (SIPRC) and the Radioisotope Processing Facility (RPF). These modern facilities are the bedrock of our strategy to re-establish sovereign U.S. capabilities and ensure a resilient supply chain for national security and economic prosperity.
- Strengthening Critical Infrastructure: The Request prioritizes strategic modernization activities across our national network of production sites. These investments ensure safe, reliable, and robust operations, enhancing our capacity to respond to emerging needs and directly addressing growing gaps in supply chains for isotopes vital to American healthcare, industry, and research.
- Operating Mission-Critical Isotope Facilities: This funding supports the full operation of unique national assets that produce high-impact isotopes. This includes facilities delivering isotopes from accelerators, reactors, waste and enrichment technologies.
- Cultivating a National Network of Excellence: The Request continues to support public private partnerships and our university partner network, which is integral to producing specialized isotopes and developing the next generation of highly skilled scientists and technicians. This network expands our national capabilities and ensures the U.S. maintains its intellectual leadership in nuclear science and technology.
- Integrating Advanced Technology for Greater Efficiency: The Request supports the growth of advanced data analytics, machine learning, and automation into our operations. These technologies will drive efficiencies in isotope science, streamline complex chemical processing, and accelerate advanced manufacturing, allowing us to produce critical materials more effectively and at a lower cost.

Workforce Development for Teachers and Scientists (WDTS)

WDTS invests in sustaining a highly skilled talent pool in science, technology, engineering, and mathematics (STEM) for a strong future DOE science and technology workforce.

The Request funds:

- Sustained support for unique hands-on research, learning, and development at DOE national laboratories, including undergraduate internships (SULI/CCI), graduate thesis research (SCGSR), and visiting faculty program (VFP), with innovative pathways in partnership with community colleges for preparing skilled technical professionals in DOE priority horizons.
- Support for K-12 students and teachers through National Science Bowl (NSB) and Albert Einstein Distinguished Educator Fellowship (AEF), with increased support for advancing AI education for American youth, including support for the national AI Challenge.
- Modernizing online technologies and harnessing the power of data for delivering quality learning and mentoring experiences.
- Combining rigorous assessment with comprehensive evaluation portfolio for management excellence and sustained improvement.

Science Laboratories Infrastructure (SLI)

SLI supports scientific and technological innovation at the SC laboratories by sustaining and modernizing general purpose infrastructure and fostering safe, efficient, reliable, and resilient operations to enable achievement of ambitious scientific goals while increasing American competitive advantage. The Request funds five ongoing construction projects, nuclear operations at ORNL, a Laboratory Operations Apprentice Program, at least three General Plant Projects, and Payment in Lieu of Taxes.

Safeguards and Security (S&S)

S&S maintains critical Federally-mandated physical and cyber security measures to protect the array of government and national security assets, information, and data critical to accomplishing the SC mission of basic research in key scientific fields, fundamental scientific research related to Executive Order 14363, Launching the Genesis Mission, and a secure artificial intelligence (AI) platform for sharing our Nation's scientific research. Also, SC will implement an Artificial Intelligence (AI) for Operations initiative aimed at combining enhanced data collection and analysis with AI tools to streamline mission-critical functions and provide predictive, insight-driven information for more effective enterprise risk management.

Program Direction (PD)

PD supports the Federal workforce that plans, develops, and oversees SC investments in world-leading basic research and scientific user facilities, and provides critical oversight to 10 of DOE's national laboratories. The Request funds Salaries, Benefits, Travel, Support Services, Other Related Expenses, and the Working Capital Fund.