DOE/CF-0193
Volume 2

# Department of Energy
# FY 2024 Congressional Justification

## Other Defense Activities
## Departmental Administration
## Inspector General
## Technology Transitions
## Working Capital Fund
## Crosscutting Activities
## Advanced Research Projects Agency- Energy
## Energy Information Administration

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**FY 2024 Congressional Budget Request**

**Volume 2**

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**DEPARTMENT OF ENERGY**
**Comparative Appropriation Summary**
**(dollars in thousands)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 President's Budget | FY 2024 Presidents Budget vs. FY 2023 Enacted | |
|---|---|---|---|---|---|
| | | | | $ | % |
| **Department of Energy Budget by Appropriation** | | | | | |
| Energy Efficiency and Renewable Energy | 3,200,000 | 3,460,000 | 3,826,116 | +366,116 | +10.58% |
| Electricity | 277,000 | 350,000 | 297,475 | -52,525 | -15.01% |
| Cybersecurity, Energy Security and Emergency Response | 185,804 | 200,000 | 245,475 | +45,475 | +22.74% |
| Strategic Petroleum Reserve | 219,000 | 207,175 | 280,969 | +73,794 | +35.62% |
| Naval Petroleum and Oil Shale Reserves | 13,650 | 13,004 | 13,010 | +6 | +0.05% |
| SPR Petroleum Account | 7,350 | -2,051,900 | 0 | +2,051,900 | +100.00% |
| Northeast Home Heating Oil Reserve | 6,500 | 7,000 | 7,150 | +150 | +2.14% |
| **Total, Petroleum Reserve Accounts** | **246,500** | **-1,824,721** | **301,129** | **+2,125,850** | **+116.50%** |
| **Total, Cybersecurity, Energy Security, and Emergency Response** | **432,304** | **-1,624,721** | **546,604** | **+2,171,325** | **+133.64%** |
| Nuclear Energy (270) [(1), (2), (3)] | 1,505,000 | 1,623,000 | 1,384,887 | -238,113 | -14.67% |
| Fossil Energy and Carbon Management | 825,000 | 890,000 | 905,475 | +15,475 | +1.74% |
| Uranium Enrichment Decontamination and Decommissioning (UED&D) | 860,000 | 879,052 | 857,482 | -21,570 | -2.45% |
| Defense Uranium Enrichment D&D | 573,333 | 586,035 | 427,000 | -159,035 | -27.14% |
| Energy Information Administration | 129,087 | 135,000 | 156,550 | +21,550 | +15.96% |
| Non-Defense Environmental Cleanup | 333,863 | 358,583 | 348,700 | -9,883 | -2.76% |
| Science [(2)] | 7,475,000 | 8,100,000 | 8,800,400 | +700,400 | +8.65% |
| Office of Technology Transitions | 19,470 | 22,098 | 56,550 | +34,452 | +155.91% |
| Office of Clean Energy Demonstrations | 20,000 | 89,000 | 215,300 | +126,300 | +141.91% |
| Federal Energy Management Program | 0 | 0 | 82,200 | +82,200 | N/A |
| Grid Deployment Office | 0 | 0 | 106,600 | +106,600 | N/A |
| Office of Manufacturing & Energy Supply Chains | 0 | 0 | 179,490 | +179,490 | N/A |
| Office of State and Community Programs | 0 | 0 | 705,000 | +705,000 | N/A |
| Advanced Research Projects Agency - Energy | 450,000 | 470,000 | 650,200 | +180,200 | +38.34% |
| Nuclear Waste Fund Oversight | 27,500 | 10,205 | 12,040 | +1,835 | +17.98% |
| Departmental Administration | 240,000 | 283,000 | 433,475 | +150,475 | +53.17% |
| Indian Energy Policy and Programs | 58,000 | 75,000 | 110,050 | +35,050 | +46.73% |
| Inspector General | 78,000 | 86,000 | 165,161 | +79,161 | +92.05% |
| Title 17 Innovative Technology Loan Guarantee Program | 29,000 | -135,794 | -126,524 | +9,270 | +6.83% |
| Advanced Technology Vehicles Manufacturing Loan Program | 5,000 | 9,800 | 13,000 | +3,200 | +32.65% |
| Tribal Energy Loan Guarantee Program | 2,000 | 4,000 | 6,300 | +2,300 | +57.50% |
| **Total, Credit Programs** | **36,000** | **-121,994** | **-107,224** | **+14,770** | **+12.11%** |
| Energy Projects | 0 | 221,969 | 0 | -221,969 | -100.00% |
| **Total, Energy Programs** | **16,539,557** | **15,892,227** | **20,159,531** | **+4,267,304** | **+26.85%** |
| Weapons Activities | 15,920,000 | 17,116,119 | 18,832,947 | +1,716,828 | +10.03% |
| Defense Nuclear Nonproliferation | 2,354,000 | 2,490,000 | 2,508,959 | +18,959 | +0.76% |
| Naval Reactors [(1)] | 1,918,000 | 2,081,445 | 1,964,100 | -117,345 | -5.64% |
| Federal Salaries and Expenses | 464,000 | 475,000 | 538,994 | +63,994 | +13.47% |
| National Nuclear Security Administration Rescissions | -288,133 | 0 | 0 | 0 | N/A |
| **Total, National Nuclear Security Administration** | **20,367,867** | **22,162,564** | **23,845,000** | **+1,682,436** | **+7.59%** |
| Defense Environmental Cleanup | 6,710,000 | 7,025,000 | 7,073,587 | +48,587 | +0.69% |
| Other Defense Activities | 985,000 | 1,035,000 | 1,075,197 | +40,197 | +3.88% |
| **Total, Environmental and Other Defense Activities** | **7,695,000** | **8,060,000** | **8,148,784** | **+88,784** | **+1.10%** |
| Nuclear Energy (050) | 149,800 | 150,000 | 177,733 | +27,733 | +18.49% |
| **Total, Atomic Energy Defense Activities** | **28,212,667** | **30,372,564** | **32,171,517** | **+1,798,953** | **+5.92%** |
| Southeastern Power Administration | 0 | 0 | 0 | 0 | N/A |
| Southwestern Power Administration | 10,400 | 10,608 | 11,440 | +832 | +7.84% |
| Western Area Power Administration | 90,772 | 98,732 | 99,872 | +1,140 | +1.15% |
| Falcon and Amistad Operating and Maintenance Fund | 228 | 228 | 228 | 0 | 0.00% |
| Colorado River Basins Power Marketing Fund | 0 | 0 | 0 | 0 | N/A |
| **Total, Power Marketing Administrations** | **101,400** | **109,568** | **111,540** | **+1,972** | **+1.80%** |
| **Total, Energy and Water Development and Related Agencies** | **44,853,624** | **46,374,359** | **52,442,588** | **+6,068,229** | **+13.09%** |
| Excess Fees and Recoveries, FERC | -9,000 | -9,000 | -9,000 | 0 | 0.00% |
| Title XVII Loan Guar. Prog Section 1703 Negative Credit Subsidy Receipt | -10,000 | -14,000 | -7,000 | +7,000 | +50.00% |
| UED&D Fund Offset | -573,333 | -586,035 | -427,000 | +159,035 | +27.14% |
| **Discretionary Funding by Appropriation** | **44,261,291** | **45,765,324** | **51,999,588** | **+6,234,264** | **+13.62%** |

*(1) Funding does not reflect the mandated transfer of $92.75 million in FY 2022 and $99.75 million in FY 2023 from Naval Reactors to the Office of Nuclear Energy for operation of the Advanced Test Reactor.*

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

*(3) FY 2023 Enacted levels for base funding includes $300 million for the Office of Nuclear Energy that was enacted in Division M, Additional Ukraine Supplemental Appropriations, of the Consolidated Appropriations Act, 2023 (P.L. 117-328). This funding is a part of the total $12.5 billion governmentwide originally intended to be base appropriations that was designated as emergency requirements for purposes of the 2023 Omnibus agreement.*

# Other Defense Activities

# Other Defense Activities

**Other Defense Activities**

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**Other Defense Activities**
**Proposed Appropriation Language**

*For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other expenses, necessary for atomic energy defense, other defense activities, and classified 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 $1,075,197 to remain available until expended: Provided, That of such amount, $381,460 shall be available until September 30, 2025, for program direction.*

**Other Defense Activities**
**($K)**

| FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request |
|---|---|---|
| 985,000 | 1,035,000 | 1,075,197 |

**Overview**

The Other Defense Activities appropriation funds elements that relate to and support the defense-oriented activities within the Department. These include Environment, Health, Safety and Security (EHSS), Enterprise Assessments (EA), Specialized Security Activities (SSA), Legacy Management (LM), Hearings and Appeals (OHA), and Defense Related Administrative Support (DRAS). Funding from DRAS is used to offset administrative expenses for work supporting defense-oriented activities.

**Highlights and Major Changes in the FY 2024 Budget Request**

- Within EA, the budget provides funding for Safety and Security Training and needed operating levels at the National Training Center (NTC).
- LM's FY 2024request allow LM to increase its foundational Environmental Justice program activities, enabling the program to reach a larger number of affected communities.

**Other Defense Activities**
**Funding by Congressional Control**
**($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Request |
|---|---|---|---|---|
| Environment, Health, Safety and Security | 206,320 | 215,539 | 231,263 | +15,724 |
| Office of Enterprise Assessments | 83,384 | 85,427 | 94,154 | +8,727 |
| Specialized Security Activities | 328,500 | 335,000 | 345,330 | +10,330 |
| Legacy Management | 178,730 | 190,909 | 196,302 | +5,393 |
| Defense-Related Administrative Support | 183,710 | 203,648 | 203,649 | +1 |
| Office of Hearings and Appeals | 4,356 | 4,477 | 4,499 | 22 |
| **Total, Other Defense Activities** | **985,000** | **1,035,000** | **1,075,197** | **+40,197** |

**Outyear Priorities and Assumptions**

In the FY 2012 Consolidated Appropriations Act (P.L. 112-74), Congress directed the Department to include a future-years energy program (FYEP) in subsequent requests that reflects the proposed appropriations for five years. This FYEP shows outyear funding for each account for FY 2025 - FY 2028. The outyear funding levels use the growth rates from and match the outyear account totals published in the FY 2024 President's Budget for both the 050 and non-050 accounts. Actual future budget request levels will be determined as part of the annual budget process.

**Future Years Energy Program (FYEP)**
**($K)**

| | FY 2024 Request | FY 2025 | FY 2026 | FY 2027 | FY 2028 |
|---|---|---|---|---|---|
| **Total, Other Defense Activities** | **1,075,197** | **1,100,000** | **1,125,000** | **1,151,000** | **1,159,000** |

## Environment, Health, Safety and Security

### Overview

The Office of Environment, Health, Safety and Security (EHSS) provides corporate leadership and strategic approaches in enabling the Department of Energy (DOE) mission and furthering the protection afforded DOE workers, the public, the environment, and national security assets. This is accomplished through the maintenance of corporate-level policies and standards and providing implementation guidance; sharing operating experience, lessons learned, and best practices; and providing assistance and supporting services to line management with the goal of mission success as DOE's environment, health, safety and security advocate.

### Environment, Health, Safety and Security
### Funding ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| Environment, Health, Safety and Security | | | | | |
| Environment, Health and Safety | | | | | |
| Worker Safety | 4,448 | 4,656 | 5,156 | +500 | +10.7% |
| Nuclear Safety | 5,638 | 6,030 | 6,030 | 0 | 0% |
| Environment | 2,407 | 2,407 | 3,357 | +950 | +39.5% |
| Health Programs | | | | | |
| Domestic Health Programs | | | | | |
| Health Research | 2,470 | 2,570 | 2,570 | 0 | 0% |
| Former Worker Medical Screening | 19,850 | 19,850 | 19,850 | 0 | 0% |
| Employee Compensation Program | 4,200 | 4,691 | 4,691 | 0 | 0% |
| International Health Programs | | | | | |
| Russian Health Studies | 2,750 | 2,750 | 2,750 | 0 | 0% |
| Japanese Health Studies | 14,000 | 14,000 | 14,000 | 0 | 0% |
| Marshall Islands Program | 6,300 | 6,300 | 6,300 | 0 | 0% |
| Total, Environment, Health and Safety | 62,063 | 63,254 | 64,704 | +1,450 | +2.3% |
| Security | | | | | |

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| Insider Threat Program | 1,500 | 1,000 | 1,000 | 0 | 0% |
| Security Operational Support | 7,341 | 7,591 | 7,942 | +351 | +4.6% |
| Classification, Declassification and Controlled Information | 13,179 | 13,679 | 13,679 | 0 | 0% |
| Security Investigations | 4,000 | 4,000 | 4,550 | +550 | +13.8% |
| Headquarters Security Operations | 44,649 | 49,330 | 52,830 | +3,500 | +7.1% |
| Total, Security | 70,669 | 75,600 | 80,001 | +4,401 | +5.8% |
| **Total, Environment, Health, Safety and Security** | **132,732** | **138,854** | **144,705** | **+5,851** | **+4.2%** |
| **Program Direction** | **73,588** | **76,685** | **86,558** | **+9,873** | **+12.9%** |
| **Total, Environment, Health, Safety and Security** | **206,320** | **215,539** | **231,263** | **+15,524** | **+7.3%** |

| Explanation of Changes<br>Funding ($K) | FY 2024<br>Request vs<br>FY 2023 Enacted ($) |
|---|---|
| **Environment, Health, Safety and Security:** | |
| **Worker Safety:** Funding increase is required to support Information Technology contract support costs. Increase ensures availability and reliability of DOE-wide Safety Databases. | +500 |
| **Environment:** Funding increase is required to support direction from Deputy Secretary for EHSS to lead the coordination of the Department's Per- and Polyfluoroalkyl Substances (PFAS) analysis and assessments. | +950 |
| **Security Operation Support:** Funding increase is required to support Information Technology contract support costs for the Safeguards and Security Information Management System and the Foreign Visits and Assignments Database. Increase ensures availability and reliability of DOE-wide Security Databases. | +351 |
| **Security Investigations:** Funding increase is required to support Information Technology contract support costs for the electronic DOE Integrated Security System (eDISS). Increase ensures availability and reliability of this DOE-wide Personnel Security Database. | +550 |
| **Headquarters Security Operations:** Funding increase is required to support the Union Collective Bargaining Agreement escalation requirements of the Protective Force Contract and other associated Protective Force support costs. | +3,500 |
| **Program Direction:** Funding increases are in the areas of Salaries and Benefits which includes funding increase that reflects current actual salaries and benefits projected to FY 2024 including a 5.2% pay raise for calendar year 2024 (7.546M); Travel (0.450M); Training (0.073M); and Other Related Program Direction including Information Technology, Executive Protection, and miscellaneous program direction expenses (1.804M). | +9,873 |

## Environment, Health and Safety

**Description**

The Environment, Health and Safety subprogram provides technical and analytical expertise to protect and enhance the safety of DOE workers, the public, and the environment. This subprogram maintains policies and guidance for the establishment of safe, environmentally sound work practices to achieve best-in-class performance in occupational, facility, nuclear, and radiation safety; protection of the environment and cultural and natural resources; and quality assurance. Environment, Health and Safety provides assistance to DOE offices and laboratories through site-specific activities, such as nuclear facility safety basis reviews, and corporate-wide services, such as accrediting commercial laboratories used by DOE sites for regulatory compliance and employee monitoring programs; administering the accident investigation and analytical services programs; supporting the Radiation Emergency Assistance Center/Training Site; and testing of high efficient particulate air filters. Corporate databases, such as those pertaining to accidents and illnesses, occurrence reporting, radiation monitoring and dose assessment, safety basis information, and hazardous substances inventories are maintained and used to support analyses of health and safety performance for senior management.

The Environment, Health and Safety subprogram provides technical support for the implementation of Department-wide safety and environmental programs, such as the DOE Federal Occupational Safety and Health program; the Voluntary Protection Program, which encourages and rewards safety performance that exceeds industry averages through universally recognized certifications; environmental management systems, which support sustainable practices that promote pollution prevention, greenhouse gas reduction, effective resource utilization, radiological clearance; and control programs for the safe reuse and recycle of DOE equipment and materials and for the radiological release of lands and buildings. These DOE-wide safety and environmental programs are integrated with mission activities to optimize protection and effective implementation.

The Environment, Health and Safety subprogram also provides support to the Department of Labor for the implementation of the Energy Employees Occupational Illness Compensation Program Act, and supports the former worker medical screening program, and radiation health studies in Japan and Russia. These projects and programs provide for the evaluation and documentation of health effects and outcomes that support the basis for national and international worker protection policies and standards, which, in turn, provide updated levels of protection appropriate for the risk posed to DOE workers and the public.

In FY 2024, Environment, Health and Safety will continue:

- Developing cost-effective solutions for achieving best-in-class safety performance founded on integrated safety management and enhanced through such concepts as safety culture, voluntary protection, and environmental management systems.
- Honoring the national and Departmental commitment to current and former workers through cost-effective implementation of the former worker medical screening program and support to the Department of Labor for the implementation of the Energy Employees Occupational Illness Compensation Program Act.

Worker Safety

Worker safety and health policies establish Department-wide safe work practices to achieve best-in-class safety performance, as compared to industrial operations, resulting in work conducted with a full understanding of health and safety related risks and controls necessary to mitigate those risks leading to minimization or avoidance of worker compensation liabilities. Funding provides for the maintenance of existing standards and the development of new requirements based on new or evolving working conditions and new developments in health science; technical assistance to DOE programs, laboratories, and sites in implementing health and safety requirements and programs; promotion of improvements in overall safety culture; and implementation of corporate health- and safety-related programs and information technology systems. Funding also provides for collecting, analyzing, and trending operational data to identify strengths and weaknesses of safety programs in support of continuous improvement in safety performance and cost-effective implementation. Funding provides for the Employee Concerns Program that manages

and provides a DOE enterprise approach to ensure that employee concerns related to environment, health, safety and security and the management of DOE and NNSA programs and facilities are addressed.

Nuclear Safety

Nuclear Safety program activities include establishing and maintaining nuclear safety policies and requirements to ensure adequate protection of workers, the public, and the environment from hazards associated with the design and operation of DOE nuclear facilities. This includes the establishment of general facility safety requirements in fire protection, response to natural phenomena, maintenance, and quality assurance to ensure that products and services meet or exceed the Department's objectives. This program provides assistance to field elements in implementing requirements and resolving issues; and provides oversight of DOE nuclear operations and facilities. Nuclear Safety maintains a DOE-wide nuclear safety research and development program to provide corporate-level leadership supporting the coordination and integration of nuclear safety science and technology, share nuclear safety research and development information across the Department, and coordinate the conduct of nuclear safety research and development activities.

Environment

Environmental activities support DOE's efficient use of resources and energy and its compliance with environmental requirements. Funding provides technical support for the development of policies, requirements, and guidance related to responsible management of natural and cultural resources on and around DOE sites, and performance tracking across the DOE complex and in support of Department-wide conservation efforts. Environmental activities also fund coordination, planning and technical analyses supporting EHSS's role representing DOE to external agencies and stakeholders to develop cost effective and efficient means of meeting environmental and public protection objectives and avoiding future liabilities. One such area of concern involves identifying and characterizing the extent of Per- and Polyfluoroalkyl Substances (PFAS) use and inventories across the enterprise. Environmental activities also support the development of guidance and tools for implementation of practical and broadly accepted consensus standards. Funding supports programs that provide assurance that environmental monitoring and sampling data meet DOE data quality objectives and ensures computer codes that are used to demonstrate compliance with DOE public and environmental protection requirements are appropriate and employ the best science. Funding also supports the development and maintenance of plans, models, and guidance to respond to radiological and nuclear-related emergencies and support for interagency and national consensus standard development with a goal to harmonize Federal radiation protection policies and guidance for protection of the public and environment.

Domestic Health Programs

*Health Research*

Domestic health research activities provide for the conduct of health studies on DOE workers and communities surrounding DOE sites, technical assistance to DOE programs in addressing specific health issues, support to national assets used to respond to radiological events throughout the country, and expertise to support national and international efforts in response to disease outbreaks. These activities also support the maintenance of the electronic comprehensive epidemiologic data resource; the Beryllium Associated Worker Registry; the U.S. Transuranium and Uranium Registry; and the illness and injury surveillance database and access to the data these systems contain.

*Former Worker Medical Screening*

Former worker medical screening activities provide for the conduct of medical screenings for former DOE and DOE-related beryllium vendor employees to identify adverse health conditions that may have resulted from work conducted at DOE facilities. In addition, EHSS also screens DOE-related beryllium vendor facilities on behalf of DOE, as mandated by the FY 1993 Defense Authorization Act (Public Law 102-484). Workers who are found to have illnesses related to work on behalf of DOE are referred to the Department of Labor for potential compensation through the Energy Employees Occupational Illness Compensation Program Act.

*Employee Compensation Program*
DOE Energy Employees Occupational Illness Compensation Program Act (EEOICPA) activities support the implementation of Parts B and E of the Act by the Department of Labor to provide compensation to DOE and DOE-related vendor employees who have become ill as a result of work for DOE. Part B provides for compensation to workers with beryllium disease, silicosis, or radiation-induced cancer, and Part E provides for compensation and medical benefits to DOE contractor and subcontractor employees whose illnesses were caused by exposure to any toxic substance, such as beryllium or other chemical hazards. DOE's support consists primarily of providing information regarding employment status, exposures to radiation and toxic substances, and operational history of DOE facilities to the Department of Labor, the National Institute for Occupational Safety and Health, and the President's Advisory Board on Radiation and Worker Health in support of claims filed by current and former DOE Federal and contractor employees.

International Health Programs:

*Russian Health Studies*
The Russian health studies program supports the collaborative radiation health effects research program between U.S. and Russian scientists to determine the risks associated with working at or living near Russian former nuclear weapons production sites. The research is performed under the Cooperation in Research on Radiation Effects for the Purpose of Minimizing the Consequences of Radioactive Contamination on Health and the Environment, an agreement between the United States and Russia that was signed in 1994 and renewed in 2000, 2007, and 2011, and automatically extended every five years unless terminated by either Party. The agreement is implemented through the Joint Coordinating Committee for Radiation Effects Research, representing agencies from the United States and the Russian Federation. The goals of the program are to better understand the relationship between health effects and chronic, low-to-medium radiation exposure; determine radiation-induced cancer risks from exposure to gamma, neutron, and alpha radiation; and to improve and validate U.S. and international radiation protection standards and practices.

*Japanese Health Studies*
The Japanese health studies activity supports the Radiation Effects Research Foundation (RERF), pursuant to an agreement between the United States and Japan. RERF conducts epidemiologic studies and medical surveillance of the survivors of the atomic bombings of Hiroshima and Nagasaki; and engages in innovative science to develop new research methods and approaches for assessing radiation health effects for use as a basis for the development of radiation standards.

*Marshall Islands Program*
The Marshall Islands program provides medical surveillance and treatment of Marshallese citizens who were affected by U.S. nuclear weapons testing in the Pacific. It also provides for environmental monitoring for safe resettlement of four atolls affected by the testing. The work was specified by the Compact of Free Association Acts of 1986 and 2003 between the United States and the Republic of the Marshall Islands and by the Insular Areas Act of 2011 that required enhanced monitoring of the Runit Island Nuclear Waste Containment Structure beginning in FY 2013.

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Environment, Health, Safety $63,254,000** | **$64,704,000** | **+$1,450,000** |
| **Worker Safety $4,656,000** | **$5,156,000** | **+$500,000** |
| • Research, update, and maintain existing DOE regulations, directives and technical standards, and develop new safety and health requirements based on new or evolving working conditions, when warranted.<br>• Provide technical assistance to DOE programs, laboratories, and sites in the implementation of health and safety requirements and programs, such as integrated safety management.<br>• Provide support in development of technical qualification standards and description of required competencies and training for Federal staff involved in management of defense nuclear facilities.<br>• Promote the implementation of the DOE voluntary protection program, which encourages and rewards safety performance that exceeds industry averages.<br>• Provide technical support for the implementation of the DOE contractor employee assistance program that provides for the collection and analysis of causes of lost time and disabilities and the medical and psychological interventions available to reduce those losses.<br>• Maintain the electronic Radiation Exposure Monitoring System, which serves as the Department's central repository for radiation exposure information at DOE in support of 10 C.F.R. 835, Occupational Radiation Protection, Subpart I, requirements regarding annual monitoring of individual occupational radiation exposure records for DOE employees, contractors, and subcontractors, as well as members of the public who visit DOE sites.<br>• Provide technical support for the implementation of the DOE Federal employee occupational safety and health program, as required by Presidential Executive Order 12196, Occupational Safety and Health Programs for Federal Employees; Section 19 of Public Law 91-596, the Occupational Safety and Health Act of | • Continuation of all FY 2023 activities. | • Funding increase is required to support Information Technology contract support costs. Increase ensures availability and reliability of DOE-wide Safety Databases. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| 1970; and 29 C.F.R. 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters.<br>• Conduct and communicate analysis and trending of safety performance information to identify excellent performance and areas needing improvement in order to reduce or prevent adverse events and injuries and minimize mission interruptions.<br>• Provide information to DOE operating entities regarding operating experience, lessons learned, and suspect, defective, and counterfeit items.<br>• Provide overall program administration and assistance, including training, to DOE program offices in support of implementing the Department's accident investigation program, which provides for independent Federal investigations of high-consequence incidents involving worker fatalities or serious injuries, acute exposures to radiation or chemicals, environmental releases, or significant loss of capital assets. Upon request, or as directed by DOE leadership, assist DOE program offices in conducting specific accident investigations.<br>• Maintain the differing professional opinion program and process, including a web page and online submittal form that DOE and contractor employees can use to identify and document differing professional opinions concerning technical issues.<br>• Maintain corporate health- and safety-related information management technology systems, such as the Computerized Accident/Incident Reporting System, the Occurrence Reporting and Processing System, the Radiation Exposure Monitoring System, and the lessons learned system.<br>• Support continuous improvement in meeting the Department's safety culture and safety conscious work environment (SCWE) across the complex and to ensure consistent leadership and focus on all aspects of DOE's safety culture initiatives.<br>• Support the DOE enterprise-wide Employee Concerns Program that provides management and administration of the program to ensure that employee concerns related to environment, health, safety, and security and the management of DOE and NNSA | | |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| programs and facilities are addressed utilizing well-established processes that include prompt identification, reporting, and resolution of employee concerns regarding DOE facilities or operations in a manner that provides the highest degree of safe operations. | | |
| **Nuclear Safety $6,030,000** | **$6,030,000** | **$0** |
| • Assess, update, and maintain DOE regulations, directives, and technical standards and lead the development of nuclear safety and quality assurance requirements based on new or evolving facility hazards and/or operating conditions, when warranted (including fire protection, natural phenomena hazards, nuclear materials packaging, and maintenance).<br>• Maintain a DOE-wide nuclear safety research and development program to provide corporate-level leadership supporting the coordination and integration of nuclear safety science and technology, share nuclear safety research and development information across the Department, and coordinate the conduct of nuclear safety research and development activities.<br>• Provide technical assistance to DOE program and line organizations, national laboratories, and sites in implementing nuclear safety and quality assurance requirements and programs and resolving issues and recommendations identified by the Defense Nuclear Facilities Safety Board.<br>• Provide technical assistance to national standards development organizations in developing and maintaining nuclear safety and quality assurance consensus standards.<br>• Support DOE program offices in assessing conduct of operations, maintenance, and/or training evaluations for hazard category 1, 2, and 3 nuclear facilities prior to authorizing startup or restart of these facilities or their operations.<br>• Facilitate continuous improvement to the DOE facility representative and safety system programs, supporting approximately 280 site office resident nuclear safety subject matter experts funded by and reporting to DOE line management.<br>• Assist in coordinating information exchanges in various safety concepts relevant to DOE including nuclear safety; safety and | • Continuation of all FY 2023 activities. | • No change. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| organizational culture, high reliability performance and human performance improvement.<br>• Implement safety software quality assurance activities that provide for the maintenance of the DOE safety software central registry of approved computer codes, including a user-oriented communication forum, and operation of the safety software expert working group for enabling effective and consistent use of high-quality safety software across DOE.<br>• Provide for the testing of 100 percent of all high efficiency particulate air filters used in safety class and safety significant systems, and other ventilation systems for confinement of radioactive materials prior to their use at DOE nuclear facilities. | | |
| **Environment $2,407,000** | **$3,357,000** | **+$950,000** |
| • Research, update, and maintain existing DOE regulations, directives, and technical standards, and develop new environmental protection, and public radiation protection requirements based on new or evolving science, protection strategies, national radiation protection guidance, and techniques based on new or evolving DOE activities and programs, when warranted.<br>• Provide technical assistance to DOE programs, laboratories, and sites in implementing public radiation protection requirements and programs.<br>• Provide technical support to DOE site and program offices and laboratories in evaluating and resolving regulatory compliance issues through the interpretation of regulatory requirements, development of cost-effective implementation strategies, and maintenance of web-based compliance tools.<br>• Coordinate and develop consolidated responses to proposed changes in environmental regulations that may impact Departmental operations to improve implementation and optimize the use of protective resources.<br>• Review data from environmental reports required by Federal and state environmental protection agencies to validate adherence to reporting requirements; evaluate the effectiveness of the Department's toxic chemical release reduction and pollution | • Continuation of all FY 2023 activities and increase support of the Department's Polyfluoroalkyl Substances (PFAS) analysis and assessments. | • Funding increase is required to support direction from Deputy Secretary for EHSS to lead the coordination of the Department's Per- and Polyfluoroalkyl Substances (PFAS) analysis and assessments. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| prevention efforts; produce annual reports on DOE environmental performance; and develop annual radionuclide emissions summaries submitted to the EPA under an interagency agreement.<br>• Conduct proficiency and quality assurance audits and reviews of environmental analytical laboratories and commercial waste treatment, storage, and disposal vendors used by DOE operating entities in support of ongoing operations, remediation, and other cleanup projects, compliance programs, and long-term monitoring and surveillance activities to ensure consistency of services while minimizing the number of DOE audits of these commercial service providers.<br>• Provide assistance to and oversight of DOE site property radiological clearance and control programs to ensure the public and environment are protected from radiological harm associated with the use or disposition of DOE property.<br>• Continue development and maintenance of residual radioactivity models and codes that support evaluations and safe disposition of lands, structures, equipment, soil, and other material that may contain small amounts of residual radioactive material.<br>• Support development of Federal radiation protection policies and guidelines and consistent, cost-effective implementation of radiation protection programs within DOE including the review, evaluation and implementation of the 2014 and 2015 updates to the recommendations of the International Commission on Radiological Protection and associated revisions to Federal guidance reports on radiation protection.<br>• Provide assistance to support development and effective use of national consensus standards for radiation protection, radioactive waste and materials management, environmental protection, and operational resilience.<br>• Maintain operational guidelines and other radiological criteria that support protective action decisions and Federal policy governing response to and recovery from radiological and nuclear terrorism incidents (radiological dispersal devices and improvised nuclear devices) and major nuclear accidents, and support NNSA emergency response and preparedness activities associated with | | |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| such incidents.<br>• Provide technical assistance to DOE programs, laboratories, and sites in implementing natural and cultural resource protection requirements and programs. | | |
| **Domestic Health Programs $27,111,000** | **$27,111,000** | **$0** |
| Health Research $2,570,000<br>• Provide for the operation and maintenance of the electronic comprehensive epidemiologic data resource, the illness and injury surveillance database, and the U.S. Transuranium and Uranium Registry.<br>• Support the Radiation Emergency Assistance Center/Training Site, which provides medical expertise to DOE occupational medicine clinics, supplies chelating pharmaceuticals to treat radiation-exposed workers, and trains physicians to respond to radiological accidents anywhere in the United States.<br>• Provide for maintenance of the beryllium registry, which collects, analyzes, summarizes, and disseminates health and exposure data to improve chronic beryllium disease prevention programs.<br>• Provide for the conduct of public health studies and other activities performed by the Department of Health and Human Services through the National Institute for Occupational Safety and Health, the National Center for Environmental Health, and the Agency for Toxic Substances and Disease Registry to provide third-party objectivity regarding the effect of DOE operations on communities surrounding DOE sites.<br>• Provide funding for the Million Person Radiation Workers and Veterans Study that will provide the most precise estimate possible of the lifetime risk of cancer resulting from low levels of chronic radiation exposure and be of significant value to workers and the public. Results also would appreciably improve the data used for compensation of workers with prior exposures to ionizing radiation. | • Continuation of all FY 2023 activities. | • No change. |
| Former Worker Medical Screening $19,850,000<br>• Conduct site assessments to identify groups of at-risk former DOE Federal and contractor/ subcontractor workers and DOE site-specific exposures. | • Continuation of all FY 2023 activities. | • No change. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| • Provide for outreach efforts to inform former workers of the availability and benefits of the program.<br>• Provide for approximately 8,000 medical screenings annually to check for adverse health effects that could be related to occupational exposures to radiation, noise, beryllium, asbestos, silica, lead, cadmium, chromium, and solvents, conducted by independent health experts through seven cooperative agreements held by a consortia of universities, labor unions, and commercial organizations throughout the United States with expertise in administration of medical programs.<br>• Refer workers who are found to have illnesses related to work on behalf of DOE to the Department of Labor for potential compensation through the Energy Employees Occupational Illness Compensation Program Act.<br>• Support the DOE central institutional review board, jointly funded with Science and NNSA, which reviews all medical screening programs funded by DOE and/or involving the DOE workforce to ensure the risks to human participants are minimized and reasonable in relation to the anticipated benefits. | | |
| Energy Employee Occupational Illness Compensation Program (EEOICPA) $4,691,000<br>• Conduct searches for records related to the employment and hazardous exposures for workers who applied to the Department of Labor for benefits under EEOICPA, declassify relevant records, and provide copies of those records to the Department of Labor (DOL) and the National Institute for Occupational Safety and Health.<br>• Provide for large-scale records research projects conducted by DOL, the National Institute for Occupational Safety and Health, and the President's Advisory Board on Radiation and Worker Health.<br>• Provide for the continued transition of hard copy, paper records to electronic records, as well as records indexing projects to improve the efficiency of responses to the DOL and the National Institute for Occupational Safety and Health.<br>• Continue coordination and interface between former worker medical screening activities and EEOICPA activities, including | • Continuation of all FY 2023 activities. | • No change. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| identifying mechanisms for outreach to former workers and enhancing the exchange of medical, site, and exposure information among former worker medical screening service providers, the DOL, and the National Institute for Occupational Safety and Health to assist the agencies tasked with adjudicating claims. | | |
| **International Health Program $23,050,000** | **$23,050,000** | **$0** |
| Russian Health Studies $2,750,000<br>• Provide for the conduct of radiation exposure historical dose reconstruction studies, epidemiologic studies, and for a tissue repository of Russian nuclear workers and people living in communities surrounding the Russian nuclear facilities.<br>• Assess radiation health effects of ionizing radiation.<br>• Publish analyses of radiation health effects assessments. | • Continuation of all FY 2023 activities. | • No change |
| Japanese Health Studies $14,000,000<br>• Conduct epidemiologic studies and medical surveillance of the survivors of the atomic bombings of Hiroshima and Nagasaki at the Radiation Effects Research Foundation.<br>• Assess radiation health effects of ionizing radiation.<br>• Publish analyses of radiation health effects assessments. | • Continuation of all FY 2023 activities. | • No change. |
| Marshall Islands Program $6,300,000<br>• Conduct whole-body counting and plutonium urinalyses to measure individual exposure to radionuclides.<br>• Conduct comprehensive annual screening examinations.<br>• Provide medical care for specified Marshallese.<br>• Provide environmental monitoring services in support of resettlement activities. | • Continuation of all FY 2023 activities. | • No change. |

## Security

**Description**

The Security subprogram provides support to develop and assist in the implementation of safeguards and security programs that provide protection to national security and other vital national assets entrusted to DOE, and to implement the U.S. Government's nuclear weapons-related technology classification and declassification program. Policies and guidance related to physical, personnel, and information security and nuclear materials accountability are designed to promote responsiveness to national security needs and changing threat environments. Assistance is provided to DOE programs and site offices and laboratories via working groups, site-specific support, and corporate program support to implement cost-effective security measures tailored to Departmental mission accomplishment. Corporate security-related information management systems are maintained to identify and reduce the potential for undue risk to individual sites, the Department, and national security. This subprogram also provides for the continuous physical protection and security of DOE facilities and information in the National Capital Area and access authorization security background investigations for EHSS Headquarters Federal and contractor personnel. Additionally, DOE implements the information control program for the U.S. Government to mitigate national security threats by preventing the release of information regarding weapons of mass destruction. Support is also provided to review over 400 million pages of documents at the National Archives for potential release as required by Executive Order 13526 – Classified National Security Information.

In FY 2024, Security activities will include developing comprehensive, reasonable, and cost-effective security policies and operational guidelines to assure that the Nation's nuclear and energy assets and DOE's personnel and facilities are secure from insider and external threats.

Insider Threat Program

The DOE Insider Threat Program (ITP) is intended to: deter cleared employees from becoming insider threats; detect insiders who pose a risk to personnel, assets, facilities, or classified or sensitive information; and mitigate insider threat risks through administrative, investigative, or other response actions. The Secretary of Energy designated an EHSS Senior Executive as the Designated Senior Official for the ITP to provide guidance for and oversight of DOE's enterprise-wide ITP activities. On a continuing basis, this Designated Senior Official engages with senior security and intelligence officials across the Department and advises and reports directly to the Secretary and Deputy Secretary regarding the planning, construct, and operation of the Department's ITP.

Security Operational Support

Security operational support provides technical expertise to develop safeguards and security policy requirements and guidance; assistance to DOE operations, to include foreign ownership, control and influence analysis; security technology research, development, test and evaluations to effectively mitigate current and emerging threats; and maintenance and management of corporate-level safeguards and security-related programs and information technology systems. These activities support Departmental objectives by providing an appropriately tailored level of security requirements and cost-effective protection options for a wide range of scientific, research, and national security operations based on the significance of the national assets involved.

Security policies, requirements, and guidance are developed to be clear and easily implemented, with the goal of securing nuclear material and classified matter and protecting the highly specialized DOE workforce. Corporate Security/Complex Wide initiatives provide specialized assessments and analyses of enterprise-wide security activities and issues affecting DOE safeguards and security programs and the identification of approaches to address them. Human Reliability Program, under 10 C.F.R. 712, provides trending, analysis and training to ensure compliance and a consistent enterprise approach to implementation. Funding to implement EHSS's share of program responsibilities includes the DOE share for the inter-agency Security, Suitability and Credential Line of Business (SSCLoB) budget supporting Executive Branch-wide reforms to the security clearance, employment suitability, and credentialing processes.

Classification, Declassification, and Controlled Information

The classification, declassification, and controlled information activity ensures that the Department meets its statutory responsibility to implement the U.S. Government-wide program to classify and declassify nuclear weapons-related information (i.e., Restricted Data and Formerly Restricted Data) in order to prevent proliferation of nuclear weapons and

technology. This activity supports the implementation of Executive Order 13526 to classify other information critical to national security (i.e., National Security Information), such as security-related information concerning U.S. nuclear sites and chemical/biological and radiological dispersal devices. Funding provides for declassification review of DOE records and the development of policies, requirements, and guidance and technical support for the protection of controlled unclassified information. Advanced Computer Tools to Identify Classified Information (ACTICI) is an artificial intelligence/machine learning initiative to develop advanced computer tools to identify classified information embedded in electronic documents and augment human classification reviews. The goals of the program are to develop and deploy advanced tools that can automatically identify the subject areas of a document, determine whether a document needs a classification review, determine if the document is classified, determine which parts of the document are sensitive, and determine which classification guides are applicable.

Security Investigations

Security investigation activities provide for background investigations conducted by the Defense Counterintelligence and Security Agency (DCSA) (formerly the National Background Investigations Bureau) of EHSS Headquarters federal and contractor personnel who require access to classified information or certain quantities of special nuclear material, as required by Section 145 of the Atomic Energy Act of 1954 (as amended) and Executive Order 12968, Access to Classified Information. The conduct of investigations and granting of access authorizations are based on 10 C.F.R. 710, Procedures for Determining Eligibility for Access to Classified Matter or Special Nuclear Material.

Headquarters Security Operations

Headquarters security operations provide a comprehensive safeguards and security program for the protection of DOE Headquarters facilities and assets in the Washington, DC, area. This is accomplished through the deployment of a protective force; security education programs; the management and operation of countermeasures, alarms, and access control equipment; and the implementation of security-related programs. Funding provides for a secure work environment and assures management, workers, and stakeholders that activities within Headquarters facilities are effectively protected.

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Security $75,600,000** | **$80,001,000** | **+$4,401,000** |
| **Insider Threat Program $1,000,000** | **$1,000,000** | **$0** |
| • Develop and maintain a robust program to deter, detect, and centrally analyze and respond to insider threats facing the Department.<br>• Enhance existing information-sharing partnerships with law enforcement, intelligence, and community organizations.<br>• Assist field sites in the establishment of Local Insider Threat Working Groups.<br>• Assist Local Insider Threat Working Groups in the implementation of the Insider Threat Program.<br>• Develop measures of success and program review criteria.<br>• Develop and implement insider threat program training in fundamentals of counterintelligence, security, agency procedures for insider threat response, as well as applicable laws and regulations on gathering, integrating, retaining, safeguarding and use of collected insider threat data.<br>• Produce an annual report for the Secretary to provide to the President. | • Continuation of all FY 2023 | • No change |
| **Security Operational Support $7,591,000** | **$7,942,000** | **+$351,000** |
| • Research, update, and maintain existing DOE regulations, directives and technical standards, and develop new safeguards and security requirements based on new or evolving threats or working conditions, when warranted.<br>• Provide technical assistance to DOE programs, laboratories, and sites in implementing safeguards and security requirements and programs.<br>• Provide technical support, training, and awareness materials for the security-related aspects of the human reliability program, including deployment of the human reliability program database and standard certification management system to ensure that over 10,000 individuals with access authorizations/clearances who occupy positions requiring access to special nuclear materials, nuclear explosive devices, or related facilities and information meet the highest standards of reliability and physical and mental suitability;<br>• Provide support to the security awareness special interest group for DOE and contractor safeguards and security awareness coordinators to share | • Continuation of all FY 2023 activities. | • Funding increase is required to support Information Technology contract support costs for the Safeguards and Security Information Management System and the Foreign Visits and Assignments Database. Increase ensures availability and reliability of DOE-wide Security Databases. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| security awareness methods and products, solve problems, and disseminate security-related information to satisfy Presidential and other regulatory requirements.<br>• Operate, maintain, and perform data analysis of the electronic Safeguards and Security Information Management System, a centralized classified browser-based database that serves as the repository of current and historical DOE safeguards and security information pertaining to inspection deficiencies, corrective action status, facility clearance levels, classified addresses, and asset information.<br>• Provide technical support and assistance for risk communication, risk management, vulnerability assessments, and security system performance evaluations, verifications, and validations, which are used to identify and cost-effectively address and mitigate current and emerging threats to Departmental assets at the site level.<br>• Provide assistance to DOE programs, sites, and laboratories in the use of security technology as a means to mitigate vulnerabilities, reduce recurring costs, and lessen environmental impacts.<br>• Maintain corporate security-related information technology systems, such as the DOE electronic Foreign Ownership, Control, or Influence program mandated by the Federal acquisition regulations system (48 C.F.R. 904.7003, 952.204-2, 970.0404, 904.404, and 952.204-73) and by Executive Order 12829, National Industrial Security Program; the DOE foreign visits and assignments (FACTS) program that enables foreign nationals' participation in unclassified DOE work, as well as classified visits involving foreign nationals; and the Radiological Source Registry and Tracking (RSRT) database, which is used to inventory approximately 18,000 radioactive sealed sources at DOE sites in support of the Department's nonproliferation and antiterrorist programs, U.S. and DOE regulatory compliance, and international treaty obligations.<br>• Conduct specialized assessments and analyses of enterprise-wide security activities.<br>• Assess systemic issues affecting DOE safeguards and security programs and identify approaches to address them.<br>• Produce biennial reports to Congress on the status of Security of the Department's Category I and II Special Nuclear Materials. | | |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Classification, Declassification and Controlled Information<br>$13,679,000** | **$13,679,000** | **$0** |
| • Provide technical support in developing U.S. Government and DOE-wide policy and technical guidance to ensure that classified nuclear weapons-related information and other information critical to national security and to U.S. Governmental, commercial, or private interests is identified for proper protection.<br>• Provide specialized technical expertise to foreign governments and to DOE and other U.S. departments and agencies regarding the national security implications of classification and declassification decisions for nuclear proliferation issues.<br>• Provide training and certification of DOE and other agency personnel in classification and information control programs and related areas.<br>• Provide support to the National Declassification Center (NDC) for review of the remaining 3 million pages at the National Archives and follow-on record collections amounting to 24 million pages; support to NDC in its Interagency Referral Center confirming potential Restricted Data/Formerly Restricted Data in documents referred to DOE/EHSS by other agencies;<br>• Review documents in support of DOE operations and other U.S. Government entities, such as Congress, Presidential Libraries, U.S. Patent Office, the Defense Nuclear Facilities Safety Board, the Government Accountability Office, and the Inspector General; and<br>• Perform the final review of classified DOE documents and documents containing DOE equities from all U.S. Government departments and agencies, including DOE, when they are requested under the Freedom of Information Act and the mandatory provisions of Executive Order 13526, to ensure that DOE classified and controlled information is identified and protected from unauthorized release to the public as required by 10 C.F.R. 1004, Freedom of Information, and 10 C.F.R. 1045, Nuclear Classification and Declassification.<br>• Continue efforts for the Advanced Computer Tools to Identify Classified Information (ACTICI) initiative. | • Continuation of all FY 2023 activities. | • No change. |
| **Security Investigations $ 4,000,000** | **$4,550,000** | **+$550,000** |
| • Provides for initial background investigations, periodic reinvestigations, and reimbursement for fingerprint and name checks. | • Continuation of all FY 2023 activities. | • Funding increase is required to support Information Technology |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| • Provide for the Defense Counterintelligence and Security Agency to conduct most background investigations of EHSS Headquarters Federal and contractor employees. Funding provides for initial single-scope background investigations, periodic reinvestigations, and initial and reinvestigation national agency checks, and continuous evaluation special agreement checks.<br>• Research, update, and maintain existing DOE regulations, directives, and technical standards, and develop new personnel security requirements based on new or evolving threats or working conditions, when warranted.<br>• Provide technical assistance to DOE programs, laboratories, and sites in implementing personnel security requirements and programs.<br>• Conduct corporate-level access authorization adjudications (i.e., performing case reviews, conducting evaluations, and preparing decision packages), as necessary.<br>• Operate and manage the electronic DOE Integrated Security System (eDISS), which consists of interrelated databases and associated client applications and web pages that automate the processing and tracking of access authorizations, access and visitor control, personal identity verification, and related personnel security processes.<br>• Continue deployment of the personnel security case management system, as well as the integration of this system with DOE field site human resources, financial management, and access control systems to reduce overall personnel security program costs by eliminating redundant systems at DOE field sites and reduce processing time by integrating directly with other databases.<br>• Provide for Homeland Security Presidential Directive 12 credentials for Headquarters DOE employees and contractors. | | contract support costs for the electronic DOE Integrated Security System (eDISS). Increase ensures availability and reliability of this DOE-wide Personnel Security Database. |
| **Headquarters Security Operations $49,330,000**<br>• Provide a protective force engaged in the physical protection of classified information, facilities, and the workforce 24 hours a day, 365 days a year at DOE Headquarters facilities and satellite facilities in Washington, DC, and Germantown, MD.<br>• Operate and maintain security alarms and access control systems, including security screening equipment, vehicle inspection scanning devices, internet protocol video, turnstiles, unmanned access/egress portals, other access | **$52,830,000**<br>• Continuation of all FY 2023 activities. | **+$3,500,000**<br>• Funding increase is required to support the Union Collective Bargaining Agreement escalation requirements of the Protective Force Contract and other associated Protective Force support costs. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| control equipment; and protective force shelters.<br>• Conduct technical surveillance countermeasures activities, such as surveys, inspections, in-conference monitoring, pre-construction consultation services, and threat analysis, in support of Presidential Decision Directive 61, Energy Department Counterintelligence, to detect and prevent hostile intelligence collection operations intent on penetrating DOE installations to steal technology or sensitive or classified information.<br>• Conduct the telecommunications security activities consisting of emission security, protected transmission systems, and communications security to ensure the protection of DOE's sensitive unclassified and classified telecommunications through various security components.<br>• Provide Communications Security (COMSEC) and TEMPEST support and oversight to all of the DOE/NNSA entities; develop and implement training for the various elements of the Technical Surveillance Program (TSP); perform COMSEC Audits/Inspections; and maintain DOE policy and guidance for TSP activities.<br>• Serve as the COMSEC Central office of record and national command and controlling authorities for classified key material.<br>• Provide access authorization adjudication services (i.e., case reviews and analysis, interviews, and use of court reporters and consulting physicians as needed) for DOE Headquarters personnel to assure that access to DOE classified information is permitted only after a determination that such access will not endanger the common defense and national security.<br>• Implement Homeland Security Presidential Directive 12 requirements related to the secure and reliable identification of DOE Federal and contractor employees.<br>• Administer the DOE Headquarters facility clearance registration and foreign ownership, control, or influence programs for contractors granted access to classified information.<br>• Conduct safeguards and security surveys, self-assessments, and program reviews to ensure that DOE Headquarters operations comply with Departmental and national-level requirements.<br>• Replace and repair of Headquarters physical security systems at both the Forrestal and Germantown facilities. | | |

## Program Direction

**Overview**

Program Direction provides for Federal staffing and mission support services to provide overall direction and execution of the EHSS mission of conducting the Department's activities in environment, health, safety, and security policy, technical assistance, analysis, and corporate programs. Critical to achieving its vision and goals is the ability of EHSS to maintain a highly qualified workforce with the expertise and skills necessary to support, manage, and conduct its mission. EHSS will implement activities to support Executive Order 14035: Diversity, Equity, Inclusion and Accessibility in the Federal Workforce to create a respectful, inclusive, and safe workplace where employees can thrive, develop their potential and contribute to the success of their workplace that will increase productivity and morale and may reduce employee turnover.

Technical Support Services: Defense Nuclear Facilities Safety Board (DNFSB) Liaison Activities

The Office of the Departmental Representative to the DNSFB ensures effective cross-organizational leadership and coordination to resolve DNFSB-identified technical and management issues to ensure the health, safety, and security of the workers, public, and environment.

Other Related Expenses

Other related expenses provide support required for EHSS to accomplish its mission. Support includes Working Capital Fund services; training for Federal employees; funding for information technology equipment, services, and DOE common operating environment fees; and executive protection and other security-related equipment.

**Program Direction Funding ($K)**

| Program Direction Summary | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| Program Direction | | | | | |
| Salaries and Benefits | 51,000 | 52,946 | 60,492 | +7,546 | +14.3% |
| Travel | 2,700 | 3,000 | 3,450 | +450 | +15.0% |
| Mission Support | 285 | 285 | 285 | 0 | 0% |
| Other Related Expenses | 19,603 | 20,454 | 22,454 | +1,877 | +9.2% |
| Total, Program Direction | 73,588 | 76,685 | 86,558 | +9,873 | +12.9% |
| Federal FTEs | 262 | 262 | 262 | 0 | 0% |
| | | | | | |
| Support Service and Other Related Expenses | | | | | |
| Support Services | | | | | |
| Technical Support | | | | | |
| Defense Nuclear Facilities Safety Board Liaison Activities | 285 | 285 | 285 | 0 | 0% |
| Total, Technical Support | 285 | 285 | 285 | 0 | 0% |
| Total, Support Services | 285 | 285 | 285 | 0 | 0% |
| | | | | | |
| Other Related Expenses | | | | | |
| Working Capital Fund | 12,377 | 12,377 | 12,500 | +123 | +.1.0% |
| Tuition/Training of Federal Staff | 365 | 365 | 438 | +73 | +20.0% |
| Other Services Procured | 6,861 | 7,712 | 9,393 | +1,681 | +21.8% |
| Total, Other Related Expenses | 19,603 | 20,454 | 22,331 | +1,877 | +9.2% |

## Program Direction

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $76,685,000** | **$86,558,000** | **+$9,873,000** |
| **Salaries and Benefits $52,946,000** | **$60,492,000** | **+$7,546,000** |
| • Funds 262 full-time equivalent employees (FTE): | • Continuation of all FY 2023 activities. | • Funding increase reflects current actual salaries and benefits projected to FY 2024 including a 5.2% pay raise for calendar year 2024. |
| **Travel $3,000,000** | **$3,450,000** | **+$450,000** |
| • Support the management and conduct of environment, health, safety, and security programs for the Department; and<br>• Support executive protection activities for the Secretary, Deputy Secretary, and other dignitaries as assigned. | • Continuation of all FY 2023 activities. | • Funding reflects inflationary travel costs. |
| **Technical Mission Support $285,000** | **$285,000** | **$0** |
| *Defense Nuclear Facilities Safety Board (Board) Liaison Activities*<br>• Coordinate resolution of Board recommendations and agreed-upon defense nuclear facility safety issues.<br>• Provide requested reports/information on defense nuclear facility safety issues.<br>• Coordinate ready access to such defense nuclear facilities, personnel, and information as are necessary for the Board to carry out its responsibilities.<br>• Provide technical evaluation and analysis of defense nuclear safety and management issues identified by the Board.<br>• Provide assistance, advice and support to DOE/NNSA Program and field offices, including line management on addressing and resolving such issues; and<br>• Monitor Department-wide performance in addressing Board-related defense nuclear safety and management issues. | • Continuation of all FY 2023 activities. | • No change |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Other Related Expenses $20,454,000** | **$22,331,000** | **+$1,877,000** |
| • Working Capital Fund fees for the cost of common administrative services such as building occupancy and alterations, computer and telephone infrastructure and usage, mail service, copying, printing and graphics, procurement closeouts, supplies, online learning, computer network support, and payroll processing.<br>• Federal employee training to obtain and/or maintain the technical competence of Federal employees.<br>• The DOE common operating environment initiative that provides a single point of contact for all common information technology systems and services and brings security, service, efficiency, and scale to these projects.<br>• Information technology investments that support Headquarters Federal and contractor staff with hardware, software, hotline, and other desktop computer maintenance support on per-user count and level of service.<br>• Information technology systems exclusive to EHSS, such as the classified local area network that includes a Secret/Restricted Data network that supports Headquarters users and the Secret Internet Protocol Router Network that provides access to the Department of Defense classified network to effect coordination between the two departments;<br>• Executive protection services to the Secretary of Energy and others designated by the Secretary; and the conduct of inquiries and investigations into significant matters of security concern.<br>• Specialized security equipment and services. | • Continuation of all FY 2023 activities. | • Funding change reflects an increase in Information Technology, Executive Protection, Working Capital Fund and miscellaneous program direction expenses. |

## Safeguards and Security Crosscut Funding ($K)

| | FY 2023 Enacted | FY 2024 Request | FY 2024 vs. FY 2023 $ Chg. |
|---|---|---|---|
| Environment, Health, Safety and Security (EHSS) | | | |
| Protective Forces | 40,000 | 43,500 | 3,500 |
| Physical Security Systems | 6,238 | 6,238 | 0 |
| Information Security (Class/Declass) | 13,679 | 13,679 | 0 |
| Cyber Security | | | |
| Identify | 890 | 890 | 0 |
| Protect | 4,245 | 4,330 | 85 |
| Detect | 480 | 490 | 10 |
| Respond | 75 | 75 | 0 |
| Recover | 140 | 140 | 0 |
| Subtotal, Cyber Security | 5,830 | 5,925 | 95 |
| Personnel Security | 6,192 | 6,742 | 550 |
| Program Management (Security Operational Support) | 7,591 | 7,591 | 0 |
| Security Investigations Clearances | 900 | 900 | 0 |
| Total, EHSS | 80,430 | 84,575 | 4,145 |

## Artificial Intelligence & Machine Learning Crosscut ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs. FY 2023 Enacted |
|---|---|---|---|---|
| Advanced Computer Tools to Identify Classified Information (ACTICI) | 1,400 | 1,400 | 1,400 | 0 |
| **Total, Artificial Intelligence** | **1,400** | **1,400** | **1,400** | **0** |

## Research and Development Crosscut ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs. FY 2023 Enacted |
|---|---|---|---|---|
| Nuclear Safety Research Development | 1,000 | 1,000 | 1,000 | 0 |
| **Total, Research and Development** | **1,000** | **1,000** | **1,000** | **0** |

**Environment, Health, Safety and Security Funding by Appropriation by Site**
**Funding ($K)**

| | FY 2023 Enacted | FY 2024 Request |
|---|---|---|
| **Environment, Health, Safety and Security** | | |
| Argonne National Laboratory | 945 | 945 |
| Brookhaven National Laboratory | 250 | 250 |
| Chicago Operations Office | 50 | 50 |
| Consolidated Business Center | 259 | 259 |
| Idaho National Laboratory | 150 | 150 |
| Idaho Operations Office | 400 | 400 |
| Kansas City Plant | 10 | 10 |
| Lawrence Berkeley National Laboratory | 0 | 50 |
| Lawrence Livermore National Laboratory | 3,050 | 3,050 |
| Lexington Project Office | 200 | 200 |
| Los Alamos National Laboratory | 95 | 95 |
| Nevada Site Office | 15 | 15 |
| NNSA Service Center | 1,000 | 1,000 |
| Oak Ridge Institute for Science and Education | 1,305 | 1,255 |
| Oak Ridge National Laboratory | 1,035 | 1,035 |
| Oak Ridge Operations Office | 2,795 | 2,795 |
| Office of Scientific and Technical Information | 300 | 300 |
| Ohio Field Office | 5 | 5 |
| Pacific Northwest National Laboratory | 1,905 | 1,905 |
| Pantex Plant | 10 | 10 |
| Richland Operations Office | 1,000 | 1,000 |
| Sandia National Laboratory | 1,210 | 1,210 |
| Savannah River Operations Office | 500 | 500 |
| Savannah River Site | 10 | 10 |
| Washington, D.C., Headquarters | 199,020 | 214,744 |
| Y-12 National Security Complex | 20 | 20 |
| **Total, Environment, Health, Safety and Security** | **215,539** | **231,263** |

## Office of Enterprise Assessments

**Overview**

The Office of Enterprise Assessments (EA) supports the Department's mission priorities and strategic plan for the secure, safe, and efficient operation of the nuclear weapons complex, science and energy research, and environmental cleanup activities by conducting independent assessments of security and safety performance throughout the Department, holding contractors accountable for violations of security and safety regulations, and providing training programs that institutionalize enterprise security and safety lessons learned. EA activities complement, but do not replace, the responsibility of DOE line management to ensure compliance with security and safety requirements and manage the Department's programs effectively.

Because EA is organizationally independent of the DOE entities that develop and implement security and safety policy and programs it is able to provide objective and timely information to DOE senior leadership, contractor organizations, and other stakeholders on whether national security material and information assets are appropriately protected; and whether Departmental operations ensure the safety of its employees and the public. EA activities evaluate the Department's effectiveness in promoting protection strategies that are based on informed risk management decisions. EA is designated to implement statutorily authorized contractor enforcement programs pertaining to information security, nuclear safety, and worker safety and health. EA also operates the DOE National Training Center (NTC) in Albuquerque, New Mexico, to enhance the proficiency and competency of the Department's security and safety personnel, and to support DOE workforce development through other programs including safety culture improvement and the Department's Diversity, Equity, Inclusion and Accessibility (DEIA) Strategic Plan.

EA has initiated a program to support Executive Order 14035: Diversity, Equity, Inclusion and Accessibility in the Federal Workforce to create a respectful, inclusive, and safe workplace where employees can thrive, develop their potential, and contribute to the success of their organization that will increase productivity and morale and may reduce employee turnover.

EA's key activities in FY 2024 are:

Strengthening the Department's posture and ability to protect national security assets (special nuclear material [SNM], controlled unclassified information, and classified matter), its employees and the public by:

- Conducting comprehensive independent security performance assessments and follow-up assessments at DOE National Security / Category I SNM sites (those with high value assets); utilizing "limited notice" safeguards and security performance tests to provide accurate, up-to-date assessments of DOE site security response capabilities; and evaluating actions to detect insider threats from individuals who may seek to compromise national security and/or the ability of the Department to meet its mission;

- Enhancing the methods and tools used to conduct comprehensive, and threat-informed independent cybersecurity assessments, including unannounced "red team" performance testing to identify vulnerabilities in the Department's National Security, Intelligence, scientific, and other information systems to external and internal attacks;

- Conducting nuclear safety, worker safety and health, and emergency management independent performance assessments of the Department's operations including high hazard nuclear construction projects and operations, such as those at the Los Alamos National Laboratory, Y-12 National Security Complex, Savannah River Site, Hanford Site, and Idaho National Laboratory;

- Enhancing the effectiveness of the DOE enforcement function that holds contractor organizations accountable for noncompliance with worker safety and health, nuclear safety, and information security regulations;

- Developing and providing training programs that promote the competency and proficiency of DOE federal and contractor employees and performing other related functions via the NTC, that institutionalize security and safety

data analysis and safety lessons learned in support of improved DOE security and safety performance, advance strong safety culture and DEIA principles across the enterprise; and

- Using risk-informed and fact-based analyses to identify emerging trends in safety, security, and cybersecurity within the Department.

**Office of Enterprise Assessments**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Office of Enterprise Assessments** | | | | | |
| Nuclear Safety Assessments | 7,621 | 7,621 | 8,383 | +762 | 10.0% |
| Enforcement | 435 | 435 | 479 | +44 | 10.1% |
| Security and Safety Training | 19,279 | 19,430 | 21,160 | +1,730 | 8.9% |
| **Total, Office of Enterprise Assessments** | **27,335** | **27,486** | **30,022** | +2,536 | 12.5% |
| **Program Direction** | **56,049** | **57,941** | **64,132** | +6,191 | 10.7% |
| **Total, Office of Enterprise Assessments** | **83,384** | **85,427** | **94,154** | +8,727 | 10.2% |

**Office of Enterprise Assessments**
**Explanation of Major Changes ($K)**

| | FY 2024 Request vs FY 2023 Enacted |
|---|---|
| **Office of Enterprise Assessments** | |
| Increase for: Program funding reflects Security and Safety Training current and projected operating levels; Salaries & Benefits to support subject matter experts to include a pay raise of 5.2% and for overall ongoing personnel actions to include lump sum payouts, Permanent Change of Station (PCS), and awards. | **+8,727** |
| **Total, Office of Enterprise Assessments** | **+8,727** |

## Enterprise Assessments

**Description**

The EA Program provides for the assessment of DOE performance in nuclear safety; implementation of the statutorily authorized contractor enforcement programs for information security, nuclear safety, and worker health and safety; development and administration of security and safety training that reflects the most current Departmental policy and lessons learned derived from enforcement investigations, independent assessments to enhance performance of the Department, and data analysis in support of improved DOE security and safety performance.

Nuclear Safety Assessments

Provides for the planning and execution of independent assessments of DOE high hazard nuclear facility construction projects (as required under Sec. 303 of annual appropriations legislation) and nuclear facilities and operations to determine performance compared with nuclear safety requirements and standards contained in Title 10, Code of Federal Regulations (C.F.R.) Part 830, Nuclear Safety Management, and related DOE directives. EA will continue its focus of nuclear safety performance assessments on nuclear weapons complex infrastructure projects, e.g., at the Y-12 National Security Complex; and at cleanup and related operations, e.g., construction of the Hanford Site Waste Treatment and Immobilization Plant; and pit production operations at Los Alamos National Laboratory and the Savannah River Site.

Enforcement

Provides the Department with the capability to implement the DOE contractor enforcement programs specified in 10 C.F.R. Part 824, Procedural Rules for the Assessment of Civil Penalties for Classified Information Security Violations; 10 C.F.R. Part 820, Procedural Rules for DOE Nuclear Activities; 10 C.F.R. Part 851, Worker Safety and Health Program, and 10 C.F.R. Part 1017, Identification and Protection of Unclassified Controlled Nuclear Information. These activities provide a consistent and transparent method of contractor accountability for information security, nuclear safety, and worker health and safety performance that complements the Department's contract management mechanisms. The goal of this activity is to enable safe and secure accomplishment of the Department's mission by promoting DOE contractor adherence to classified and unclassified controlled nuclear information security, nuclear safety, and worker safety and health requirements, and incentivize proactive performance improvement through timely self-identification, reporting, and correction of noncompliant conditions that enables contractors to achieve excellence in mission accomplishment without the need for enforcement actions.

Security and Safety Training

Security and safety training activities provide the Department a means to improve security and safety performance by developing and maintaining the proficiency and competency of DOE security and safety contractor and Federal employees. These activities also improve senior executives' performance and capabilities to fulfill security and safety leadership responsibilities through standardized training for the security of critical Departmental and national security assets, the safety and health of the workforce, and the protection of the public and the environment. The DOE National Training Center (NTC), located in Albuquerque, New Mexico, serves as the primary resource for DOE security and safety training for Federal and contractor employees. Funding provides for operation and maintenance of the NTC campus and the development and presentation of various security and safety training and certification programs at the NTC, through e-learning mechanisms, and at DOE sites via mobile training teams. The NTC is also responsible for certifying training programs in accordance with DOE Policy 364.1, Health and Safety Training Reciprocity. The NTC certifies certain health and safety training programs for those training programs to be accepted at various DOE sites and contractor organizations, thus reducing or eliminating the need for employees to complete redundant training programs before conducting work at different DOE sites. The NTC also incorporates lessons learned and best practices identified during EA enforcement investigations and independent assessments into its training programs to increase their utility, relevancy, and effectiveness.

EA is continuing to build its data analysis program, which draws upon existing DOE reporting systems and programs, as well as other potentially useful data sources, to identify and interpret emerging security and safety trends across the DOE complex, and to evaluate their potential impact on the Department's performance. A robust data analysis program will result in improved risk-based planning for EA assessments, informed regulatory enforcement decision-making, and will help DOE programs and sites make better decisions, with the goal of improving security and safety performance.

## Office of Enterprise Assessments

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Office of Enterprise Assessments $27,486,000** | **$30,022,000** | **+$2,536,000** |
| **Nuclear Safety Assessments $7,621,000** | **$8,383,000** | **+$762,000** |
| • Conduct independent assessments of high hazard nuclear facility construction projects to ensure performance in the implementation of nuclear safety requirements; and<br>• Provide independent assessments of DOE nuclear facilities and operations to ensure performance in the implementation of nuclear safety requirements. | • Continuation of activities. | Increase to continue high priority assessments of projects into the future, personnel costs necessary to attract and retain highly experienced safety and security technical support staff, and inflation of airfare, rental cars and accommodations for travel to DOE sites. |
| **Enforcement $435,000** | **$479,000** | **+$44** |
| • Review and analyze information from the DOE data management system designed for noncompliance reporting, as well as reports from independent assessment activities, the DOE Occurrence Reporting and Processing System, the DOE Computerized Accident/Incident Reporting System, the DOE Safeguards and Security Information Management System, Federal accident investigations, and DOE site and program office assessments and evaluations to determine whether enforcement investigations are warranted and to identify performance trends; and<br>• Conduct periodic outreach and training activities to communicate the Department's approach to security and safety enforcement, convey noncompliance-reporting expectations, and provide information about DOE regulatory performance. | • Continuation of activities. | No significant change. |
| **Security and Safety Training $19,430,000** | **$21,160,000** | **+$1,730,000** |
| • Develop and provide security and safety-related training and professional development programs at the NTC and at DOE sites through mobile training teams, Webinars, video conferencing, and synchronous distance learning to enhance performance throughout the Department;<br>• Maintain and upgrade equipment and technologies to support a greater web presence and "just-in-time" online | • Continuation of activities. | Increased development and implementation of training curricula including expansion of virtual learning offerings, support of DEIA Strategic Plan implementation, protective force training, customer requested programs such as contractor acquisition curricula, data analysis, and activities to support a common DOE-wide Learning Management System, |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| training products, such as webcasts and topical area seminars;<br>• Continue recent initiatives to provide expanded nuclear safety training, expanded DOE oversight training, and Nuclear Executive leadership training, expanded protective force training and development of contractor acquisition curricula.<br>• Support development and implementation of the DOE Learning Nucleus platform that consolidates DOE-wide employee training resources and administration;<br>• Continue the implementation of the training reciprocity and collaboration program whereby certified safety training programs are recognized by other DOE contractors and sites and provide mechanisms for DOE contractors to work together to share training content and develop DOE-wide courses;<br>• Incorporate best practices and lessons learned from EA enforcement investigations and independent assessments as well as data analysis into NTC training programs to enhance performance of the DOE workforce; and<br>• Operate and maintain the facility, including classrooms, administrative offices, weapons live-fire ranges, and the Integrated Safety and Security Training and Evaluation Complex, a simulated DOE research and operational facility designed to allow for the use and evaluation of training methodologies and evolving safety and security technologies through hands-on, performance-based instruction. | | increased infrastructure maintenance, and information technology upgrades. |

## Program Direction

### Overview

Program Direction provides for Federal staffing and mission support services to provide overall direction and execution of the EA mission to conduct independent assessments of the Department's performance in security, safety, and other areas; implement classified information security, nuclear safety, and worker health and safety contractor enforcement programs; and develop and administer security and safety training that reflects the most current Departmental policy on security and safety issues; and perform internal analytic functions designed to optimize the prioritization and selection of specific EA activities. Critical to achieving its vision and goals is the ability of EA to maintain a highly qualified workforce with the expertise and skills necessary to support, manage, and conduct its mission. The EA workforce is composed of security and safety professionals highly educated in science, engineering, and technology that are led by effective program and project managers with exceptional communication and leadership skills and supported by innovative resource management experts. The judicious use of contractor support continues to be a practical and cost-effective means of providing a surge pool of technical experts.

Support Services

Independent assessment activities provide high value to the Department by assessing performance and identifying gaps and vulnerabilities in physical security and cybersecurity programs, safety (worker and nuclear safety, and emergency management), and related performance. Independent assessment activities are selected based on careful consideration and analysis of risk to Departmental operations and performance trends, and tailored to the unique missions and needs of each DOE program and site / field office. Safeguards and security, information security, and cybersecurity independent performance assessment activities are designed to determine whether special nuclear materials, classified matter (parts and information), and controlled unclassified and sensitive information are adequately protected from unauthorized or inadvertent disclosure or diversion, including from the actions of malicious insiders. Independent performance assessment activities are also designed to evaluate whether the Department's overarching management and governance structure is effective in promoting robust protection strategies based on informed risk management decisions. Safety-related independent performance assessment activities determine whether workers and the public are protected from the hazards associated with the Department's operations and identify conditions that could negatively impact the Department's ability to perform its mission and achieve its goals. Independent assessment activities provide accurate and timely information and analysis to the Department's senior leadership regarding the performance of the Department's security and safety programs and other functions of interest. Information is made available to Department management, congressional committees, and stakeholders, such as unions and local public interest groups, to provide confidence that the Department's operations are performed in a secure and safe manner.

Independent performance assessment activities complement but do not replace DOE line management's responsibility for security, safety, and contract performance management as required by Departmental policies. EA provides a check-and-balance function for the Department that is vital to provide assurance of its security and safety performance to its leadership, its workers, the public and Congress, and to maintain confidence in the Department's ability to be an effective self-regulator. As required by DOE Order 227.1A, *Independent Oversight Program*, independent assessment activities are performed by personnel who are organizationally independent of the DOE program and site / field offices that develop and implement policies and programs, and who can therefore objectively observe and report on the performance of those policies and programs as they relate to Departmental operations. Independent assessment processes are governed by documented, formal protocols that are continuously evaluated, revised, and refined based on Departmental and national events and activities that have an impact on DOE security and safety to provide more useful performance data and related information to DOE management.

Other Related Expenses

Support includes working capital fund services; training for Federal employees; information technology equipment and services, and the Energy Information Technology Services.

## Program Direction
## Funding ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Program Direction** | | | | | |
| Salaries and Benefits | 21,190 | 24,180 | 26,822 | +2,642 | +10.9 % |
| Travel | 1,545 | 1,170 | 1,700 | +530 | +45.3% |
| Support Services | 28,201 | 27,701 | 30,471 | +2,770 | +10.0% |
| Other Related Expenses | 5,113 | 4,890 | 5,139 | +249 | +5. 1% |
| **Total, Program Direction** | **56,049** | **57,941** | **64,132** | **+6,191** | **+10.7%** |
| **Federal FTEs** | **100** | **100** | **100** | **0** | **0** |
| | | | | | |
| **Support Services** | | | | | |
| Independent Assessments | **28,201** | **27,701** | **30,471** | **+2,770** | **+10.0%** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Working Capital Fund | 2,804 | 2,804 | 2,820 | +16 | +0.6% |
| Training | 116 | 116 | 128 | +12 | +10.3% |
| Other Services Procured | 2,193 | 1,970 | 2,191 | +221 | +11.2% |
| **Total, Other Related Expenses** | **5,113** | **4,890** | **5,139** | **+249** | **+5. 1%** |

## Program Direction

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $57,941,000** | **$64,132,000** | **+$6,191,000** |
| **Salaries and Benefits $24,180,000** | **$26,822,000** | **+$2,642,000** |
| • Provides for Federal staffing to manage and oversee direction and execution of the EA mission related to: independent assessments; enforcement; security and safety training; conduct enforcement investigations of DOE contractors for potential violations of security and safety requirements; develop and issue enforcement outcomes as necessary; conduct security and safety independent assessments; develop and deploy new and existing training curricula; conduct analytical activities to support EA programs; and provide infrastructure support related to EA resources and communication. | • The request will support 100 FTEs to perform core EA mission. | Increase for Salaries and Benefits to support subject matter experts and for overall ongoing personnel actions to include pay raise of 5.2%, benefits, lump sum payouts, PCS and awards. |
| **Travel $1,170,000** | **$1,700,000** | **+$530,000** |
| • Provides for Federal employee travel in support of EA enforcement, independent assessment, training, and other mission-related activities. | • Continuation of activities. | Increase provides for inflation of airfare, rental cars and accommodations. |
| **Support Services $27,701,000** | **$30,471,000** | **+$2,770,000** |
| *Independent Assessments*<br>• Observe operations and conduct technical assessments and performance tests that examine the effectiveness of security and safety programs and policies, giving priority to the highest security interests, such as strategic quantities of special nuclear material, and activities that present the most significant safety risks to workers and the public, such as nuclear facilities and operations;<br>• Conduct performance tests for critical security interests, including protective force tests (e.g., | *Independent Assessments*<br>• Continuation of activities. | Increase reflects personnel costs necessary to attract and retain highly experienced safety and security technical support staff, as well as inflation of airfare, rental cars and accommodations for travel to DOE sites. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| force-on-force exercises) using weapons simulation systems and a specially trained composite adversary team to assess overall effectiveness;<br>• Conduct limited-notice performance testing of site protective forces to maximize response realism and broaden the spectrum of tested threat scenarios;<br>• Conduct performance assessments of the implementation of the Department's insider threat program to deter, detect, and mitigate potential insider threats posed by Federal and DOE contractor employees;<br>• Conduct announced and unannounced internal and external network penetration testing to provide a full understanding of a site's cybersecurity protection posture;<br>• Develop new and enhanced performance testing tools capable of detecting and countering evolving cybersecurity threats to national assets and critical infrastructure;<br>• Conduct the annual independent evaluation of DOE classified information systems security programs as required by the Federal Information Security Modernization Act;<br>• Conduct an annual evaluation of DOE classified information systems security programs for systems that process intelligence information on behalf of the DOE Office of Intelligence and Counterintelligence;<br>• Provide input to the DOE Office of Inspector General for the annual evaluation of the DOE unclassified information systems security program; | | |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| • Conduct annual "red team" cybersecurity performance assessments of the computer networks within the National Nuclear Security Administration nuclear weapons sites and laboratories;<br>• Undertake and/or support activities that promote accomplishing DOE Office of the Chief Information Officer and U.S. Intelligence Community strategic cybersecurity performance objectives;<br>• Conduct targeted reviews of selected nuclear safety functional areas across the DOE complex based on such factors as performance trends, changes to applicable requirements, and/or performance information gaps;<br>• Maintain the nuclear safety site lead program to monitor the status of DOE nuclear facilities and activities and facilitate the selection and execution of risk-informed assessment activities;<br>• Conduct risk-informed reviews of worker safety and health programs;<br>• Conduct reviews to assess performance of emergency planning, preparedness, and response and recovery capabilities;<br>• Conduct special reviews and studies of security and safety policies, programs, and implementation to identify needed program corrections;<br>• Develop reports to communicate security and safety performance, findings, and opportunities for improvement;<br>• Develop and broadly disseminate assessment report abstracts of key results to promote performance improvements; | | |

| FY 2023<br>Enacted | FY 2024<br>Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| • Continuously analyze results, and develop periodic summary reports that identify cross-cutting issues and performance trends;<br>• Conduct follow-up performance reviews to evaluate corrective action effectiveness; and<br>• Provide lessons learned and trending of assessment results to the NTC to be used to develop or amend security and safety curricula to enhance performance of the DOE workforce. | | |
| **Other Related Expenses $4,890,000** | **$5,139,000** | **+$249,000** |
| • Working Capital Fund (WCF) fees, based on guideline estimates issued by the working capital fund manager, for the cost of common administrative services such as building occupancy and alterations, computer and telephone infrastructure and usage, mail service, copying, printing and graphics, procurement closeouts, supplies, online learning, computer network support, and payroll processing;<br>• Federal employee training to obtain and/or maintain the technical competence of EA Federal employees, assuring that Federal personnel are fully capable of performing missions of the Department; and<br>• The Energy Information Technology Services that provide a single point of contact for all common information technology systems and services at DOE Headquarters, promoting security, service, and efficiency. | • Continuation of activities. | Provides for information technology, training for Federal employees and Working Capital Fund. |

**Other Defense Activities**
**Facilities Maintenance and Repair**

The Department's Facilities Maintenance and Repair activities are tied to its programmatic missions, goals, and objectives. The Facilities Maintenance and Repair activities funded by this budget and displayed below are intended to halt asset condition degradation.

**Costs for Direct-Funded Maintenance and Repair (including Deferred Maintenance Reduction) ($K)**

| | FY 2022 Actual Cost | FY 2022 Planned Cost | FY 2023 Planned Cost | FY 2024 Planned Cost |
|---|---|---|---|---|
| National Training Center | 1,278 | 1,720 | 1,771 | 1,824 |
| **Total, Direct-Funded Maintenance and Repair** | **1,278** | **1,720** | **1,771** | **1,824** |

**Report on FY 2021Expenditures for Maintenance and Repair**

This report responds to legislative language set forth in Conference Report (H.R. 108-10) accompanying the Consolidated Appropriations Resolution, 2003 (Public Law 108-7) (pages 886-887), which requests the Department of Energy provide an annual year-end report on maintenance expenditures to the Committees on Appropriations. This report compares the actual maintenance expenditures in FY 2019 to the amount planned for FY 2021, including congressionally directed changes.

**Other Defense Activities**
**Total Costs for Maintenance and Repair ($K)**

| | FY 2022 Actual Cost | FY 2022 Planned Cost |
|---|---|---|
| National Training Center | 1,278 | 1,720 |
| **Total, Maintenance and Repair** | **1,278** | **1,720** |

**Funding by Appropriation by Site ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request |
|---|---|---|---|
| Enterprise Assessments | | | |
| National Training Center | 300 | 300 | 330 |
| Washington Headquarters | 83,084 | 85,127 | 93,824 |
| **Total, Enterprise Assessments** | **83,384** | **85,427** | **94,154** |

**Enterprise Assessments**
**Safeguards and Security ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|---|
| Cybersecurity | 9,335 | 9,335 | 10,123 | 788 |
| **Total, Safeguards and Security** | **9,335** | **9,335** | **10,123** | **788** |

## Legacy Management

| FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request |
|---|---|---|
| $178,730 | $190,909 | $196,302 |

**Overview**

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) protects human health and the environment by providing long-term management solutions at over 100 World War II and Cold War era sites where the federal government operated, researched, produced, and tested nuclear weapons and/or conducted scientific and engineering research. While these sites were remediated and placed in a safe condition, residual hazards remain after cleanup due to technical limitations of the remedial work. As a result, DOE maintains a post closure obligation to protect human health and the environment after cleanup is completed. LM fulfills this obligation by providing long-term stewardship (LTS) of these sites. In just over five years, LM anticipates adding over 20 new sites to its LTS portfolio.

LM's LTS activities foundationally include executing Long-Term Surveillance and Maintenance (LTS&M) at remediated sites. In addition to the LTS&M activities, LTS includes evaluating the condition and addressing physical safety hazards of Defense-Related Uranium Mines (DRUM), performing Archiving and Information Management (AIM) for LM's operations and sites, assuring post-retirement benefits to more than 7,850 former contractor workers (Legacy Benefits), and conducting Asset Management (AM), Environmental Justice (EJ), Education, Communication, History, and Outreach (ECHO), and Program Direction (PD) functions.

**Highlights and Major Changes for the FY 2024 Budget Request**

The request supports LM's mission capabilities and its core LTS activities mentioned above. Approximately $72,406,000 will support LTS&M activities, transition activities for over 20 new sites over five years, and the acceleration of major maintenance and repair at sites and field offices. This will also support inventorying, risk screening, and safeguarding of DRUM sites on public, Navajo Nation, Tribal lands, and private lands. Lastly, it supports appropriate implementation of mitigating actions at LM sites to enhance climate resilience.

Additionally, $11,984,000 will allow LM to continue expanding its foundational Environmental Justice (EJ) program activities, enabling the program to reach a larger number of affected communities. In accordance with Executive Order (E.O.) 13985, "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government," and E.O. 14008, "Tackling the Climate Crisis at Home and Abroad, the expansion will include increasing current EJ activities executed by current partners and establishing new EJ activities to be executed by Minority Serving Institutions (MSIs) on or near LM sites.

The remaining $111,912,000 supports legacy benefits for former contractor workers; deployment and implementation of enhancements to address the increased number and complexity of Known Exploited Vulnerabilities; execution of beneficial land reuse activities at DOE properties to revitalize land and assets; extensive community interaction and outreach to support the LTS mission; and the proposed FY 2024 cost-of-living pay increase for civilian employees.

**Legacy Management**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Legacy Management** | | | | | |
| Legacy Management | | | | | |
| Long-Term Surveillance and Maintenance | 77,238 | 72,406 | 72,406 | 0 | 0% |
| Archives and Information Management | 20,347 | 24,075 | 25,928 | +1,853 | +6% |
| Legacy Benefits | 42,400 | 46,400 | 41,200 | -5,200 | -12% |
| Asset Management | 12,196 | 14,162 | 16,162 | +2,000 | +13% |
| Education, Communication, History, and Outreach | 4,124 | 4,553 | 6,000 | +1,447 | +27% |
| Environmental Justice | 2,492 | 7,330 | 11,984 | +4,654 | +48% |
| **Subtotal, Legacy Management** | 158,797 | 168,926 | 173,680 | +4,754 | +2% |
| **Program Direction** | 19,933 | 21,983 | 22,622 | +639 | +4% |
| **Total, Legacy Management** | 178,730 | 190,909 | 196,302 | +5,393 | +3% |
| **Federal FTEs** | 80 | 80 | 80 | 0 | |

| Legacy Management<br>Explanation of Major Changes ($K) | FY 2024 Request vs FY 2023 Enacted |
|---|---|
| • **Long-Term Surveillance and Maintenance:** No significant change. | **+0** |
| **Archives and Information Management:** The increase continues to support improvements to the enterprise geospatial information system to assure compliance with Federal Data Strategy; the Geospatial Data Act of 2018; the Open, Public, Electronic, and Necessary (OPEN) Government Data Act; and the 21st Century Integrated Digital Experience Act; pertaining to data access, data integrity, quality, use and data sharing. The increase also supports compliance with three Executive Orders (E.O.); E.O. 14028 (Improving the Nation's Cybersecurity), E.O. 13859 (Maintaining American leadership in Artificial Intelligence (AI)), and E.O. 13960 (Promoting the Use of Trustworthy AI in the Federal Government). Additionally, the increase will support enhancements to address the increased number and complexity of Known Exploited Vulnerabilities. | **+1,853** |
| • **Legacy Benefits:** Decrease is due to a reduction in participants. . | **-5,200** |
| • **Asset Management:** Increase supports infrastructure for the LM Field Support Center in Grand Junction, Colorado; and modernization of the LM fleet electric vehicles as well as vehicle charging infrastructure. | **+2,000** |
| • **Education, Communication, History, and Outreach:** Increase supports proactive communications and outreach requirements to stay engaged with the public and Tribal governments and address media participation. | **+1,447** |
| • **Environmental Justice:** Increase supports the expansion of foundational EJ activities, the establishment of new EJ initiatives, and development of partnerships with MSIs on or near sites. | **+4,654** |
| • **Program Direction:** Increase supports the proposed 5.2% cost-of-living increase to salaries and benefits for Federal full-time-equivalents (FTEs). Also, supports additional travel, training, working capital, and DOE Information Technology (IT) services. | **+639** |
| **Total, Legacy Management** | **+5,393** |

**Overview**

Long-Term Surveillance and Maintenance

This sub-program includes conducting LTS&M activities at over 100 remediated sites that have been transferred to LM for long-term care under various regulatory frameworks; planning and executing the transition of future sites from cleanup organizations to LM; inventorying and safeguarding over 3,400 defense-related uranium mine (DRUM) sites on public, Tribal, and private lands; and sustaining multiple supporting functions. These supporting functions such as environmental compliance, safety and health, and quality assurance (ESH&Q) are integrated into the daily operations of LM's programs and projects. These also include functions such as the Applied Studies and Technology (AS&T) program which incorporates advancements in science and technology into operations improving LM stewardship capabilities, cost effectiveness, sustainability, and protectiveness of environmental remedies at LM sites. All these efforts collectively assures that environmental remedies remain protective of human health and the environment.

The funding requested for FY 2024 will allow LM to accomplish sustainment activities, improvements, and new initiatives. Sustainment activities include soil, water and air monitoring, long-term treatment of contaminants, maintenance and repair of disposal cells, facility and infrastructure maintenance and repair, management and remediation of contaminated groundwater, maintenance of institutional controls, and security at our sites. They also include the execution of multiple functions (e.g., ESH&Q) and programs (e.g., AS&T) critical to LTS&M. These are the necessary activities that maintain LTS&M operations and regulatory compliance until final cleanup objectives have been met. Improvements include major projects such as repairing deficiencies in the alternate water supply system at the Riverton site in Wyoming, repairing roads and addressing erosion controls at the L-Bar site in New Mexico, installing a groundwater treatment package plant at the Shiprock site in New Mexico and constructing a multi-purpose facility and modernizing the groundwater treatment system at the Rocky Flats site in Colorado. Improvements such as these preserve the stability of the environmental remedy, strengthen institutional controls, and continue to protect human health and the environment at LM sites. New initiatives include engaging with international and intergovernmental delegations to share LTS best practices, designing an interpretive center for Rocky Flats, as well as implementing sustainability options, confronting emerging contaminants, and addressing climate resilience at LM sites. This will ensure regulatory compliance, continuous learning and improvement, and implementation of Departmental planning guidance (e.g., carbon pollution-free electricity).

A related cost, directly supporting this activity and embedded within LTS&M site-specific costs, is safeguards and security for LM properties. The costs include protective forces and physical security systems, as follows (in whole dollars): FY 2022 - $131,000; FY 2023 - $145,000; and FY 2024 - $149,000. The cost is derived from protective forces and physical security systems integral to the LTS&M strategies for the Weldon Spring (Missouri) and Fernald (Ohio) sites.

Archives and Information Management (AIM)

This sub-program includes LM's custodianship of legacy physical and electronic records for LM sites, such as closed sites at Fernald, Mound, Weldon Spring, and Rocky Flats. Additionally, and in support of the DOE Office of the Historian, this includes records management of the federal records related to DOE history and its predecessor agencies. Next, the AIM sub-program involves the management, operations, and security of LM's information technology (IT) infrastructure and data. Major objectives of this activity include management of LM's inherited and mission-related federal records, geospatial and environmental data management, and information technology management. Tasks to achieve these objectives include continuous monitoring, development, modernization, and enhancement of IT systems and cyber security activities.

Additionally, sustainment activities include the management and maintenance of LM's IT infrastructure. Management of LM's IT infrastructure includes maintaining functional equipment, operating systems, and software capable of accessing electronic records; providing planning, design, and maintenance of an IT infrastructure to effectively support automated needs (e.g., platforms, networks, servers, printers, applications, dashboards, etc.); providing cyber security for LM's

unclassified computing networks; and directing and overseeing LM's environmental data. All these efforts collectively ensure that LM will preserve, protect, and share records and information.

The funding requested for FY 2024 will allow LM to accomplish sustainment activities, improvements, and new initiatives. Sustainment activities include responsibility for approximately 111,000 cubic feet of physical records and approximately 4.22 million electronic records. LM's responsibility in this area includes management of the records and information systems (e.g., the Licensing Support Network) associated with the Yucca Mountain Project, in compliance with the Federal Records Act. Lastly, custodianship activities include responding to requests associated with the Freedom of Information Act, Privacy Act, and other information requests (e.g., DOE stakeholders processing claims associated with the Energy Employees Occupational Illness Compensation Program Act). LM currently receives approximately 1,800 formal requests for information each year.

Improvements and new initiatives include the modernization of the Geospatial Environmental Mapping System (GEMS) to ensure the long-term sustainability and operability of a critical mission and stakeholder web-based data sharing system, compliant with the Geospatial Data Act and the Government Paperwork Elimination Act. Also, new improvements include dedicating more resources to address the increased number and complexity of Known Exploited Vulnerabilities. Finally, new initiatives comprise of compliance with three Executive Orders (E.O.); E.O. 14028 "Improving the Nation's Cybersecurity", E.O. 13859 "Maintaining American leadership in Artificial Intelligence (AI)", E.O. 14028 "Improving the Nation's Cybersecurity", and E.O. 13960 "Promoting the Use of Trustworthy AI in the Federal Government".

Cyber and information security involves all processes and activities pertaining to the securing of Federal data and systems through the creation and definition of security policies, procedures, and controls covering Identify, Protect, Detect, Respond and Recover activities in accordance with the National Institute of Standards and Technology (NIST) Cybersecurity Framework. The cost of the embedded cyber security and information security functions are as follows (in whole dollars): FY 2022 - $1,067,000, FY 2023 - $1,383,000, and FY 2024 - $1,159,000

Legacy Benefits (formerly Pension and Benefit Continuity)

This sub-program fulfills the Department's commitment to former contractor employees who previously worked at sites prior to closure. For sites that have been closed, following the end of active programs and completion of site remediation, LM is responsible for ensuring former contractor employees, their dependents, and their beneficiaries receive the pensions and post-retirement benefits (PRB) that are part of the contractual agreements for the respective sites. Dependent upon the contract provisions for the respective sites, LM funds the contractor cost of providing retirement benefits to former contractor employees. These retirement benefits include pension plans, health insurance, health reimbursement account stipends, Medicare Part B reimbursement, and life insurance.

The funding requested for FY 2024 will continue to support the administration of PRB (healthcare and insurance) for the following sites: Fernald (Ohio), Grand Junction (Colorado), Mound (Ohio), Paducah (Kentucky), Pinellas (Florida), Portsmouth (Ohio), and Rocky Flats (Colorado). There are more than 7,850 participants, including spouses, covered under the retiree medical plans. The total number of participants in these plans has declined over time and mortality rates have increased.

Asset Management (AM)

This sub-program includes the management of real and personal property; aviation management; facility management and security; and emergency management. This sub-program also includes management of lease tracts for royalties paid to the U.S. government from production on U.S. Bureau of Land Management (BLM) managed lands in Colorado. Lease management continues to strengthen LM's ability to demonstrate responsible lifecycle mining and supports production of strategic and critical minerals. Leases include the option for reclamation in lieu of royalties, which allows lessees to perform reclamation activities of legacy or pre-law abandoned mine sites on or near lease tracts in lieu of annual royalty payments. Finally, this includes stewardship and preservation responsibilities under § 3061010 of the National Historical Preservation Act (NHPA).

The funding requested for FY 2024 will allow LM to accomplish sustainment activities, improvements, and new initiatives. Sustainment activities include managing more than 60,000 acres of land and other assets; awarding and administering

leases; overseeing fleet; aviation program administration; infrastructure management; and execution of land beneficial reuse activities. Additionally, sustainment activities include managing processes for preventing and reporting emergencies at LM sites and field offices. These activities include the implementation of several land beneficial reuse activities such as the sale or transfer of real property; habitat and agriculture conservation; and cultural preservation.
Also, sustainment activities include the management of DOE's Mineral Leasing program and stewardship and preservation responsibilities under § 3061010 of the National Historical Preservation Act (NHPA).

Improvements and new initiatives include infrastructure for the LM Field Support Center in Grand Junction, Colorado. Additionally, improvements include adding all electric vehicles to the fleet and the infrastructure necessary to allow further electrification of the fleet.

A related cost directly supporting this activity within program-wide asset management costs is safeguards and security for LM properties and emergency management. The costs include protective forces, physical security systems, personnel security, information security, and program management, as follows (in whole dollars): FY 2022 - $981,000; FY 2023 - $1,081,000; and FY 2024 - $1,324,000

Education, Communication, History, and Outreach (ECHO)
This sub-program includes education, communication, history, and outreach activities. Together these activities ensure stakeholders, including those traditionally disadvantaged communities, are consulted, involved, and informed regarding LM's long-term solutions.

The funding requested for FY 2024 will allow LM to accomplish sustainment activities, improvements, and new initiatives. LM's successful accomplishment of LTS&M activities depends on connecting and effectively communicating with the public, other government organizations, key stakeholders, and partnership with 25 Tribal Communities. As a result, sustainment activities include proactive outreach to the above groups through social media, radio, print publications, speeches, in-person presentations, placing stories in traditional media outlets, carefully targeted communications plans, and more.

Improvements and new initiatives include ECHO's continuous enhancements of vertical integration of outreach activities within the organization. Also, improvements include equity through language access such as language interpretative enhancements. Next, improvements include activities that further outreach requirements such as STEM with LM outreach to 13 schools in Alaska. Lastly, improvements include the integration of public participation specialists to each of the site operations teams. The integration of public participation specialists will help ensure outreach and communication proactively addresses the questions or concerns of affected communities. This is especially important in FY 2024 as the DRUM program focuses on Tribal lands, requiring more face-to-face collaboration, public communication, and relationship building to support the program.

Environmental Justice
This sub-program includes administration of the Department's Environmental Justice (EJ) mission in accordance with E.O. 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations" and E.O. 14008, "Tackling the Climate Crisis at Home and Abroad." Agencies are required to advance environmental justice ) by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, and other cumulative impacts on disadvantaged communities. Accordingly, activities are centered around meaningfully increasing community involvement and participation in the decision-making processes.

The funding requested for FY 2024 will allow EJ to accomplish sustainment activities, improvements, and new initiatives. Sustainment activities include EJ and Tribal training, education, and internships; community-driven activities; capacity building; public participation; agency, public, private industry partnerships; and fostering opportunities for minority populations, low-income populations, Navajo Nation, Tribal Communities, and Alaska Native Communities.

Improvements and new initiatives begin with amplifying existing foundational activities and expanding the scope of engagement to a broader set of communities using current models of implementation. To strengthen activities, the EJ program will work with Tribal Nations and existing partners to expand community outreach, public participation, and environmental education. Additionally, the EJ program will utilize multiple tools to establish new partnerships and

engagement with MSIs on or near LM sites. Through the expansion of current activities and the establishment of new partnerships, LM will execute more trainings, community outreach, and internships to meet the intent of reaching more affected communities.

**Legacy Management**
**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Long-Term Surveillance and Maintenance-<br>$72,406,000** | **$72,406,000** | **$0** |
| • Accept responsibility for surveillance and maintenance of 10 sites by the end of FY 2023.<br>• Conduct transition activities for over 15 sites prior to their transfer to LM.<br>• Continue to support an interagency effort to inventory and safeguard defense-related uranium mines on public and Tribal land.<br>• Support major maintenance and repair projects. | • Accept responsibility for surveillance and maintenance of 107 sites by the end of FY 2024.<br>• Conduct transition activities for over 20 sites prior to their transfer to LM.<br>• Continue to support an interagency effort to inventory and safeguard defense-related uranium mines on public, and Tribal lands.<br>• Support major maintenance and repair projects. | • No signficant change |
| **Archives and Information Management-<br>$24,075,000** | **$25,928,000** | **+$1,853,000** |
| • Continue records/IT management functions for all sites and activities.<br>• Accept responsibility for records/IT for sites transferred to LM during the fiscal year.<br>• Continue to preserve Yucca Mountain Project records and information systems in compliance with the Federal Records Act.<br>• Restoration and modernization of records, environmental, and geospatial data management information systems. | • Continue records/IT management functions for all sites and activities.<br>• Accept responsibility for records/IT for sites transferred to LM during the fiscal year.<br>• Continue to preserve Yucca Mountain Project records and information systems in compliance with the Federal Records Act.<br>• Restoration and modernization of records, environmental, and geospatial data information management systems. | • The increase continues to support improvements to the enterprise geospatial information system to assure compliance with Federal Data Strategy; the Geospatial Data Act of 2018; the Open, Public, Electronic, and Necessary (OPEN) Government Data Act; and the 21st Century Integrated Digital Experience Act; pertaining to data access, data integrity, quality, use and data sharing. The increase also |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| | • Dedicating more resources to address the increased number and complexity of Known Exploited Vulnerabilities. | supports compliance with three Executive Orders (E.O.); E.O. 14028 (Improving the Nation's Cybersecurity), E.O. 13859 (Maintaining American leadership in Artificial Intelligence (AI)), and E.O. 13960 (Promoting the Use of Trustworthy AI in the Federal Government). Additionally, the increase will support enhancements to address the increased number and complexity of Known Exploited Vulnerabilities. |
| **Legacy Benefits-**<br>**$46,400,000** | **$41,200,000** | **-$5,200,000** |
| • Continue to reimburse contractor costs for PRB administration for seven sites.<br>• Continue efforts to reduce DOE's liabilities for retiree PRB while maintaining commitments to DOE's legacy contractor workforce. | • Continue to reimburse contractor costs for PRB administration for seven sites.<br>• Continue efforts to reduce DOE's liabilities for retiree PRB while maintaining commitments to DOE's legacy contractor workforce. | • The decrease is due to a reduction in participants.<br>• |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Asset Management-**<br>**$14,162,000** | **$16,162,000** | **+$2,000,000** |
| • Initiate asset management support for incoming sites.<br>• Continue infrastructure and facilities management at LM sites and Departmental properties.<br>• Manage beneficial reuse initiatives at sites available for reuse.<br>• Establish public land withdrawals with the Department of the Interior that are associated with incoming sites.<br>• Manage program's aviation activites and requirements.<br>• Administer the Minerals Leasing Program.<br>• Continue activities towards DOE's stewardship and perservation responsiblites under § 3061010 NHPA.<br>• Manage the expansion of real property requirements at LM Field Support Center and the LM Operations Center and other Departmental properties.<br>• Recapitalization of the LM Field Support Center in Grand Junction, Colorado.<br>• Climate resiliency and sustainability at leased and owned properties such as the Regenerative Grazing Study at the Shirley Basin South site in Wyoming.<br>• Sustain fleet vehicles and infrastructure to support electrification of fleet. | • Increase asset management support for incoming sites.<br>• Continue infrastructure and facilities management at LM sites and Departmental properties.<br>• Increase beneficial reuse initiatives at sites available for reuse.<br>• Establish public land withdrawals with the Department of the Interior that are associated with incoming sites.<br>• Manage program's aviation activites and requirements.<br>• Administer the Minerals Leasing Program.<br>• Continue activities towards DOE's stewardship and perservation responsiblites under § 3061010 NHPA.<br>• Manage the expansion of real property requirements at LM Field Support Center and the LM Operations Center and other Departmental properties.<br>• Accelerate the Recapitalization of the LM Field Support Center in Grand Junction, Colorado.<br>• Climate resiliency and sustainability at leased and owned properties such as the Regenerative Grazing Study at the Shirley Basin South site in Wyoming.<br>• Modernize fleet vehicles and infrastructure to support electrification of fleet. | • Increase supports infrastructure for the LM Field Support Center in Grand Junction, Colorado; and modernization of the LM fleet electric vehicles as well as vehicle charging infrastructure.<br>• |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Education, Communications, History, and Outreach-<br>$4,553,000** | **$6,000,000** | **+$1,447,000** |
| • Continue to increase stakeholder awareness and engage the public.<br>• Support outreach requirements regarding Executive Order 13985. | • Continue to increase stakeholder awareness and engage the public.<br>• Support outreach requirements regarding Executive Order 13985.<br>• Equity improvements such as language interpretative enhancements.<br>• Integration of public participation specialists. | • Increase supports proactive communications and outreach requirements to stay engaged with the public and Tribal governments and address media participation. |
| **Environmental Justice-<br>$7,330,000** | **$11,984,000** | **+$4,654,000** |
| • Continue EJ functions as the Departmental focus for that program element.<br>• Promote EJ functions in the communities affected by DOE closure actions.<br>• Enhance education and Science, Technology, Engineering, and Mathematics (STEM) outreach activities.<br>• Support equity and energy justice requirements according to Executive Order 13985.<br>• Strengthen foundational EJ activities and expand the scope of engagement to a broader set of stakeholders. | • Continue EJ functions as the Departmental focus for that program element.<br>• Promote EJ functions in the communities affected by DOE closure actions.<br>• Enhance education and Science, Technology, Engineering, and Mathematics (STEM) outreach activities.<br>• Support equity and energy justice requirements according to Executive Order 13985.<br>• Continue the expansion foundational EJ activities and expand the scope of engagement to a broader set of stakeholders. | • Increase supports the expansion of foundational EJ activities, the establishment of new EJ initiatives, and development of partnerships with MSIs on or near sites. |

## Program Direction

**Overview**

The LM mission is carried out in the field by a workforce composed mainly of contractors paid from program funds. Oversight, policy, and inherently governmental functions (e.g., human capital, facility management, site management, contract administration, and budget management) are provided by a federal workforce funded from program direction. Program direction includes overhead costs associated with Federal personnel such as salaries, benefits, travel, training, administrative support services, DOE IT Services, and DOE Working Capital.

**Highlights of the FY 2024 Budget Request**

The request is an increase of $639,000 from the FY 2024 Request level. The request includes supporting overhead costs for 80 Federal FTEs. Overhead support for Federal FTEs includes activities for diversity, equity, inclusion, and accessibility in the Federal Workforce." The increase will also support the proposed 5.2% cost-of-living increase to salaries and benefits for Federal FTEs.

## Program Direction
## Funding ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 15,228 | 15,685 | 16,477 | +792 | +6% |
| Travel | 600 | 750 | 800 | +50 | +6% |
| Support Services | 1,500 | 2,725 | 2,345 | -380 | -15% |
| Other Related Expenses | 2,605 | 2,823 | 3,000 | +177 | +6% |
| **Total, Program Direction** | **19,933** | **21,983** | **22,622** | **+639** | **+4%** |
| **Federal FTEs** | **80** | **80** | **80** | **0** | **0** |
| **Support Services** | | | | | |
| Management Support | 1,500 | 2,725 | 2,345 | -380 | -15% |
| **Total, Support Services** | **1,500** | **2,725** | **2,345** | **-380** | **-15%** |
| **Other Related Expenses** | | | | | |
| Other Services and Supplies | 487 | 651 | 647 | -4 | -1% |
| DOE IT Services | 402 | 410 | 422 | +12 | +3% |
| Working Capital Fund | 1,716 | 1,762 | 1,931 | +169 | +9% |
| **Total, Other Related Expenses** | **2,605** | **2,823** | **3,000** | **+177** | **+6%** |

**Program Direction**
**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction- $21,983,000** | **$22,622,000** | **+$639,000** |
| **Salaries and Benefits- $15,685,000** | **$16,477,000** | **+792,000** |
| • Continue functions to execute LM's mission and achieve LM's program goals.<br>• Maintain a level of 80 Federal FTEs to meet the increased site management responsibilities such as addressing physical hazards posed by defense-related uranium mines.<br>• Provide 4.6% cost-of-living increase to salaries and benefits for 80 FTEs. | • Continue functions to execute LM's mission and achieve LM's program goals.<br>• Maintain a level of 80 Federal FTEs to meet the increased site management responsibilities such as addressing physical hazards posed by defense-related uranium mines.<br>• Provide 5.2% cost-of-living increase to salaries and benefits for 80 FTEs. | • Increase supports 5.2% cost-of-living increase for 80 FTEs. |
| **Travel- $750,000** | **$800,000** | **+50,000** |
| • Continue to resume normal travel activities to support mission functions such as surveillance, maintenance, operations, and oversight at a growing number of closed sites. | • Continue to resume normal travel activities to support mission functions such as surveillance, maintenance, operations, and oversight at a growing number of closed sites. | • Increase supports normal mission-related traveling and additional travel demands related to site portfolio and field responsibilities (surveillance, monitoring, and transition responsibilities). |
| **Support Services- $2,725,000** | **$2,345,000** | **-$380,000** |
| • Continue effort to prepare more analyses and reports with Federal staff. | • Continue effort to prepare more analyses and reports with Federal staff. | • Decrease budget request is due to prior year efficiencies. |
| **Other Related Expenses- $2,823,000** | **$3,000,000** | **+$177,000** |
| • Continue supporting individual development staff training, procurement of supplies, annual lease agreements, program allocation of WCF and the energy IT support. | • Continue supporting individual development staff training, procurement of supplies, annual lease agreements, program allocation of WCF and the energy IT support. | • Increase for mission-related training, procurement of equipment and supplies, and WCF and DOE IT support cost. |

## Legacy Management
## Facilities Maintenance and Repair

The Department's Facilities Maintenance and Repair activities are tied to its programmatic missions, goals, and objectives. Facilities Maintenance and Repair activities funded by this budget are displayed below.

**Costs for Direct-Funded Maintenance and Repair (including Deferred Maintenance Reduction) ($K)**

| | FY 2022 Actual Cost | FY 2023 Planned Cost | FY 2024 Request Level |
|---|---|---|---|
| Office of Legacy Management | | | |
| Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sites | 1,510 | 4,449 | 4,242 |
| Non-CERCLA Sites | 402 | 515 | 630 |
| Total, Direct-Funded Maintenance and Repair | 1,912 | 4,964 | 4,872 |

This report responds to legislative language set forth in Conference Report (H.R. Conf. Rep. No. 108-10) accompanying the Consolidated Appropriations Resolution, 2003 (Public Law 108-7) (pages 886-887), which requests the Department of Energy provide an annual year-end report on maintenance expenditures to the Committees on Appropriations.

**Legacy Management**
**Safeguards and Security Crosscut ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|---|
| Protective Forces | 642 | 670 | 681 | +11 |
| Physical Security Systems | 120 | 127 | 130 | +3 |
| Information Security | 71 | 72 | 72 | +0 |
| Cyber Security | 1,067 | 1,383 | 1,159 | -224 |
| Personnel Security | 76 | 76 | 77 | +1 |
| Material Control and Accountability | 0 | 0 | 0 | 0 |
| Program Management | 268 | 348 | 579 | +231 |
| Security Investigations | 0 | 0 | 0 | 0 |
| Transportation Security | 0 | 0 | 0 | 0 |
| Construction | 0 | 0 | 0 | 0 |
| **Total, Safeguards and Security** | 2,244 | 2,676 | 2,698 | +22 |

Highlights:
The total increase is primarily driven by additional protective forces and program management requirements due to increasing site portfolio.

**Legacy Management**
**Capital Summary ($K)**

| | Total | Prior Years | FY 2022 Enacted | FY 2022 Actuals | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|---|---|---|---|
| **Capital Operating Expenses Summary (including Major Items of Equipment (MIE))** | | | | | | | |
| Capital Equipment > $500K (including MIE) | n/a | n/a | 0 | 0 | 0 | 0 | 0 |
| Accelerator Improvement Projects (AIP) (<$5M) | n/a | n/a | 0 | 0 | 0 | 0 | 0 |
| Minor Construction | 22,000 | 0 | 0 | 0 | 1,500 | 20,500 | 19,000 |
| **Total, Capital Operating Expenses** | **22,000** | **0** | **0** | **0** | **1,500** | **20,500** | **19,000** |
| **Capital Equipment > $500K (including MIE)** | | | | | | | |
| Total Non-MIE Capital Equipment | n/a | n/a | 0 | 0 | 0 | 0 | 0 |
| MIE Name -N/A | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MIE Name -N/A | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total, Capital Equipment (including MIE)** | **n/a** | **n/a** | **0** | **0** | **0** | **0** | **0** |
| **Accelerator Improvement Projects (Total Estimated Cost <$5M)** | | | | | | | |
| AIP Name -N/A | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AIP Name -N/A | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total, Accelerator Improvement Projects** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| **Minor Construction Projects** | | | | | | | |
| Total Direct Funded Minor Construction Projects (TEC <$5M) | n/a | n/a | 0 | 0 | 0 | 0 | 0 |
| Total Indirect Funded Minor Construction Projects (TEC <$5M) | n/a | n/a | 0 | 0 | 0 | 0 | 0 |
| Grand Junction Field Support Center New Campus | 22,000 | 0 | 0 | 0 | 1,500 | 20,500 | 19,000 |
| **Total, Minor Construction Projects** | **22,000** | **0** | **0** | **0** | **1,500** | **20,500** | **19,000** |
| **Total, Capital Summary** | **22,000** | **0** | **0** | **0** | **1,500** | **20,500** | **19,000** |

| **Office of Legacy Management** | |
|---|---|
| | |
| Project Name: | Grand Junction Field Support Center New Campus |
| Location: | Grand Junction, CO |
| Type: | Minor Construction (GPP, IGPP, excluding AIP) |
| Total Estimated Cost: | $22.0 Million (excludes purchase) |
| Construction Design: | $1.5M Million |
| Project Start: | 10/1/2022 |
| Design Complete: | 9/30/2024 |
| Construction Complete: | 9/30/2025 |
| Project Description: | LM's current office space to support the Grand Junction Field Support Center staff requires major infrastructure renovations. This project includes the renovation of new office space to support the Grand Junction Field Support Center staff. The total estimated cost to renovate the new office space is $22 million. |
| Prior Year Accomplishments: | Initial planning and IAA preparation and execution. |
| Planned Activities: | Due diligence for purchase of property, design and construction to renovate that property. |
| Significant Changes from original plan: | Termination of construction activities at current Grand Junction (GJ) Office site. |

## Office of Hearings and Appeals
## Program Direction

### Overview

The Office of Hearings and Appeals (OHA) provides adjudicatory and conflict resolution services for DOE's programs so that disputes may be resolved at the agency level in a fair, impartial and efficient manner. OHA supports all DOE strategic goals, including operational excellence. The bulk of OHA's work is defense-related and consists of the adjudication of security clearance cases that determine the eligibility of employees to have access to special nuclear material or classified information.

Within the Other Defense Activities Appropriation, OHA operates with three divisions: the Personnel Security and Appeals Division, the Employee Protection and Exceptions Division, and the Alternative Dispute Resolution (ADR) Office. OHA offers fair, timely, impartial, and customer-friendly processes for adjudicating matters pursuant to regulatory authority or special delegation from the Secretary. Such matters include: (i) eligibility for a security clearance; (ii) whistleblower protection for employees of DOE contractors; (iii) Freedom of Information Act and Privacy Act appeals; (iv) relief from DOE product efficiency regulations to prevent special hardship; and (v) other matters that the Secretary may delegate.

OHA incorporates Diversity, Equity, Inclusion and Accessibility (DEIA) into every aspect of its mission and goals. OHA staff includes individuals from a wide variety of racial and ethnic backgrounds, and more than 50% of OHA's Administrative Judges are female. In addition, OHA's ADR Office offers mediation and other services for a variety of matters Department-wide, including DEIA matters, and collaborates with DOE's EEO Office, Ombuds Office, General Counsel, Employee Concerns Office and Human Capital Management in resolving issues at the lowest possible level.

The Secretary of Energy recently appointed two (2) Administrative Law Judges (ALJs) to OHA- to hold on-the-record hearings for parties issued a civil penalty by DOE for violations of the Energy Policy and Conservation Act of 1975 (EPCA).

### Highlights of the FY 2024 Budget Request

The FY 2024 Budget Request supports a staff of 24 FTEs needed to accomplish OHA's primary mission of performing DOE adjudications and providing Alternative Dispute Resolution support for the Department.

## Program Direction
## Funding ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Program Direction** | | | | | |
| Salaries and Benefits | $3,016 | $3,127 | $3,274 | $147 | 4% |
| Travel | $100 | $100 | $100 | 0 | 0% |
| Support Services | $150 | $150 | $150 | 0 | 0% |
| Other Related Expenses | $1,090 | $1,100 | $975 | -$125 | -11% |
| **Total, Program Direction** | **$4,356** | **$4,477** | **$4,499** | **$22** | **1%** |
| | | | | | |
| **Federal FTEs** | **22** | **24** | **24** | **0** | **0%** |
| **Support Services** | | | | | |
| Legal Research Support | $150 | $150 | $150 | 0 | 0% |
| **Other Related Expenses** | | | | | |
| Energy IT Services | $90 | $100 | $100 | 0 | 0% |
| Working Capital Fund | $1,000 | $1,000 | $875 | -$125 | -12% |
| **Total, Other Related Expenses** | **$1,090** | **$1,100** | **$975** | **-$125** | **-11%** |

**Program Direction Activities and Explanation of Changes**

| | FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs. FY 2023 Enacted |
|---|---|---|---|
| **Program Direction** | **$4,477,000** | **$4,499,000** | **$22,000** |
| **Salaries and Benefits** | **$3,127,000** | **$3,274,000** | **$147,000** |
| | • Supports staffing level of 24 FTEs | • Supports staffing level of 24 FTEs | • Increase due to Annual Civilian Pay Raise |
| **Travel** | **$100,000** | **$100,000** | **0** |
| | • Supports travel to conduct ADR training activities and services at DOE field locations | • Continuation of FY23 activities | • No Change |
| **Other Related Expenses** | **$1,100,000** | **$975,000** | **-$125,000** |
| | • Funding supports the Working Capital Fund (WCF), which provides for shared service costs and Departmental overhead expenses; Energy IT Services; and other services | • Continuation of FY 2023 activities | • Decrease due to minimizing office space and moving OHA offices out of Government leased space to DOE HQ |

**DEPARTMENT OF ENERGY**
**Funding by Site**
TAS_0243 - Other Defense Activities - FY 2024
(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| **Argonne National Laboratory** | | | |
| Environment, Health, Safety & Security | 945 | 945 | 945 |
| Environment, Health, Safety, and Security | 945 | 945 | 945 |
| **Total Argonne National Laboratory** | **945** | **945** | **945** |
| **Brookhaven National Laboratory** | | | |
| Environment, Health, Safety & Security | 250 | 250 | 250 |
| Environment, Health, Safety, and Security | 250 | 250 | 250 |
| **Total Brookhaven National Laboratory** | **250** | **250** | **250** |
| **Chicago Operations Office** | | | |
| Environment, Health, Safety & Security | 50 | 50 | 50 |
| Environment, Health, Safety, and Security | 50 | 50 | 50 |
| **Total Chicago Operations Office** | **50** | **50** | **50** |
| **Consolidated Business Center** | | | |
| Environment, Health, Safety & Security | 259 | 259 | 259 |
| Environment, Health, Safety, and Security | 259 | 259 | 259 |
| **Total Consolidated Business Center** | **259** | **259** | **259** |
| **Fernald Site** | | | |
| Legacy Management Activities - Defense | 12,497 | 11,988 | 10,759 |
| Legacy Management | 12,497 | 11,988 | 10,759 |
| **Total Fernald Site** | **12,497** | **11,988** | **10,759** |
| **Grand Junction Office** | | | |
| Legacy Management Activities - Defense | 52,606 | 41,856 | 56,188 |
| Legacy Management | 52,606 | 41,856 | 56,188 |
| **Total Grand Junction Office** | **52,606** | **41,856** | **56,188** |
| **Idaho National Laboratory** | | | |
| Environment, Health, Safety & Security | 150 | 150 | 150 |
| Environment, Health, Safety, and Security | 150 | 150 | 150 |
| **Total Idaho National Laboratory** | **150** | **150** | **150** |
| **Idaho Operations Office** | | | |
| Environment, Health, Safety & Security | 400 | 400 | 400 |
| Environment, Health, Safety, and Security | 400 | 400 | 400 |
| **Total Idaho Operations Office** | **400** | **400** | **400** |
| **Kansas City National Security Complex (KCNSC)** | | | |
| Environment, Health, Safety & Security | 10 | 10 | 10 |
| Environment, Health, Safety, and Security | 10 | 10 | 10 |
| **Total Kansas City National Security Complex (KCNSC)** | **10** | **10** | **10** |
| **Lawrence Berkeley National Laboratory** | | | |
| Environment, Health, Safety & Security | 0 | 50 | 50 |
| Environment, Health, Safety, and Security | 0 | 50 | 50 |
| **Total Lawrence Berkeley National Laboratory** | **0** | **50** | **50** |
| **Lawrence Livermore National Laboratory** | | | |

**DEPARTMENT OF ENERGY**
**Funding by Site**
TAS_0243 - Other Defense Activities - FY 2024
(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| Environment, Health, Safety & Security | 3,050 | 3,050 | 3,050 |
| Environment, Health, Safety, and Security | 3,050 | 3,050 | 3,050 |
| **Total Lawrence Livermore National Laboratory** | **3,050** | **3,050** | **3,050** |
| **Lexington Office** | | | |
| Environment, Health, Safety & Security | 200 | 200 | 200 |
| Environment, Health, Safety, and Security | 200 | 200 | 200 |
| **Total Lexington Office** | **200** | **200** | **200** |
| **Los Alamos National Laboratory** | | | |
| Environment, Health, Safety & Security | 95 | 95 | 95 |
| Environment, Health, Safety, and Security | 95 | 95 | 95 |
| **Total Los Alamos National Laboratory** | **95** | **95** | **95** |
| **Miamisburg Site** | | | |
| Environment, Health, Safety & Security | 5 | 5 | 5 |
| Environment, Health, Safety, and Security | 5 | 5 | 5 |
| **Total Miamisburg Site** | **5** | **5** | **5** |
| **Mound Site** | | | |
| Legacy Management Activities - Defense | 10,149 | 12,083 | 10,744 |
| Legacy Management | 10,149 | 12,083 | 10,744 |
| **Total Mound Site** | **10,149** | **12,083** | **10,744** |
| **National Energy Technology Lab** | | | |
| Legacy Management Activities - Defense | 2,403 | 1,976 | 2,552 |
| Legacy Management | 2,403 | 1,976 | 2,552 |
| **Total National Energy Technology Lab** | **2,403** | **1,976** | **2,552** |
| **Nevada Field Office** | | | |
| Environment, Health, Safety & Security | 15 | 15 | 15 |
| Environment, Health, Safety, and Security | 15 | 15 | 15 |
| **Total Nevada Field Office** | **15** | **15** | **15** |
| **NNSA Albuquerque Complex** | | | |
| Environment, Health, Safety & Security | 1,000 | 1,000 | 1,000 |
| Environment, Health, Safety, and Security | 1,000 | 1,000 | 1,000 |
| Enterprise Assessments | 150 | 300 | 330 |
| Office of Enterprise Assessments | 150 | 300 | 330 |
| **Total NNSA Albuquerque Complex** | **1,150** | **1,300** | **1,330** |
| **Oak Ridge Institute for Science & Education** | | | |
| Environment, Health, Safety & Security | 1,305 | 1,255 | 1,255 |
| Environment, Health, Safety, and Security | 1,305 | 1,255 | 1,255 |
| **Total Oak Ridge Institute for Science & Education** | **1,305** | **1,255** | **1,255** |
| **Oak Ridge National Laboratory** | | | |
| Environment, Health, Safety & Security | 1,035 | 1,035 | 1,035 |
| Environment, Health, Safety, and Security | 1,035 | 1,035 | 1,035 |
| **Total Oak Ridge National Laboratory** | **1,035** | **1,035** | **1,035** |
| **Oak Ridge Office** | | | |

**DEPARTMENT OF ENERGY**
**Funding by Site**
TAS_0243 - Other Defense Activities - FY 2024
(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| Environment, Health, Safety & Security | 2,795 | 2,795 | 2,795 |
| Environment, Health, Safety, and Security | 2,795 | 2,795 | 2,795 |
| **Total Oak Ridge Office** | **2,795** | **2,795** | **2,795** |
| **Office of Scientific & Technical Information** | | | |
| Environment, Health, Safety & Security | 300 | 300 | 300 |
| Environment, Health, Safety, and Security | 300 | 300 | 300 |
| **Total Office of Scientific & Technical Information** | **300** | **300** | **300** |
| **Pacific Northwest National Laboratory** | | | |
| Environment, Health, Safety & Security | 1,905 | 1,905 | 1,905 |
| Environment, Health, Safety, and Security | 1,905 | 1,905 | 1,905 |
| **Total Pacific Northwest National Laboratory** | **1,905** | **1,905** | **1,905** |
| **Pantex Plant** | | | |
| Environment, Health, Safety & Security | 10 | 10 | 10 |
| Environment, Health, Safety, and Security | 10 | 10 | 10 |
| **Total Pantex Plant** | **10** | **10** | **10** |
| **Pinellas Site** | | | |
| Legacy Management Activities - Defense | 3,664 | 4,164 | 3,749 |
| Legacy Management | 3,664 | 4,164 | 3,749 |
| **Total Pinellas Site** | **3,664** | **4,164** | **3,749** |
| **Portsmouth Gaseous Diffusion Plant** | | | |
| Legacy Management Activities - Defense | 4,200 | 4,300 | 4,000 |
| Legacy Management | 4,200 | 4,300 | 4,000 |
| **Total Portsmouth Gaseous Diffusion Plant** | **4,200** | **4,300** | **4,000** |
| **Richland Operations Office** | | | |
| Environment, Health, Safety & Security | 1,000 | 1,000 | 1,000 |
| Environment, Health, Safety, and Security | 1,000 | 1,000 | 1,000 |
| **Total Richland Operations Office** | **1,000** | **1,000** | **1,000** |
| **Rocky Flats Site** | | | |
| Legacy Management Activities - Defense | 32,996 | 40,735 | 26,728 |
| Legacy Management | 32,996 | 40,735 | 26,728 |
| **Total Rocky Flats Site** | **32,996** | **40,735** | **26,728** |
| **Sandia National Laboratories** | | | |
| Environment, Health, Safety & Security | 1,210 | 1,210 | 1,210 |
| Environment, Health, Safety, and Security | 1,210 | 1,210 | 1,210 |
| **Total Sandia National Laboratories** | **1,210** | **1,210** | **1,210** |
| **Savannah River Site** | | | |
| Environment, Health, Safety & Security | 10 | 10 | 10 |
| Environment, Health, Safety, and Security | 10 | 10 | 10 |
| **Total Savannah River Site** | **10** | **10** | **10** |
| **Savannah River Site Office** | | | |
| Environment, Health, Safety & Security | 500 | 500 | 500 |
| Environment, Health, Safety, and Security | 500 | 500 | 500 |

**DEPARTMENT OF ENERGY**

**Funding by Site**

TAS_0243 - Other Defense Activities - FY 2024

(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| **Total Savannah River Site Office** | **500** | **500** | **500** |
| **Washington Headquarters** | | | |
| Program Direction - Environment, Health, Safety and Security | 73,588 | 76,685 | 86,558 |
| Environment, Health, Safety & Security | 116,213 | 122,335 | 128,186 |
| Environment, Health, Safety, and Security | 189,801 | 199,020 | 214,744 |
| Program Direction - Office of Enterprise Assessments | 56,049 | 57,941 | 64,132 |
| Enterprise Assessments | 27,185 | 27,186 | 29,692 |
| Office of Enterprise Assessments | 83,234 | 85,127 | 93,824 |
| Specialized Security Activities | 328,500 | 335,000 | 345,330 |
| Legacy Management Activities - Defense | 35,151 | 46,693 | 55,273 |
| Program Direction - Legacy Management | 19,933 | 21,983 | 22,622 |
| Legacy Management | 55,084 | 68,676 | 77,895 |
| Office Of Hearings And Appeals | 4,356 | 4,477 | 4,499 |
| **Total Washington Headquarters** | **660,975** | **692,300** | **736,292** |
| **Weldon Spring Site Office** | | | |
| Legacy Management Activities - Defense | 5,131 | 5,131 | 3,687 |
| Legacy Management | 5,131 | 5,131 | 3,687 |
| **Total Weldon Spring Site Office** | **5,131** | **5,131** | **3,687** |
| **Y-12 Site Office** | | | |
| Environment, Health, Safety & Security | 20 | 20 | 20 |
| Environment, Health, Safety, and Security | 20 | 20 | 20 |
| **Total Y-12 Site Office** | **20** | **20** | **20** |
| **Undesignated LPI** | | | |
| Defense-Related Administrative Support | 183,710 | 203,648 | 203,649 |
| **Total Undesignated LPI** | **183,710** | **203,648** | **203,649** |
| **Total Funding by Site for TAS_0243 - Other Defense Activities** | **985,000** | **1,035,000** | **1,075,197** |

# Departmental Administration

# Departmental Administration

**Departmental Administration**

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**Departmental Administration**
**Proposed Appropriation Language**

For salaries and expenses of the Department of Energy (DOE) necessary for departmental administration in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), $534,053,000 to remain available until September 30, 2025, including the hire of passenger motor vehicles and official reception and representation expenses not to exceed $30,000, plus such additional amounts as necessary to cover increases in the estimated amount of cost of work for others notwithstanding the provisions of the Anti-Deficiency Act (31 U.S.C. 1511 et seq.): Provided, That such increases in cost of work are offset by revenue increases of the same or greater amount: Provided further, That moneys received by the Department for miscellaneous revenues estimated to total $100,578,000 in fiscal year 2024 may be retained and used for operating expenses within this account, as authorized by section 201 of Public Law 95–238, notwithstanding the provisions of 31 U.S.C. 3302: Provided further, that the sum herein appropriated shall be reduced as collections are received during the fiscal year so as to result in a final fiscal year 2024 appropriation from the general fund estimated at not more than $433,475,000.

**Explanation of Change**

In FY 2024, the Request will allow DOE to provide historic support for underserved communities, including $54,000,000 for the Office of Economic Impact and Diversity to play a critical role in implementing the Department's Justice40 efforts and equity action plan. The Request invests $50,000,000 through the Office of International Affairs to accelerate international climate progress, deploy American innovation, and support economic prosperity at home and abroad. The Request includes and $8,000,000 to increase multilateral engagement. The Office of Management requests $26,000,000 for electric vehicles and charging infrastructure. The Office of Policy Request includes $19,000,000 for a new statistical/analytical capability that will provide near-real time analysis to be used by policymakers across the government to inform decisions. To continue to address Cyber vulnerabilities, the Department is requesting $19,000,000 dedicated to cyber response and recovery management through the Office of the Chief Information Officer for the DOE enterprise.

**Departmental Administration**
**($K)**

| FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|
| 240,000 | 283,000 | 433,475 | +150,475 |

**Overview**

The Departmental Administration (DA) appropriation funds 13 management and mission support programs that have enterprise-wide responsibility for administration, accounting, budgeting, contract and project management, human resources management, congressional and intergovernmental liaison, international cooperation and coordination, information management, life-cycle asset management, legal services, energy jobs, energy justice, workforce diversity and equal employment opportunity, ombudsman services, small business advocacy, sustainability, arctic energy coordination, and public affairs.

DA supports Strategic Partnership Projects (SPP) that are reimbursed by customers of the DOE laboratories; and receives Miscellaneous Revenues that that offset the costs of the overall program of work. Additionally, the DA program of work operates by executing Defense-Related Administrative Support (DRAS) funding, appropriated within Other Defense Activities (ODA). This accounts for the support DA programs provide for the Defense portion of DOE.

**Highlights of the FY 2024 Budget Request**

In 2024 the DA Budget increase of $150,475,000 reflects a dedication to strengthen enterprise-wide management and mission support functions, per the Administration's priorities, as the highlights below outline:

- **Office of the Secretary (OSE):** Funding will continue to support leadership and policy direction at the Department.
- **Office of the Chief Financial Officer (CFO):** Funding will support corporate business systems to meet and comply with updated cybersecurity requirements and initiatives; continued implementation of the Robotic Process Automation (RPA) initiative across the CFO activities; enhance systems supporting enterprise business processes and systems; and staff support for Evidence Act Implementation.
- **Economic Impact & Diversity (ED):** Funding will support ED's role as central coordinator and departmental subject matter expert on equity and justice, to include technical assistance to minority businesses, Minority Serving Institutions, and third-party evaluation of Justice40 benefits. Funding continues support for direct oversight of Civil Rights/Employment Equal Opportunities (EEO) to support increased Civil Rights Enforcement, Compliance, and Technical Assistance for the DOE enterprise (except for NNSA), and to directly oversee the affirmative employment and diversity and inclusion functions for the DOE enterprise (except for NNSA and the PMAs), and expand external civil rights enforcement and compliance activities in the areas of Limited English Proficiency and TA. Staffing level supports EEO consolidation, energy justice, diversity, equity, and inclusion activities.
- **International Affairs (IA):** Funding will support the Administration's efforts to accelerate international climate progress, deploy American innovation, and support economic prosperity at home and abroad and continue to pursue international climate and clean energy cooperation through key multilateral and bilateral forums with the objective to reduce global greenhouse gas emissions, create good paying American jobs, enhance U.S. competitiveness on critical energy technologies, and address the distributional impacts of foreign policy decisions (consistent with the Foreign Policy for the Middle Class agenda).,
- **Office of the Chief Information Officer (OCIO):** Funding will support OCIO's continued modernization of DOE's IT infrastructure and IT services to provide the capacity, flexibility, and resiliency required of a modern and secure enterprise. Proposed modernization initiatives will continue to reduce the threat of attacks to both DOE's IT and operational technology assets through automation, scale capacity commensurate with demand, and establish IT enterprise capabilities. Cyber vulnerabilities identified by the SolarWinds intrusion incident of December 2020, will continue to be addressed through funds specifically dedicated to cyber response and recovery management in the FY 2024 Request.

- **Management (MA):** Funding will support MA's mission fulfillment, and continued expansion of the Department's electric vehicle fleet and charging infrastructure as part of DOE's transition from GSA-leased gas-powered vehicles to GSA-leased Zero Emission Vehicles.
- **Office for Human Capital (HC):** Funding will support current operational levels, maintain HC's vital customer service mission, and support ongoing initiatives related to developing more agile, cost-effective operations and modernizing hiring practices to improve the DOE workforce's ability to deliver mission outcomes. Additional funding will support hiring increases related to the Infrastructure Investment and Jobs Act, build upon Talent Teams and dedicated resources to provide HR and hiring managers with new tools and capabilities that are needed to effectively support mission needs.
- **Office of Policy (OP):** Funding will support enhanced energy policy and analysis work as an essential function to support urgently needed technology, economic, job creation, and energy-related goals; and the development of a new statistical/analytical capability to provide trend analyses of key energy indicators that can be used by policymakers across the entire government to inform decisions. Funds will also support the Arctic Energy Office.

## Departmental Administration
## Funding by Congressional Control ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted | |
|---|---|---|---|---|---|
| | | | | $ | % |
| **Departmental Administration** | | | | | |
| Office of the Secretary | 5,582 | 6,642 | 6,737 | +95 | +1.4% |
| Congressional & Intergovernmental Affairs | 6,000 | 5,000 | 7,198 | +2,198 | +44% |
| Chief Financial Officer | 56,591 | 62,283 | 67,345 | +5,062 | +8.1% |
| Economic Impact & Diversity | 20,000 | 34,140 | 53,665 | +19,525 | +57.2% |
| International Affairs | 28,000 | 32,000 | 50,142 | +18,142 | +56.7% |
| Artificial Intelligence and Technology Office | 1,000 | 1,000 | - | -1,000 | - |
| Chief Information Officer | 197,000 | 215,000 | 245,169 | +30,169 | +14% |
| **Subtotal, DA** | **314,173** | **356,065** | **430,256** | **+74,191** | **+20.8%** |
| **Other Departmental Administration** | | | | | |
| Management | 61,400 | 66,000 | 103,245 | +37,245 | +56.4% |
| Project Management | 13,325 | 13,550 | 14,953 | +1,403 | +10.4% |
| Chief Human Capital Officer | 28,200 | 35,300 | 40,144 | +4,844 | +13.7% |
| Office of Small & Disadvantaged Business Utilization | 3,800 | 4,200 | 5,472 | +1,272 | +30.3% |
| General Counsel | 38,000 | 41,725 | 45,630 | +3,905 | +9.4% |
| Office of Policy | 19,454 | 23,950 | 52,037 | +28,087 | +117.3% |
| Public Affairs | 5,936 | 5,936 | 5,965 | +29 | +0.5% |
| **Subtotal, Other DA** | **170,115** | **191,161** | **267,446** | **+76,285** | **+28.5%** |
| Strategic Partnership Projects (SPP) | 40,000 | 40,000 | 40,000 | - | - |
| **Total, Departmental Administration (Gross)** | **524,288** | **587,226** | **737,702** | **+150,476** | **+25.6%** |
| Defense-Related Administrative Support (DRAS) | -183,710 | -203,648 | -203,649 | -1 | +0.0% |
| **Subtotal, Departmental Administration** | **340,578** | **383,578** | **534,053** | **+150,475** | **+39.2%** |
| **Miscellaneous Revenues** | | | | | |
| Revenues Associated with SPP | -40,000 | -40,000 | -40,000 | - | - |
| Other Revenues | -60,578 | -60,578 | -60,578 | - | - |
| **Subtotal, Miscellaneous Revenues** | **-100,578** | **-100,578** | **-100,578** | **-** | **-** |
| **Total, Departmental Administration (Net)** | **240,000** | **283,000** | **433,475** | **+150,475** | **+53.2%** |

### Outyear Funding ($K)

| | FY 2024 Request | FY 2025 | FY 2026 | FY 2027 | FY 2028 |
|---|---|---|---|---|---|
| **Total, Departmental Administration** | **433,475** | **443,000** | **453,000** | **464,000** | **474,000** |

## Defense-Related Administrative Support

**Overview**

Beginning in FY 1999, funding has been provided within the Other Defense Activities appropriation to offset expenses that support defense-related activities. This offset addresses the significant level of administrative support performed within DA offices in support of the Department's defense-related programs. The services provided by the offices within DA are performed without distinction between defense and non-defense related activities and provide benefit for all headquarters organizations proportionally.

**Defense-Related Administrative Support**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request |
|---|---|---|---|
| **Defense-Related Administrative Support** | **-183,710** | **-203,648** | **-203,649** |

## Strategic Partnership Projects

**Overview**

The Strategic Partnership Projects (SPP) program provides funding to DOE's multi-purpose field offices and National Laboratories to finance the cost of products and services requested by non-DOE users, both foreign and domestic. The products and services provided by the Department under this program generally are not available from alternate sources and are reimbursable work for non-federal entities where the sponsor is precluded by law from providing advance funding.

The SPP program includes a portion of the Department's Foreign Research Reactor Spent Fuel Program. This program, which involves the receipt and storage of foreign research reactor spent fuel, is provided for in the SPP program only to the extent of revenues provided.

The benefits for this program are continued access to the Department's Laboratory complex, which satisfies the needs of our non-federal customers. Performance evaluation for this work is the responsibility of our customers. The success of this program is indicated by the steady influx of business from the targeted groups.

**Strategic Partnership Projects**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|---|
| Consolidated Service Center | 16,631 | 21,745 | 21,700 | -45 |
| Idaho Operations Office | 1,000 | 2,000 | 2,000 | - |
| National Energy Technology Laboratory | 100 | 150 | 100 | -50 |
| National Renewable Energy Laboratory | 500 | 500 | 500 | - |
| NNSA Complex | 14,969 | 4,305 | 4,400 | +95 |
| Richland Operations Office | 100 | 100 | 100 | - |
| Savannah River Ops Office | 6,700 | 11,200 | 11,200 | - |
| Washington DC HQ Undistributed | - | - | - | - |
| **Total, Strategic Partnership Projects** | **40,000** | **40,000** | **40,000** | - |

**Revenues Associated with Strategic Partnership Projects**
**Funding ($K)**

| **Description of FY 2024 Activities** | **FY 2022 Enacted** | **FY 2023 Request** | **FY 2024 Request** |
|---|---|---|---|
| **Consolidated Service Center** | 16,631 | 21,745 | 21,745 |
| • Argonne National Laboratory - Work with universities and state and local governments that are precluded by law in giving a cash advance; and cover anticipated work with Small Business Innovation Research federal awarded sponsors.<br>• Brookhaven National Laboratory - Primarily to cover anticipated work with small businesses on Small Business Innovation Research/Small Business Technology Transfer and Research SPP. In addition, to cover work with universities and state & local governments that are precluded by law to provide a cash advance.<br>• Lawrence Berkeley National Laboratory<br>o Additional university support for Composite for Basic Science Research;<br>o Independent Technical Assistance for Management and Treatment of Groundwater and Drinking Water;<br>o Fabricate the components in the ALICE (A Large Ion Collider Experiment)-USA scope and ALICE ITS (Inner Tracking System) upgrade;<br>o University of Washington for comprehensive Identification of Worm and Fly Transcription Factors; and<br>o National Laboratory High Energy Physics for Particle Data Group.<br>o 21st Century Indiana Energy Policy Development Task Force and Comprehensive Study.<br>• Oak Ridge National Laboratory support for Early-Time Signatures of a Nuclear Detonation in Urban Areas; Tennessee REVV Program; Tip-Enhanced Raman Spectroscopy (TERS) as a Screening Tool; Understanding Cellular Transformation and Chemical Responses Linking Type 2 Diabetes and Amyotrophic Lateral Scelerosis; Neutron Scattering Studies of Human Acetylcholinesterase (AChE); Computational Support for Problem Structure and Quantum Advantage; Joint Faculty Agreements; General Employee Loan Agreements; etc.<br>• SLAC National Accelerator Laboratory support to U.S./Japan Cooperative Program in High Energy Physics;<br>• Oak Ridge Institute for Science and Education (ORISE) support to/for Radiation Emergency Assistance Center/Training courses, and Beryllium Lymphocyte Proliferation Testing; and<br>• Pacific Northwest National Laboratory (PNNL) work with universities and state and local governments in the areas of Biomedical, High Performance Computing, Grid Modernization, Security and Incident Response, Nuclear and Reactor Technologies, Advance Material Development, Marine Sciences research and development, Build Back Better solicitations, and State Clean Energy fund, Advance Material Development, and Advance Manufacturing. | | | |
| **Idaho Operations Office** | 1,000 | 2,000 | 2,000 |

| Description of FY 2024 Activities | FY 2022 Enacted | FY 2023 Request | FY 2024 Request |
|---|---|---|---|
| • Work with universities state and local governments.<br>• To cover anticipated work with small businesses on Small Business Innovation Research/Small Business Technology Transfer and Research SPP. | | | |
| **National Energy Technology Laboratory** | 100 | 150 | 100 |
| • Work with state and local governments that are precluded by law in giving a cash advance. | | | |
| **National Renewable Energy Laboratory** | 500 | 500 | 500 |
| • Work with state and local governments. | | | |
| **NNSA Complex**<br>• Consolidated Nuclear Solutions (CNS) National Security Complex support to long-term supply contracts with foreign governments to provide uranium fuel;<br>• CNS - NA-23 Material Management & Minimization Nuclear Material Removal program - cost of recovery operations subsequently reimbursed by foreign customers;<br>• CNS support for Universities precluded by law from providing advance funding.<br>• Sandia National Laboratory support to state & local governments; and<br>• Lawrence Livermore National Laboratory support to state and local governments | 14,969 | 4,305 | 4,450 |
| **Richland Operations Office** | 100 | 100 | 100 |
| • Work with Universities, State, and Local governments. | | | |
| **Savannah River Operations** | 6,700 | 11,200 | 11,200 |
| • Savannah River National Laboratory support to universities & institutions, state and local governments, and non-profit organizations; and<br>• Savannah River site support for the receipt and management of foreign research reactor spent nuclear fuel | | | |
| **Washington DC HQ Undistributed** | 6,722 | 6,722 | - |
| • Funding kept in reserve to support SPP activities | | | |
| **Total, Revenues Associated with Strategic Partnership Projects** | **40,000** | **40,000** | **40,000** |

## Miscellaneous Revenues

**Overview**

The Departmental Administration account receives Miscellaneous Revenues from the following:

- Revenues received from the sale of by-products that have no cost associated with the Departmental Administration program of work. These items are by-products of activities funded by other on-going Departmental programs and are collected as Miscellaneous Revenues. Included in this estimate are revenues collected from the Reimbursable Work program for Federal Administrative Charges.
    - Federal Administrative Charges – Revenues collected from other federal agencies as well as non-federal entities for reimbursable activity conducted by the Department in accordance with full-cost recovery policy.
    - Nuclear Production Office – Revenues generated from shipment of surplus Highly Enriched Uranium and Low Enriched Uranium for use in foreign research and test reactors.
    - Naval Reactors Laboratory Field Office (formally Pittsburgh Naval Reactors Office) – The Department of Navy reimburses the Naval Reactors Laboratory Field Office for the nuclear material burn-up while the core is in operation and when residual nuclear material is removed during refueling and defueling of the core. While nuclear material burn-up is relatively consistent across years, major fluctuations in this line item are attributable to the refueling and defueling schedules, which are based on ship availability and quantity of nuclear material left in the cores.
    - Other Revenues, including Timber Sales – Estimate based on current rate of collections for various miscellaneous revenues collected at all Department sites, including timber sales at Savannah River Site.

**Miscellaneous Revenues**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|---|
| Revenues Associated with Strategic Partnership Projects | **-40,000** | **-40,000** | **-40,000** | **-** |
| Other Revenues | **-60,578** | **-60,578** | **-60,578** | **-** |
| Federal Administrative Charges | -40,362 | -36,667 | -30,803 | +5,864 |
| Nuclear Production Office | -4,044 | -4,044 | -4,044 | - |
| Pittsburgh Naval Reactors Office | -11,472 | -15,167 | -20,931 | -5,764 |
| Other Revenues, including Timber Sales | -4,700 | -4,700 | -4,800 | -100 |
| **Total, Miscellaneous Revenues** | **-100,578** | **-100,578** | **-100,578** | **-** |

**Office of the Secretary**
**Program Direction**

**Overview**

The Office of the Secretary (OSE) provides leadership and policy direction to the Department of Energy (DOE) in its commitment to advance U.S. national security and economic growth through transformative science and technology innovation that promotes affordable and reliable energy through market solutions and meets our nuclear security and environmental cleanup challenges. The OSE staff leads the Department's priorities of Combating the Climate Crisis, Creating Clean Energy Union Jobs, and Promoting Energy Justice. The Department also plans to continue to make progress in achieving each of its strategic goals through continued investments in scientific research, technology innovation, nuclear security, arctic energy coordination, and environmental cleanup.

The FY 2024 Budget Request of $6,737,000 is a $95,000 increase above the FY 2023 Enacted Budget, and supports up to 33 full time equivalent employees, travel, and operational expenses necessary to achieve the Department's priorities. The additional resources support administrative costs and interagency cooperation on efforts to address the climate coordination capacity across DOE and with the National Climate Task Force agencies' activities including the Net-Zero Gamechangers Initiative.

**Office of the Secretary**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 4,952 | 5,012 | 5,107 | 95 | **2%** |
| Climate Change Coordination | 0 | 1,000 | 1,000 | 0 | 0 |
| Travel | 529 | 529 | 529 | 0 | 0 |
| Support Services | 0 | 0 | 0 | 0 | 0 |
| Other Related Expenses | 101 | 101 | 101 | 0 | 0 |
| **Total, Program Direction** | **5,582** | **6,642** | **6,737** | **95** | **1%** |
| **Federal FTEs** | **33** | **33** | **33** | **0** | **0** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Training | 6 | 6 | 6 | 0 | 0 |
| Other Services | 95 | 95 | 95 | 0 | 0 |
| **Total, Other Related Expenses** | **101** | **101** | **101** | **0** | **0** |

**Explanation of Changes Table**
**Office of the Secretary**
**Funding ($K)**

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $6,642** | **$6,737** | **+$95** |
| **Salaries and Benefits $5,012** | **$5,107** | **+$95** |
| Funding supports up to 33 FTEs in the Office of the Secretary, Deputy Secretary, Office of the Under Secretary for Infrastructure (S3), and the Office of the Under Secretary for Science and Innovation (S4). | Continued funding supports payroll costs of up to 33 FTEs in the Office of the Secretary, Deputy Secretary, Office of the Under Secretary for Infrastructure (S3), and the Office of the Under Secretary for Science and Innovation (S4). | +$95 Funding supports a pay raise, within grade increases, promotions, and awards allocation. |
| **Climate Change Coordination $1,000** | **$1,000** | **$0** |
| Funding supports staff and coordinated stakeholder engagement for interagency coordination on efforts to address the climate crisis. | Funding supports staff and coordinated stakeholder engagement for interagency coordination on efforts to address the climate crisis. | No change |
| **Travel $529** | **$529** | **$0** |
| Funding for the Office of the Secretary, Deputy Secretary, Under Secretary for Infrastructure, and the Under Secretary for Science and Innovation, as well as Special Assistants to travel in support of the Department's mission. | Continued funding for the Office of the Secretary, Deputy Secretary, Under Secretary for Infrastructure, and the Under Secretary for Science and Innovation, as well as Special Assistants to travel in support of the Department's mission. | No change |
| **Other Related Expenses $101** | **$101** | **$0** |
| Funding supports training and course registration cost for OSE employees for essential training activities and support for security clearance investigations | Continued funding supports training and course registration cost for OSE employees for essential training activities and support for security clearance investigations. | No change |

## Congressional and Intergovernmental Affairs
## Program Direction

### Overview

The Office of Congressional and Intergovernmental Affairs (CI) delivers accurate and timely communication of Administration and Departmental objectives and activities with Congress, State, local, and Tribal governments, and other stakeholder organizations.

In FY 2024, CI will direct, manage, and ensure timely coordination between Departmental organizations and their external stakeholders. This includes timely notifications to Members of Congress, Governors, Mayors, and Tribal officials on Department of Energy (DOE) matters of specific interest including pending awards/grants/contracts that may affect the States, Tribal nations, congressional districts, and other constituencies. CI will ensure the Department provides timely and complete responses to inquiries and requests for information. In addition, CI will engage with Governors, staff, local elected and appointed officials, and consult Tribal leaders on DOE activities and decisions; and to elicit concerns and interests for consideration in DOE decision processes.

CI will recommend legislative strategies and engagements in alignment with Administration policy and DOE program initiatives. This includes both monitoring and developing legislative activity on behalf of the Department, as well as working with Congress to define and advance the Administration's position on pending legislation. CI will prepare Departmental officials for Congressional hearings, briefings, and meetings, as well as gubernatorial and Tribal consultations and events. This includes directing and coordinating the preparation of congressional testimony, transcripts, pre- and post-hearing questions and answers, and other information provided for the record.

### Highlights of the FY 2024 Budget Request

The Department requests $7,198,000 in FY 2024 for CI to maintain operational levels consistent with Departmental needs and Secretarial priorities. Funding will ensure CI can continue to provide accurate and timely communications of Administration and Departmental activities and objectives to Congress, State, local and Tribal governments, and external stakeholders.

**Program Direction**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 4295 | 3260 | 5302 | +2042 | 63% |
| Travel | 70 | 70 | 150 | +80 | 114% |
| Support Services | 409 | 317 | 409 | +92 | 29% |
| Other Related Expenses | 1226 | 1353 | 1337 | -16 | -1% |
| **Subtotal, Washington Headquarters** | **6,000** | **5,000** | **7,198** | **+2,198** | **44%** |
| **Total, Program Direction** | **6,000** | **5,000** | **7,198** | **+2,198** | **44%** |
| **Federal FTEs** | **24** | **24** | **31** | **+7** | **29%** |
| **BIL FTEs** | **1** | **1** | **1** | **-** | **-** |
| **Support Services** | | | | | |
| Management Support | | | | | |
| Print and electronic subscription services | 80 | 80 | 80 | - | - |
| Contractor Support | 314 | 222 | 314 | +92 | 41% |
| Other Support Services | 15 | 15 | 15 | - | - |
| **Total, Support Services** | **409** | **317** | **409** | **+92** | **29%** |
| **Other Related Expenses** | | | | | |
| Training | 0 | 0 | 50 | +50 | - |
| Energy IT Services | 196 | 268 | 268 | - | - |
| Working Capital Fund | 980 | 1035 | 969 | -66 | -6% |
| Other Services | 50 | 50 | 50 | - | - |
| **Total, Other Related Expenses** | **1,226** | **1,353** | **1,337** | **-16** | **-1%** |

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $5,000,000** | **$7,198,000** | **+$2,198,000** |
| **Salaries and Benefits $3,260,000** | **$5,302,000** | **+$2,042,000** |
| Provides funding for 24 FTEs to include salaries and benefits. | Provides funding for 31 FTEs to include salaries and benefits, pay raise adjustments, and performance award pool. Increase of 7 FTEs address resource needs required to support existing and newly created DOE offices and programs. | Increase funds 7 additional FTEs required to meet full staffing requirements to adequately perform mission and objectives. Assumes 5.2% pay increase in civilian salaries, and supplemental funds for performance award pool increase in FY 2024. |
| **Travel $70,000** | **$150,000** | **+$80,000** |
| Funding for travel requirements to support the Department's engagements with congressional, intergovernmental, and other stakeholders. | Funds travel at historic level required to support Departmental engagements as well as additional activities essential to new IGEA Regional Specialist positions | Increase funds the additional travel critical to performing IGEA Regional Specialist job duties as liaisons between the Department and localities. |
| **Support Services $317,000** | **$409,000** | **+$92,000** |
| Funds essential administrative and executive contractor support services, costs associated with background investigation services, and access to subscription platforms critical to staff performance. | Funds essential administrative and executive contractor support services, costs associated with background investigation services, and access to subscription platforms critical to staff performance. | Increase funds critical contractor support for full period of performance at the required level of effort. |
| **Other Related Expenses $1,353,000** | **$1,337,000** | **-$16,000** |
| Funds support business costs associated with the Department's Working Capital Fund (WCF), Energy IT Services (EITS), and conference registration fees | Continuation of WCF, EITS support, and costs associated with conference attendance; additional funding allocated toward staff training. | Decrease as a result of WCF building rent rate adjustments due to decrease in office square footage. |

## Office of the Chief Financial Officer
## Program Direction

**Overview**

The Office of the Chief Financial Officer (OCFO) is responsible for the management and financial integrity of Department of Energy (DOE) programs, activities, and resources and for developing, implementing, and monitoring DOE-wide policies and systems for budget formulation and execution, finance and accounting, internal controls and financial policy, corporate financial systems, and strategic planning. The OCFO:

- Serves as the principal advisor to the Secretary and other DOE officials on matters relating to the Department's financial resources and performance management.
- Oversees the formulation, execution, analysis, and financial integrity of the Department's annual and multi-year budget, including portions of the Infrastructure Investment and Jobs Act (IIJA), Inflation Reduction Act (IRA), and other supplemental spending bills including funding for Ukraine and Puerto Rico.
- Develops and maintains an integrated agency-wide financial accounting system.
- Prepares reports including a description and analysis of the status of financial management in the annual financial statements, audit reports, the Digital Accountability and Transparency Act of 2014 (DATA Act) reporting, and internal accounting and administrative controls systems at DOE. In November 2022, DOE received its 16$^{th}$ consecutive unmodified audit opinion and the high accuracy rate for DATA Act reporting efforts.
- Manages the activities and execution of DOE's Working Capital Fund (WCF) and prepares annual budget documentation.
- Leads the Enterprise Risk Management efforts to provide data for risk by systematically identifying, assessing, and managing strategic, financial, and programmatic risks across the DOE.
- Develops program performance measures, manages the performance tracking system, and serves as the Performance Improvement Officer, the Department's principal advocate for improved performance and management. Improves departmental implementation of budget performance integration and evidence-based decision making.
- Coordinates and leads the development and implementation of the DOE Strategic Plan, Agency Priority Goals (APGs), and other requirements of the GPRA Modernization Act, including quarterly assessment meetings.
- Manages and supports the administration and the operations and maintenance of the Department-wide enterprise corporate business systems (e.g., Foreign Travel Management System, Integrated Data Warehouse).
- Leads the implementation of program management policies and strategies for developing highly qualified program managers required by the *Program Management Improvement Accountability Act of 2016 (PMIAA)*.

**Highlights of the FY 2024 Budget**

The FY 2024 Request is $67,345,000, an increase of $5,062,000 from the FY 2023 Enacted budget. The FTE level was adjusted to 220 to more accurately reflect the increase in salary and benefits, reduction in carryover, and increased Cloud costs. This budget Request includes the 5.2 percent pay raise for federal employees and Federal Employees Retirement Systems (FERS) benefits. With the additional funding, OCFO will continue to support the effective management and ensure the financial integrity of DOE programs, activities, and resources including IIJA and IRA implementation activities. OCFO will continue to develop, implement, and monitor DOE-wide policies and systems in budget formulation and execution, finance and accounting, internal controls and financial policy, corporate financial systems, and strategic planning.

In FY 2024, OCFO is requesting additional funds for increased personnel costs, travel requirements, and meeting and complying with updated cybersecurity requirements and initiatives for the corporate business systems. The requested funding will also support various corporate business system improvements including the MoveLINQS Government Relocation Accounting System, AMERICA, and the Departmental Audit Reporting Tracking System (DARTS), as well as the continued implementation of the Robotic Process Automation (RPA) initiative within OCFO and DOE.

In FY 2024, the Program Management Improvement Officer (PMIO) continues implementation of OMB's five-year PMIAA Strategy to enhance the role of program managers, including training and educational opportunities, improved career paths and career opportunities, a plan to recruit and retain highly qualified individuals, collecting and disseminating best practices and lessons learned, and common templates and tools to support improved data collection and analysis for project and

program management and oversight purposes. The OCFO will continue to oversee the implementation of DOE Policy (P) 410.3, *Program Management*, which established expectations, principles for program management, and program evaluation and evidence-based decision making to accomplish the Agency's mission and goals efficiently and effectively per various statutory, regulatory, administrative, and agency requirements.

**Program Direction**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 33,797 | 36,202 | 40,759 | +4,557 | +13% |
| Travel | 150 | 100 | 200 | +100 | +100% |
| Support Services | 11,698 | 14,035 | 14,412 | +377 | +3% |
| Other Related Expenses | 10,946 | 11,946 | 11,974 | +28 | 0% |
| **Total, Program Direction** | **56,591** | **62,283** | **67,345** | **+5,062** | **+8%** |
| **Federal FTEs - OCFO** | **230** | **230** | **220** | **-** | **0%** |
| **Federal FTEs - WCF** | **22** | **22** | **22** | **-** | **0%** |
| **Federal FTEs – IIJA** | **8** | **8** | **8** | **-** | **-** |
| | | | | | |
| **Support Services** | | | | | |
| Management Support | | | | | |
| Corporate Business Systems | 5,606 | 6,635 | 7,287 | +652 | +10% |
| System Support/Other Support Services | 6,092 | 7,400 | 7,125 | -275 | -4% |
| **Total, Support Services** | **11,698** | **14,035** | **14,412** | **+377** | **+3%** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Energy IT Services | 2,100 | 3,100 | 3,281 | +181 | +6% |
| Security Clearance Investigations | 100 | 100 | 100 | - | 0% |
| Training | 225 | 225 | 225 | - | 0% |
| Interagency Agreements | 370 | 370 | 435 | +65 | +18% |
| Working Capital Fund | 8,151 | 8,151 | 7,933 | -218 | -3% |
| **Total, Other Related Expenses** | **10,946** | **11,946** | **11,974** | **+28** | **0%** |

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2023 Request vs FY 2021 Enacted |
|---|---|---|
| **Salaries and Benefits $36,202 ,000** | **$40,759,000** | **+$4,557,000** |
| Funds 230 full-time equivalent employees (FTE). | Funds 220 FTEs. | Increase reflects a 5.2 percent pay raise for federal employees and FERS benefits increase in FY 2024. The FTEs have been adjusted to more accurately reflect the increases in salary and benefits. |
| **Travel $100,000** | **$200,000** | **+$100,000** |
| Supports travel requirements for OCFO staff, leadership and minimally projected Congressional travel. | Supports travel requirements for OCFO staff, leadership and estimated Congressional travel. | Reflects post-Pandemic travel requirements for the OCFO and Congressional staff travel. |
| **Support Services $14,035,000** | **$14,412,000** | **+$377,000** |
| The FY 2023 Corporate Business Systems (CBS) budget funds the operation and maintenance, and cybersecurity requirements of the DOE enterprise financial, procurement, and human capital business systems, including the Integrated Data Warehouse, Foreign Travel Management System, automaton of the agency financial report, Robotic Processing Automation (to meet the PMA Cross-Agency Priority (CAP) goal), and the Audit automation tasking system. Funding is also provided for technical system support and other services (to include PMIAA). | The FY 2024 Corporate Business Systems (CBS) budget funds the operation and maintenance, and cybersecurity requirements of the DOE enterprise financial, procurement, and human capital business systems, including the Integrated Data Warehouse, Foreign Travel Management System, Robotic Processing Automation project (to meet the PMA CAP goal), MoveLINQS Government Relocation Accounting System, and the Departmental Audit Reporting Tracking System (DARTS). | Supports increased costs of operating in a Cloud environment, continued implementation of the Robotic Processing Automation project; the MoveLINQS Government Relocation Accounting System; and the Departmental Audit Reporting Tracking System (DARTS); and continued work on the budget formulation system. |
| **Other Related Expenses $11,946,000** | **$11,974,000** | **+$28,000** |
| Funding supports employee training, interagency agreements, IT desktop technical support requirements, security clearance investigations, and WCF. | Funding supports increased IT technical support, employee training, interagency agreements, security clearance investigations, and WCF. | Increase reflects changes to the costs for interagency agreements and IT support services offset in part by the reduced WCF costs. |

**Office of Economic Impact and Diversity**
**Program Direction**

**Overview**

Established in 1979 pursuant to Section 641, Title VI, Part 3 of the National Energy Conservation Policy Act of 1978, the Office of Economic Impact and Diversity (ED) is tasked with: (1) advising the Secretary of Energy on the effect of energy policies, regulations, and other actions of the Department and its components on communities of color and minority business enterprises (MBEs), and on ways to ensure that people of color are afforded an opportunity to participate fully in Departmental energy programs; (2) conducting an ongoing research program, with the assistance of the Administrator of the Energy Information Administration (EIA) and other Federal agencies as the Director determines appropriate, to determine the effects (including socio-economic and environmental effects) of national energy programs, policies, and regulations of the department on people of color; (3) developing and recommending to the Secretary of Energy policies to assist communities of color and MBEs; (4) conducting research on energy burden, economic opportunities for communities of color, and commercialization of energy-related technologies; (5) providing management and technical assistance to minority serving institutions (MSIs) and MBEs; and (6) providing financial assistance in the form of loans to any MBE under such rules prescribed by the Director to facilitate research, development, demonstration, and contract activities of the Department. ED also ensures compliance with Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments Act of 1972, and other anti-discrimination statutes.

Pursuant to these statutes, ED advises the Secretary on Departmental compliance with civil rights and equal employment opportunity (EEO) laws, regulations, and related directives and Executive Orders (EO's) that prohibit workplace discrimination and discrimination in programs receiving federal financial assistance from DOE, ensuring integration of EEO into DOE policies and decisions, overseeing intake and processing of complaints of discrimination. ED also advises and supports the Secretary on promoting a diverse DOE workforce and inclusive work environment.

The Office of Economic Impact and Diversity's mission is intertwined throughout every aspect of the Department. ED touches on all aspects of the DOE Mission through:

1. Increasing participation of underrepresented stakeholders in DOE programs through stakeholder outreach, community-centered education, and technical assistance. Such activities advance and support energy justice across DOE, enhancing the Department's ability to achieve its mission. Key activities include leading stakeholder webinars in partnership with DOE colleagues; providing resources and toolkits on DOE programs; providing technical assistance and support to DOE colleagues on issues of energy justice; equitable deployment; equitable procurement; and diversity, equity, inclusion, and accessibility; and coordinating cross-cutting equity-focused initiatives and activities across the DOE complex and National Laboratories.
2. Conducting energy justice policy research and analysis, in partnership with the Office of Energy Information Administration, members of academia, and Federal colleagues to advance energy equity across the DOE complex and in Federal energy policy. Research includes the identification of the socio-economic and environmental effects of DOE and State-level energy programs; a national analysis of energy poverty and energy burden, using EIA datasets; equitable deep decarbonization; and equitable deployment of clean energy resources. Policy and technical assistance efforts include collaboration with DOE program offices to develop programs that accelerate the adoption of clean energy technologies in historically marginalized populations and increase the participation of communities of color in the clean energy economy.
3. Providing technical assistance and support through grants/cooperative agreements to help minority business enterprises and MSIs to compete competitively for Bipartisan Infrastructure Law and Inflation Reduction Act opportunities.
4. Enforcing all anti-discrimination statutes.
5. Leading on diversity, equity, inclusion, and accessibility (DEIA) across the agency. Key activities include developing and implementing an agency-wide DEIA Strategic Plan; standing up a DEIA Senior Leadership Council; providing technical assistance, training, and support to Departmental staff and management; and creating revamped recruitment and hiring processes to ensure a diverse workforce.
6. Leading several communities of practice for senior leadership and staff focused on equity, energy, and environmental justice, the Justice40 Initiative, and stakeholder engagement.

**Highlights of the FY 2024 Budget Request**

The Department requests $53,665,000 in FY 2024, an increase of $20,000,000 from the FY 2023 Enacted budget, for ED to continue driving initiatives to achieve energy equity and environmental justice across the DOE complex and labs in accordance with Biden-Harris Administration directives and priorities and ED's core statutory mandate. Ongoing initiatives led by ED include ensuring 40 percent of the overall benefits of DOE's investments are targeted to help disadvantaged communities (Justice40 Initiative); helping to create climate and clean energy jobs and accelerate clean energy business creation in historically marginalized and overburdened communities; providing technical assistance (TA) to MSIs and MBEs to increase their participation in DOE programs and opportunities; augmenting training programs geared towards helping the historically disadvantaged population, including the formerly incarcerated, those in impoverished communities, and our minority stakeholders; and identifying and eradicating systemic barriers to DOE opportunities and benefits for people of color and other underserved groups.

In FY 2024, ED will recruit new subject matter experts and support staff to: (1) better advise the Secretary on energy policies; (2) enhance technical assistance being provided to MSIs and MBEs; (3) support oversight of DOE strategic action plans; and (4) support agency-wide implementation of equity, energy, and environmental justice (EEEJ) activities within appropriated programs and programs established or expanded under the Bipartisan Infrastructure Law and Inflation Reduction Act.

In FY 2024, ED's Office of Energy Justice Policy and Analysis will execute a research, policy analysis, and technical assistance program that includes third party evaluations of the over 140 Justice40 covered programs across the Department, to advance EEEJ initiatives and activities. Research will seek to determine the effects (including socio-economic and environmental effects) of national energy programs, policies, and regulations of the Department on minority and other disadvantaged communities. Consistent with ED's mandate, this office will continue research on relevant DOE and other federal policies that lessen energy burdens for disadvantaged individuals and communities and increase access to clean energy technology. Policy analysis and technical assistance efforts will include collaboration with DOE program offices to develop programs that accelerate the adoption of clean energy technologies in historically marginalized populations. The office will provide technical assistance and support across DOE in accordance with ED's congressional mandate. These efforts will facilitate the coordination of EEEJ initiatives and activities more effectively within DOE and the National Laboratories, as well as with other Federal partners and external stakeholders.

ED's Office of Diversity, Equity, Inclusion, and Accessibility (ODEIA) will, in coordination with relevant stakeholders, continue oversight of DOE's DEIA Strategic Plan, which includes 31 crosscutting departmental goals. The office will continue developing competencies for DEIA training and provide DEIA subject matter expertise and technical assistance to DOE program and staff offices. This office will deepen workforce engagement through Employee Resource Groups (ERGs) and DEIA initiatives, as well as strengthen external partnerships through targeted outreach opportunities with diverse organizations.

In FY 2024, ED will continue leading DOE's efforts to expand the inclusion and participation of minorities, women, veterans, and formerly incarcerated persons across all department programs. ED supports these Departmental efforts through its minority education; science, technology, engineering, and mathematics (STEM) enhancement; workforce development; and training related projects ("MEWT" program), and by creating partnerships with Federal, State, non-profit, and private agencies engaged in sustaining our nation's energy sector. ED will continue to engage with stakeholders to increase awareness of, and commitment to, the principles of equity and DEIA as they relate to the DOE workplace and to recipients of DOE financial assistance. ED will expand its contributions to the intra-agency Communities Local Energy Action Program (LEAP) Pilot, launched in FY22 to support more community-led clean energy economic development.

In FY 2024, ED's Office of Minority Programs (OMP) will amplify execution of its statutory mandates as outlined in Public Law 95-619, including the provision of technical assistance to MSIs and MBEs to enable these enterprises and institutions to participate in the research, development, demonstration, and contract activities of the Department. FY 2024 funding will allow OMP to increase technical assistance aimed at increasing MBE and MSI capacity for greater participation in DOE programs, including on-going and expanded funding for MEWT capacity-building projects in underserved communities. These projects will support hundreds of minority students and faculty members in Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs), Asian American and Native American Pacific Islander-Serving Institutions (AANAPISI), and other MSIs. Pursuant to Public Law 95-619, OMP will provide technical assistance programs that encourage, promote, and assist MBEs in establishing and expanding energy-related business opportunities to provide clean energy jobs to workers in these communities.

In FY 2024, ED's Office of Civil Rights & Equal Employment Opportunity (OCR-EEO) will directly oversee EEO complaint processing for the entire DOE enterprise (except for the National Nuclear Security Administration (NNSA) and Bonneville Power Administration)

and will also expand external civil rights enforcement and compliance activities in the areas of Limited English Proficiency and TA. OCR-EEO implements the statutory requirement of administering departmental policies, practices, and procedures under Title VI and VII of the Civil Rights Act of 1964, the Age Discrimination in Employment Act, Sections 501/504 of the Rehabilitation Act of 1973, the Genetic Information Nondiscrimination Act, Title IX of the Education Amendments of 1972, the Age Discrimination Act, and related statutes and Executive Orders that prohibit discrimination, including those that prohibit discrimination in programs and activities that receive Federal financial assistance from DOE. As such, the office will stand up a pre-award assurance pilot to evaluate grant applications received by the Department.

**Program Direction Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Request ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Economic Impact and Diversity** | | | | | |
| Salaries and Benefits | 13,011 | 19,151 | 25,365 | +6,214 | +32% |
| Travel | 270 | 300 | 350 | +50 | +17% |
| Support Services | 3,784 | 10,354 | 23,311 | +12,957 | +125% |
| Other Related Expenses | 2,935 | 4,335 | 4,639 | +304 | +7% |
| **Total, Program Direction** | **20,000** | **34,140** | **53,665** | **+19,525** | **+57%** |
| **Federal FTEs** | **72** | **100** | **126** | **+26** | **+26%** |
| **Contractor Headcount** | **7** | **7** | **7** | | |
| **Support Services** | | | | | |
| Office of Minority Programs (OMP) | 2,140 | 4,500 | 14,650 | +10,150 | +226% |
| Office of Civil Rights & Equal Employment Opportunity | 921 | 921 | 1,121 | +200 | +22% |
| EEO Field Site Services | 383 | 583 | 660 | +77 | +13% |
| Office of Energy Justice Policy/Analysis | 340 | 4000 | 6,100 | +2,100 | +53% |
| Office of Diversity, Equity, & Inclusion | 0 | 350 | 780 | +430 | +123% |
| **Total Support Services** | **3,784** | **10,354** | **23,311** | **+12,957** | **+125%** |
| **Other Related Expenses** | | | | | |
| Working Capital Fund | 1,908 | 2,800 | 2,914 | +114 | +4% |
| Energy Information Technology System | 952 | 1,175 | 1,225 | +50 | +4% |
| Training | 75 | 360 | 500 | +140 | +39% |
| **Total, Other Related Expenses** | **2,935** | **4,335** | **4,639** | **+304** | **+7%** |

**Program Direction**
**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **$34,140 Program Direction** | **$53,665** | **$19,525** |
| **$19,151 Salaries and Benefits** | **$25,365** | **$6,214** |
| Provides funding for 100 FTEs who directly support the ED mission. | Provides funding for 126 FTEs who directly support ED's missions, including DEIA. | Reflects FY 2024 5.2% increase in civilian salaries and FERS increase for staff of 126 FTEs. Provides for increased technical experts on matters related to Civil Rights/EEO (+14 FTEs), Energy J40 Research & Analysis (+5FTEs), technical/financial assistance to MSIs/MBEs(+7FTEs). |
| **$300 Travel** | **$350** | **$50** |
| Provides funding for travel associated with outreach activities related to the launch of the national Equity in Energy initiative and increase in compliance/enforcement activities of the Office of Civil Rights and Diversity. Mission outreach and regulatory activities undertaken with increased coordination with Agency programmatic activities. | Funding supports travel by ED's increased staffing from 100 to 126 FTEs.<br><br>Funding supports continued travel associated with stakeholder partnering/outreach, minority businesses and education projects oversight/partnering, and EEO compliance/enforcement activities. | No major change. |
| **$10,354 Support Services** | **$23,311** | **$12,957** |
| ($2,250) Provides technical assistance through new grants/cooperative agreements to help MBEs compete competitively for DOE program and contract opportunities.<br><br>($2,250) Provides technical assistance through new grants/cooperative agreements to help MSIs compete competitively for DOE program and contract opportunities.<br><br>($921) Supports contracted services to augment federal staff members in the areas of investigative services and complaints processing supporting the DOE Headquarters in Washington D.C.<br><br>($583) Supports investigative services for EEO field sites. | ($1,150) Provides increased services from three services agreements to support ED's increased staffing and program activities.<br><br>($13,500) Supports community-based technical assistance and capacity building, expanded support for MBEs through region-specific assistance networks, and expanded continuation of high performing ongoing MSI projects. Technical assistance effort aimed at helping MBEs and MSIs compete competitively for historic Bipartisan Infrastructure Law and Inflation Reduction Act opportunities and strengthening overall national ecosystem of support for underrepresented communities. | +$10,150 Increased funding supports new MBE, MSI, and minority workforce development projects while sustaining projects with high returns on investments in disadvantaged communities across the United States. |
| | ($1,121) Supports contracted services to augment federal staff members in the areas of investigative services and | +$277 • Funding increase supports enhanced compliance and enforcement activities |

| | | |
|---|---|---|
| | complaints processing supporting the DOE Headquarters in Washington D.C.<br><br>($660) Supports investigative services for EEO field sites. | within the DOE Headquarters and six EEO field sites. |
| ($4,000) Funding supports third-party contracted services to analyze benefits accrued within disadvantaged communities for over 140 Justice40 covered programs across the Department. | ($4,400) Supports third-party evaluation services to analyze DOE's Justice40 benefits accrued to disadvantaged communities. Funds will continue support for three-year contract to evaluate over 140 Justice40 covered programs across the Department.<br><br>($1,200) Maintains technical services support provided by four DOE National Laboratories as needed to support ED's Energy Justice research and analysis.<br><br>($500) Continues ED's Energy Justice Fellowship program with two faculty or researchers for one-year ($200,000 stipend support + $50,000 research funds). The program will increase access to new researchers and build the Office of Energy Justice Policy and Analysis career employee pipeline. | +$2,100 Funding supports continued third party contracted services to conduct evaluations of accrued benefits for 140 covered programs spanning across DOE programs and supporting disadvantaged communities. Increased funding enhances DOE Justice40 Dashboard and supports a new senior Energy Justice Fellowship program. |
| ($175) DEIA Training Platform and services to support employees.<br><br>($100) Supports Employee Resource Groups (ERGs) contributions to DOE's DEIA strategic goals as well as strengthen external partnerships through targeted outreach to diverse organizations.<br><br>($75) Provides DEIA outreach and sponsorships. | ($500) Supports development, facilitation, and deployment of programs and training to advance DEIA knowledge and accountability across the DOE.<br><br>($205) Supports Employee Resource Groups (ERGs) contributions to DOE's DEIA strategic goals as well as strengthen external partnerships through targeted outreach to diverse organizations.<br><br>($75) Provides DEIA subject matter expertise and technical assistance (TA) to DOE program offices. | +$430 Funding increases DEIA training and technical assistance across the DOE complex while expanding outreach and partnering with external stakeholders and DOE ERGs. |
| **$4,335 Other Related Expenses** | **$4,639** | **+$304** |
| Funds Working Capital Fund (WCF), Energy IT Services (EITS), and staff training and development, and other services for 100 FTEs. | Funds Working Capital Fund (WCF), Energy IT Services (EITS), and staff training and development, and other services for 126 FTEs. . | Reflects increased support for WCF, IT, training, and other services for ED's increased staff of 26 FTEs. |

## Office of International Affairs

The Department of Energy's (DOE) Office of International Affairs (IA) has primary responsibility for setting international energy policy and leading all bilateral and multilateral energy collaborations involving the Secretary, Deputy Secretary, and other DOE senior leadership, including connecting DOE's program offices and its 17 National Labs to partner countries. IA is also responsible for protecting critical U.S. industries and technological innovation by tracking and investigating all foreign investment in U.S. energy companies or other firms with energy interests, as well as foreign contracts with the National Labs.

Building on the work of FY 2023, in FY 2024, IA will pursue international energy cooperation through key bilateral and multilateral forums, with the objectives of ensuring energy security, accelerating the transition to net zero greenhouse gas emissions, creating good paying American jobs, enhancing U.S. competitiveness on critical energy technologies, and addressing the distributional impacts of foreign policy decisions (consistent with the Foreign Policy for the Middle Class agenda).

**Highlights of the FY 2024 Budget Request**

IA's priorities for FY 2024 are:

1) Securing global energy supply while promoting rapid decarbonization.
2) Redoubling efforts to help major emitters decarbonize their energy sectors through managing partnerships with National Labs and partner countries, engaging in key multilateral initiatives such as Mission Innovation and the Clean Energy Ministerial, and leading over two dozen bilateral and regional dialogues.
3) Strengthening critical clean energy supply chains and expanding work to create alternatives to reliance on China in trusted third countries.
4) Advancing multilateral negotiations to set new international norms for cooperation on clean energy.
5) Track and investigate foreign investment in the U.S. and contracts with National Labs to protect U.S. national security.

IA's FY 2024 Request is $50,142,000, which is an increase of $18,142,000 from the FY 2023 Enacted. It includes:

- $2,000,000 to support the Net Zero World Initiative, which will provide comprehensive technology and investment roadmaps paired with technical assistance to help strategically important large emitters decarbonize their economies by 2050.
- $6,500,000 to support multilateral engagements to reassert U.S. leadership and influence and ensure that each institution's work aligns with the U.S. energy and climate agenda.
- $3,000,000 will support market development work, which enhances and revitalizes U.S. competitiveness in the rapidly expanding global clean energy and infrastructure marketplace, while creating clean energy jobs in the U.S. and ensuring stable and secure supply chains

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| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Energy Security and Clean Energy Initiatives** | **1,200** | **1,200** | **3,100** | **+1,900** | **+158%** |
| **Technical Assistance** | **1,350** | **1,350** | **1,350** | **0** | **0%** |
| **Market Development** | | | **3,000** | **+3,000** | |
| **Multilateral Engagement** | | | **6,500** | **+6,500** | |
| **Net Zero World** | | | **2,000** | **+2,000** | |
| **U.S.-Israel Energy Center of Excellence** | **4,000** | **4,000** | **4,000** | **0** | **0%** |
| **BIRD Energy Program** | **2,000** | **2,000** | **2,000** | **0** | **0%** |
| **TOTAL PROGRAM SUPPORT** | **8,550** | **8,550** | **21,950** | **+13,400** | **+157%** |
| **Salaries and Benefits** | **14,450** | **18,150** | **22,050** | **+3,900** | **+21%** |
| **Travel** | **650** | **800** | **1,200** | **+400** | **+50%** |
| **Support Services** | | | | | |
| Subscriptions/Publications | **175** | **100** | **200** | **+100** | **+100%** |
| Management Support Services | **100** | **100** | **250** | **+150** | **+150%** |
| **Other Related Expenses** | | | | | |
| Working Capital Fund | **3,000** | **3,100** | **3,168** | **+68** | **+2%** |
| Energy IT and Other Services | **1,050** | **1,150** | **1,249** | **+99** | **+9%** |
| Training | **25** | **50** | **75** | **+25** | **+50%** |
| **TOTAL PROGRAM DIRECTION** | **19,450** | **23,450** | **28,192** | **+4,742** | **+20%** |
| **Total, International Affairs** | **28,000** | **32,000** | **50,142** | **+18,142** | **+57%** |
| **Federal FTEs** | **75** | **89** | **93** | **+4** | **+4%** |

## International Affairs

**Description**

IA requests funding for the following programs: Energy Security and Clean Energy Initiatives ($3.100,000); Technical Assistance ($1,35,000); Net Zero World ($2,000,000); Multilateral Engagement ($6,500,000); the U.S.-Israel Energy Center of Excellence ($4,000,000); the BIRD Energy Program ($2,000,000); and Market Development ($3,000,000). These activities are implemented through Headquarters contracts or the National Laboratories. In addition, IA requests $28,200,000 to fund the salary, benefits, travel, support services, and other related expenses for 93 federal staff to develop, coordinate, and implement the Administration's international energy policy objectives. Our people are our most important asset, staffers will continue to support bilateral and multilateral relationships, market development and international economic opportunities, especially for American-made clean energy technologies.

**Net Zero World**

The Net Zero World Initiative (NZW) is an interagency and DOE National Laboratory network-based initiative to accelerate decarbonization efforts toward net zero, resilient, and inclusive energy systems in strategically important countries. It will strengthen partner countries' ability to achieve their stated goals by creating and implementing highly tailored, actionable technology road maps and investment strategies at both the national- and subnational-levels that put net zero within reach. This work will also include targeted and sustained technical support across sectors. It will enable technology pilots, testing and incubators, policy and regulatory support, infrastructure modernization, investment partnerships and programs, workforce development, and other near- and long-term actions tailored to country contexts and priorities. In addition, NZW will help foster peer-to-peer learning. NZW aims to create new clean energy jobs and to mobilize at least $10,000,000,000 in clean energy infrastructure and project investment. It aims to grow the export market for U.S. clean energy goods and services, creating good-paying jobs in the U.S.

**Multilateral Engagement**

The Office of Multilateral Climate and Clean Energy Engagement seeks to advance U.S. leadership and DOE mission objectives, especially related to energy security and clean energy innovation and deployment, through international organizations and multilateral forums including (but not limited) the International Energy Agency, Clean Energy Ministerial, Energy Efficiency Hub, Mission Innovation, G7, G20, the Global Power System Transformation Consortium (G-PST) and UN Agencies.

The Office is DOE's conduit for leveraging key multilateral engagement platforms and related workstreams to enhance the impact of U.S. energy policy at home and abroad. Key efforts include:

- Rationalizing the international energy architecture: DOE is engaging with entities like the G7, G20, UN, IEA, and other key multilateral forums to make big bets on clean energy innovation, development, and deployment through developing centers of gravity across the multilateral landscape.
- Streamlining the clean energy innovation to deployment timeline: Through engagement with forums such as the Clean Energy Ministerial and Mission Innovation, DOE will address problems such as gaps in scaling up technologies, identifying appropriate incentives, market rules, risk mitigation, and implementing appropriate clean energy standards. All these actions are taken against a backdrop of engagement with industry to prioritize finance on an appropriate energy transition time horizon.
- Pursuing a sectoral approach to clean technology deployment: DOE will cluster multilateral initiatives by sector as appropriate across key multilateral forums as natural centers of gravity.
- Sustained action on critical minerals: Acknowledging that critical minerals are the fuel that will power the clean energy transition, IA will further U.S. values through multilateral cooperation, addressing clean energy supply chains, including critical minerals and materials, and acting on opportunities for collective action to manage risks.

**Energy Security and Clean Energy Initiatives**

Energy Security and Clean Energy Initiatives aim to protect the security of energy infrastructure in strategic U.S. partner countries through collaboration with DOE's National Laboratories and other experts, with a focus on country-appropriate technologies or policy solutions. Initiatives are designed to decarbonize and improve resiliency of energy systems, reduce vulnerability in the supply of critical materials, secure markets for clean energy resources, and build cooperation among trading partners in nearly every region of the world.

**Technical Assistance**

Multilateral institutions help drive global action and are an important (and efficient) tool for expanding U.S. influence, driving global change and creating opportunities for U.S. industry in every corner of the planet. IA serves as DOE's focal point for all clean energy engagement through these multilateral institutions, ensuring alignment between institutional and U.S. efforts, and reducing unnecessary duplication of efforts or lost opportunities to maximize the responsible and efficient use of U.S. energy investments in these institutions.

**Market Development**

The Office of Market Development's mission is to advance policies that foster incentives for decarbonization of the global energy sector while bolstering U.S. jobs, enhancing our innovation edge against our key competitors, and fostering resilient, secure energy markets and supply chains. The Office of Market Development aims to enhance and revitalize U.S. competitiveness in the rapidly expanding global clean energy and infrastructure marketplace, while creating clean energy jobs in the U.S. economy across the country, and for fossil-dependent and disadvantaged communities. In FY 2024, Market Development will advance three main objectives:

- Mobilizing for Near-Term Energy Transition Investment Needs: EO 14008 calls on DOE to advance international collaborations on innovation and deployment of clean energy. Market Development will coordinate a technology and finance-driven approach to support other countries meeting their climate objectives through deployment of U.S.-sourced energy technologies and solutions.
- Harnessing Over-the-Horizon Energy Transition Opportunities: Through close partnerships with programmatic offices and National Labs, Market Development will identify policy levers and strategic partnerships to enhance U.S. competitiveness in net-zero energy technologies and develop frameworks to leverage international market demand pull capable of maturing technologies from developmental to commercial deployment.
- Addressing Resilience and Security: Market Development will lead engagements to help other countries improve the resilience of their energy systems and supply chains, including a focus on critical minerals.

**BIRD Energy Program**

The Binational Industrial Research and Development Foundation (BIRD Foundation) was established by the U.S. and Israel Governments in 1977 to generate mutually beneficial cooperation between U. S. and Israeli companies. IA requests $2,000,000 for the BIRD Energy Program, which is an offshoot of the endowed parent BIRD Foundation and was authorized in 2007 and first appropriated funds in 2009. Since 2009, the BIRD Energy Program has resulted in commercialization of seven new clean energy technologies and attracted more than $800,000,000 in venture capital and other follow-on investments to commercialize clean energy technologies.

**U.S.-Israel Energy Center of Excellence**

IA requests $4,000,000 to contribute as matching funds to the U.S. – Israel Energy Center of Excellence (Energy Center) on behalf of the U.S. Government. Matching contributions are also provided by the Israeli Government and private partners from the U.S. and Israel. The goal of the Energy Center is to promote energy security and economic development through the research and development (R&D) of innovative energy technologies, while facilitating cooperation between U.S. and Israeli companies, research institutes and universities. The Energy Center will facilitate joint R&D activities on energy areas by teams of scientists and engineers from the U.S. and Israel.

**Committee on Foreign Investment in the U.S. (CFIUS)**

IA ensures the Department's compliance with the Foreign Investment Risk Review and Modernization Act of 2018 (FIRRMA), which modernizes CFIUS' process to better enable timely and effective reviews of covered transactions. This ensures that the U.S. maintains an open policy on foreign investment while properly screening inbound investments to ensure U.S. vital national security interests are protected.

Under FIRRMA, DOE CFIUS assists at a technical level with capacity building among U.S. friends and allies overseas, especially in Europe among NATO partners and member states of the European Union. DOE CFIUS intends to increase and expand international outreach focused on ensuring partner governments are able to maintain a proper balance between open foreign investment regimes to attract high quality investment, while ensuring vital national security interests are protected from increasingly aggressive predatory investment practices by countries less friendly to the U.S.

**International Clean Energy Policy Development and Coordination**

IA serves as DOE's representative on internationally focused Policy Coordination Committees (PCCs) managed by the National Security Council (NSC) and the National Economic Council (NEC); and serves as the conduit for energy policy and technical expertise across DOE and other Agencies. To achieve its mission, IA collaborates with DOE Senior Leadership, program offices, and the DOE National Laboratory complex, coordinating across the enterprise to leverage technical, policy, and market expertise with international partners. IA develops policies and provides senior-level advice on international energy matters in line with Administration goals and priorities. IA works to coordinate the U.S. Government's international energy relationships with foreign governments, energy ministries, and International Organizations, working in concert with the Departments of State, Defense, Interior, Commerce and other relevant federal agencies to promote the clean energy transition to net-zero emissions by 2050, advance universal energy access, spur technological innovation, open international clean energy markets to U.S. businesses, and promote energy security fundamentals and practices.

**International Working Groups, Meetings, and Activities**

IA supports U.S. government leadership through a network of international relationships with energy partners that further our nation's international energy goals. The Request fully funds IA participation in and implementation of interagency working groups, international meetings, activities, and policy areas, including:

- International Energy Agency
- U.S.-EU Energy Council
- UN meetings, including the COP
- Partnership for Transatlantic Energy and Climate Cooperation
- Three Seas Initiative
- Clean Energy Ministerial/Steering Committee
- Conference on Critical Minerals
- Mission Innovation Ministerial/Steering Committee
- U.S.-Israel Energy Meetings
- U.S.-Brazil Energy Forum
- U.S.-India Strategic Clean Energy Partnership
- G-7 Working Groups and Ministers Meetings
- G20 Working Groups and Ministers Meetings
- Global Methane Pledge
- U.S.-Ukraine Energy Cooperation
- U.S.-Mexico Energy Business Council
- Japan-U.S. Strategic Energy Partnership
- U.S.-Korea Energy Policy Dialogue
- U.S.-Indonesia Energy Policy Dialogue
- U.S.-Poland Energy Dialogue
- Asia-Pacific Economic Cooperation (APEC) Energy Working Group and Ministers Meetings
- North American Energy Ministerial
- East Mediterranean Gas Forum
- Iraq Initiatives
- Net Zero Producers Forum
- Quad Climate Working Group
- Association of Southeast Asian Nations (ASEAN) - U.S. Energy Ministerial

**Foreign Engagements with National Laboratories**

IA also manages and reviews the DOE approval process for DOE's 17 National Laboratories' international partnerships, which include, *inter alia*, Strategic Partnership Projects (SPP); Cooperative Research and Development Agreements (CRADA); Agreements for Commercializing Technology (ACT); and other mechanisms. IA reviews these agreements to ensure that the foreign engagements of the laboratories meet the requirements of DOE Order 485.1A to: (1) align consistently with the strategic interests and foreign policies of the U.S., (2) be legally sound and compliant with U.S. laws and regulations, and (3) address research security and counterintelligence considerations.

**Interagency Appropriations Transfers and Reimbursable Work**

IA federal staff also implement projects funded by other agencies through appropriations transfers or reimbursable work. The received funds occasionally fund IA federal staff travel and support services contracts, but not salaries, benefits, or administrative expenses.

**Activities and Explanation of Change**

**Dollars in Thousands**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Energy Security and Clean Energy Initiatives $1,200** | **$3,100** | **+$1,900** |
| Energy Security and Clean Energy Initiatives provides technology innovation, resilience, sector development, training, and other activities through National Laboratories or headquarters contracts. | Continuation of Activities. | Increase in funding would support additional bilateral work in countries that are geopolitical priorities, countries who represent opportunities for mutually beneficial R&D collaboration, or countries who offer opportunities for technology-specific cooperation. |
| **Technical Assistance $1,350** | **$1,350** | **No Change** |
| Technical Assistance funds participation through dues, contributions, and other activities in multilateral organizations to improve alignment with U.S. goals. | Continuation of Activities. | No Change |
| **Market Development $0** | **$3,000** | **+$3,000** |
| | Advance policies that foster incentives for decarbonization of the global energy sector while bolstering U.S. jobs, enhancing our innovation edge against our key competitors, and fostering resilient, secure energy markets and supply chains. | **NEW** |
| **Multilateral Engagement $0** | **$6,500** | **+$6,500** |
| | Fund substantive workstreams under both the Clean Energy Ministerial and Mission Innovation, which are intended to drive innovation and build markets for several sectors, including hydrogen, super-efficient appliances and carbon dioxide removal technologies, amongst others, that are lynchpin technologies to address the climate crisis and where U.S. industry has a competitive advantage. | **NEW** |
| **Net Zero World $0** | **$2,000** | **+$2,000** |
| | Net Zero World harnesses DOE's world class research complex and leverages inter-agency efforts to decarbonize the energy systems in strategically critical countries – growing the market for | **NEW** |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| | U.S.clean energy goods and services, creating jobs, and expanding U.S. influence. | |
| **U.S. – Israel Energy Center of Excellence $4,000** | **$4,000** | **$0** |
| U.S.– Israel Energy Center of Excellence funding is provided to the Center on behalf of the U.S. Government. Matching contributions are also provided by the Israeli Government and private partners from the U.S. and Israel. The Energy Center will facilitate joint R&D activities on energy areas by teams of scientists and engineers from the U.S. and Israel. | Continuation of FY 2023 activities. | No change. |
| **BIRD Energy Program $2,000** | **$2,000** | **$0** |
| BIRD Energy Program supports commercialization of new clean energy technologies. | Continuation of FY 2023 activities. | No change. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Salaries and Benefits $18,150** | **$22,050** | **+$3,900** |
| Use of prior year balances supports Salary and Benefits of federal employees expenses. | Continuation of FY 2023 activities. | Supports 4 additional FTEs for bilateral and multilateral relationships, market development, and international economic opportunities. $1M of this amount provides additional support for the Department of Energy's overseas presence. Assumes a 5.2 percent pay raise for federal employees and FERS benefits increase in FY 2024. |
| **Travel $800** | **$1,200** | **+$400** |
| Travel to support the President, the Secretary, and others supporting meetings and events pertaining to energy policy, science and technology, and multilateral national security engagements. | Continuation of FY 2023 activities. | Supports additional International Travelers. |
| **Support Services $200** | **$450** | **+$250** |
| Subscriptions and Publications<br>Management Support Contracts for administrative functions. | Continuation of FY 2023 activities. | Increase number of subscriptions for additional FTEs. |
| **Other Related Expenses $4,300** | **$4,492** | **+$192** |
| Working Capital Fund, Building Rent, IT Equipment and Services, Training, Secure Communications, Translation Services, Security Investigations, Supplies, Training, and Registrations. | Continuation of FY 2023 activities. | No significant change |

**International Affairs**
**Research and Development ($K)**

| | FY 2022 Enacted | FY 2023 Request | FY 2024 Request | FY 2024 Request vs. FY 2023 Request |
|---|---|---|---|---|
| **Applied Research (Direct)** | | | | |
| U.S.-Israel Energy Center of Excellence | 4,000 | 4,000 | 4,000 | 0 |
| BIRD Energy Program | 2,000 | 2,000 | 2,000 | 0 |
| **Total, R&D** | **6,000** | **6,000** | **6,000** | **0** |

## Office of the Chief Information Officer

**Overview**

The Office of the Chief Information Officer (OCIO) leads and manages information technology (IT), information management (IM), operational technology (OT), spectrum and cybersecurity for the entire DOE enterprise.

**Highlights of the FY 2024 Budget Request**

The FY 2024 Request is $245,169,000 which is an increase of $30,169,000 or 14 percent from the FY 2023 Enacted amount and provides a down payment on IT infrastructure and cybersecurity requirements at the Department of Energy going forward. This increase is composed of the following activities: (1) Advanced Wireless Strategy ($6,735,619), (2) Cyber Modernization and Response and Recovery activities ($18,731,000), (3) Technology Transformation Services ($1,200,000) and (4) an increase to Program Direction to cover cost of living increases for Federal FTEs and other related costs ($3,502,381). Details related to these increases are provided in the Budget narratives.

The FY 2024 Request continues to support the President's Management Agenda priorities of IT Modernization and Cybersecurity initiatives that leverage process improvements, focuses on digital services delivery and provides for continued incremental progress in funding ongoing activities. OCIO's priority is to continue the modernization of DOE's IT infrastructure and IT services to provide the capacity, flexibility, and resiliency required for a modern and secure enterprise, including enhancing the security of the critical infrastructure assets owned by DOE's Power Marketing Administrations.

The OCIO continues to provide leadership, coordination, policy direction, governance, oversight and strategic support and services across the entire DOE enterprise, while also providing direct IT and cybersecurity services to the vast majority of DOE headquarters programs.

The OCIO will lead spectrum management activities across the DOE enterprise and ensure coordination of wireless research and development across DOE and with our interagency partners to meet our security and functionality requirements. The OCIO will also continue to lead the DOE geospatial PMO and represent DOE's geospatial program with interagency partners.

The proposed modernization and technology development initiatives included in the FY 2024 Request will continue to provide a down payment on the overall resources required to reduce the threat of cyber attacks to both DOE's IT and OT assets through technical tools and automation, scale capacity commensurate with demand, and establish enabling IT enterprise capabilities. This will allow for commercial/managed IT service implementation with engineered and inherent cybersecurity capabilities and provide foundational requirements for enhanced cybersecurity tools, products, and capabilities. Cyber vulnerabilities will continue to be addressed through funds specifically dedicated to cyber response and recovery management in the FY 2024 Request.

The OCIO will focus on opportunities to increase DOE enterprise-wide asset visibility through real-time information availability, integrated incident reporting and metrics and tool modernization to increase data integration; strengthening enterprise risk management practices and execution of enterprise-wide assessments and risk register reporting; and delivering improved cybersecurity training, education, and awareness. Additionally, the OCIO works closely with federal interagency partners and like-minded international partners to leverage best practices in technology innovation and cybersecurity to improve the Department's overall security posture.

**Office of the Chief Information Officer**
**($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Chief Information Officer** | | | | | |
| **Cybersecurity** | | | | | |
| Protecting Networks and Information (Protect) | 25,725 | 30,985 | 37,721 | 6,736 | +22% |
| Detect, Analyze, and Mitigate Intrusions (Detect and Respond) | 24,700 | 31,431 | 31,431 | 0 | 0% |
| Shaping the Cybersecurity Environment (Identify and Recover) | 20,665 | 29,945 | 29,945 | 0 | 0% |
| **Total, Cybersecurity** | **71,090** | **92,361** | **99,097** | **6,736** | **+7%** |
| **Cyber Modernization Response and Recovery** | **57,972** | **40,275** | **59,006** | **18,731** | **+47%** |
| **Corporate IT Program Support** | | | | | |
| IT Portfolio Summary | 17,271 | 22,881 | 24,081 | 1,200 | +5% |
| IT Infrastructure | 2,970 | 4,170 | 4,170 | 0 | 0% |
| End User-Energy Information Technology Services ( EITS) | 3,996 | 4,184 | 4,184 | 0 | 0% |
| **Total, Corporate IT Program Support** | **24,237** | **31,235** | **32,435** | **1,200** | **+4%** |
| **Program Direction** | | | | | |
| Salaries and Benefits | 25,663 | 30,963 | 32,439 | 1,476 | +5% |
| Travel | 330 | 336 | 400 | 64 | +19% |
| Support Services | 3,325 | 3,325 | 3,575 | 250 | +8% |
| Other Related Expenses | 14,383 | 16,505 | 18,217 | 1,712 | +10% |
| **Total, Program Direction** | **43,701** | **51,129** | **54,631** | **3,502** | **+7%** |
| **Total, Chief Information Officer** | **197,000** | **215,000** | **245,169** | **30,169** | **+14%** |
| **Federal FTEs** | 124 | 143 | 143 | 0 | |

| OCIO Sources for Funding Activities | FY 2024 Request | WCF | Customer (EITS) | Total |
|---|---|---|---|---|
| **CYBERSECURITY** | | | | |
| Protecting Networks and Information (Protect) | 37,721 | 0 | 3,425 | 41,146 |
| Detect, Analyze, and Mitigate Intrusions (Detect and Respond) | 31,431 | 0 | 5,573 | 37,004 |
| Shaping the Cybersecurity Environment (Identify and Recover) | 29,945 | 0 | 9,602 | 39,547 |
| **TOTAL, CYBERSECURITY** | **99,097** | **0** | **18,600** | **117,697** |
| **CYBER MODERNIZATION RESPONSE AND RECOVERY** | **59,006** | **-** | **-** | **59,006** |
| **CORPORATE IT PROGRAM SUPPORT** | | | | |
| IT Portfolio Summary[1] | 24,081 | 8,767 | - | 32,848 |
| IT Infrastructure | 4,170 | - | - | 4,170 |
| End User –Energy Information Technology Services (EITS) | 4,184 | 42,482 | 94,683 | 141,349 |
| **TOTAL, CORPORATE IT PROGRAM SUPPORT** | **32,435** | **51,249** | **94,683** | **178,367** |
| **PROGRAM DIRECTION** | | | | |
| Federal Salaries & Benefits | 32,439 | - | - | 32,439 |
| Travel | 400 | - | - | 400 |
| Support Services | 3,575 | - | - | 3,575 |
| Other Related Expenses | 18,217 | - | - | 18,217 |
| **TOTAL, PROGRAM DIRECTION** | **54,631** | **-** | **-** | **54,631** |
| OCIO payments into Shared Services and WCF[2] | | (3,610) | (7,073) | (10,683) |
| **Total, Chief Information Officer** | **245,169** | **47,639** | **106,210** | **399,018** |
| **Federal FTEs** | **143** | **3** | **-** | **146** |

[1] The WCF Corporate IT Program Support reflects the WCF request for $51,249,000 which is comprised of $8,767,000 for the Inter-Agency Transfers business line under IT Portfolio Summary and $42,482,000 is for End User – EITS Telecommunications business line.

[2] OCIO provides funds to Shared Services and WCF as a customer as well as the rest of the contributing program offices. In order to not double count those payments in the totals available, a bottom line adjustment was made.

## Office of the Chief Information Officer

## Cybersecurity

**Overview**

The OCIO leads the Department's Cybersecurity program for the entire enterprise, including the Power Marketing Administrations on behalf of the Secretary and in accordance with the Federal Information Security Modernization Act of 2014; and unclassified network services to DOE Headquarters and participating field sites. This includes protecting DOE networks and information; detecting, analyzing, and mitigating intrusions; providing continuous monitoring of the network and infrastructure; and managing the DOE cybersecurity environment. The following summarizes the Cybersecurity portfolio of work and provides information on the anticipated activities.

**Highlights of the FY 2024 Budget Request**

- Increase enterprise-wide visibility of the Department through increased real-time information availability, integrated incident reporting data and metrics, and tool modernization to increase data integration. (Protect, Detect, and Respond)
- Strengthen enterprise risk management practices to support defensible business decisions through sustainment of the Enterprise Cybersecurity Risk Management program, Supply Chain Risk Management program, and execution of enterprise-wide assessments and risk register reporting. (Identify and Recover)
- Deliver improved cybersecurity training, education, and awareness through enriched cybersecurity training curriculums, awareness and learning opportunities, and collaboration with internal and external cybersecurity communities of interest. (Protect)
- Continue migration of data center applications to the cloud and optimization of multi-cloud (the distribution of cloud resources over a number of clouds) operations and application workloads. (Identify and Recover)
- Continue implementation of Trusted Internet Connection (TIC) 3.0 and Zero-Trust Networking capabilities. (Protect)
- Deploy new capabilities in Customer Relationship Management (CRM), Workforce Enablement, Digital Worker Services, Identity Management, Infrastructure Services, and IT Service Management. (Protect)

**Funding Breakout and Analysis**

This section summarizes the program and activities associated with the overall projected OCIO cybersecurity budget. It captures activities under three budget lines aligned to the NIST Cyber Security Framework (CSF):

- Protect – Awareness and Training, Information Protection Processes, and Protective Technology
- Detect and Respond – Response Planning, Detection, Analysis, Mitigation, and Improved Communication
- Identify and Recover – Continuous Monitoring, Risk Assessment/Management, Business Processes, Governance, Asset Management, Recovery Planning, and Improvements

**Budget Line: Protecting Networks and Information - Protect ($37,720,619 – Request; $3,424,572 – Customer) (TOTAL = $41,145,191)**

Provide programs to protect DOE networks and the information which resides on them.

Activity: Data Center Modernization ($2,700,000)
Funding is being requested to continue the migration of on-premises data center workloads to the DOE enterprise cloud Infrastructure as a Service (IaaS), Software as a Service (SaaS), Platform as a Service (PaaS) environments in Amazon AWS and Microsoft Azure. Funding will also support the optimization of poly-cloud operations and applications within the cloud environments to include deployment of additional PaaS and SaaS solutions within the AWS and Azure environments. This initiative also supports and is aligned with the federal Data Center Optimization Initiative (DCOI) and will assist in driving the Department towards compliance while driving down Total Cost of Ownership (TCO) by leveraging cloud native solutions to automate workflow. Planned accomplishments for FY24 include 100% completion of all computer and storage workloads out of Germantown data center and into Poly-cloud environment.

Activity: Infrastructure IT Modernization ($2,500,000)
This initiative will focus on new capabilities in the focus areas of Customer Relationship Management (CRM), Workforce Enablement, Digital Worker Services, Identity Management, Infrastructure Services, and IT Service Management as part of the overall DOE IT Modernization. This includes, modernizing DOE's IT infrastructure, services, and operations to a level consistent with the needed capacity, flexibility, and resiliency of a modern secure enterprise remains a key priority. This funding will support continued identification and implementation of new technologies, managed services, and commercial cloud services solutions to improve cybersecurity, scale capacity commensurate with demand, and establish IT enterprise capabilities in support of DOE enterprise users and the DOE mission. Planned accomplishments for FY24 include a fully scoped and implemented CRM program to include government and contractor FTEs focused on OCIO strategic objectives and meeting customer requirements through innovative IT solutions.

Activity: Design and Engineering (Previously Policy and Development- IT Modernization) ($2,573,000)
This funding supports Google Cloud Platform (GCP) Operations and Maintenance to further develop the platform and maintain a security Authorization to Operate (ATO). As part of the OCIO effort to expand cloud services to the Enterprise, OCIO is leading a project to integrate Google Cloud Platform (GCP) as an additional Cloud offering in the OCIO portfolio to compliment current offerings such as Amazon AWS and Microsoft Azure. GCP is a FedRAMP authorized Cloud platform with a set of management tools, identity and security services, and modular cloud products for commodity and advanced IT deployments such as Analytics, Machine Learning, and Artificial Intelligence. Specifically, the offering provides governed access and broker services to the suite of GCP cloud computing products, including high-level services like Containers that may not be available in other OCIO offerings, to support the missions of the Innovation Foundry and the broader Department of Energy Offices and Labs.

Activity: Network Modernization - DOEnet/ESnet (Energy Sciences Network) & Trusted Internet Connection (TIC) 3.0 ($2,395,000)
The Department maintains a corporate business Wide Area Network (WAN), DOEnet, supporting enterprise business services. DOE continues to evolve from a decentralized entity to one focused on integration and collaboration, which requires modernization of the DOE wide area network. This funding will continue the efforts to improve operational performance, security, and resiliency, while expanding opportunities for multi-site collaborations through modernization of the Department's wide area network architecture. This funding will support DOE's efforts to transition to Internet Protocol Version 6 (IPv6). Identify and implement additional Trusted Internet Connection (TIC) 3.0

and Zero-Trust Network (ZTN) capabilities and solutions aligned with the Department of Homeland Security (DHS) guidance in support of the continued shift from on-premises TIC infrastructure to commercially managed services and solutions to deliver an improved mobile/remote access experience for DOE users and support the expanded use of cloud services. Planned accomplishments for FY24 include 20% of EITS devices transitioned to IPV6 and Zero-Trust improvements to include secure DNS and strict HTTPS.

Activity: Identity, Credential, and Access Management (ICAM) ($4,500,000)
Funding supports the requirement for PIV or equivalent Identity Assurance Level (IAL)/Federation Assurance Level (FAL)/Authenticator Assurance Level (AAL) credentials for network access for privileged and un-privileged accounts. DOE has achieved the OMB goal to require PIV or equivalent to access un-privileged network user accounts and will focus efforts on the OMB goal for privileged network user accounts. Funding will enable expansion of the digital identity repository of DOE sites. The DOE identity management service supports 377,546 identities of which 236,868 are current active identities. Funding will expand authentication services directly supporting a current total of 170 DOE applications in production or in process as well as federated to 4 authentication hubs and expansion of authentication services to DOE sites which will result in raising the requirement for use of the proper credential based on a role-based risk assessment. Funding also supports continued federation services with MAX.gov and Login.gov, ongoing cloud infrastructure costs, enterprise service support for the DOE-wide global address list including exchange of encryption certificates and physical access for a number of sites, and enterprise licensing of identity and access management commercial products.

Activity: Managing DOE Spectrum Program ($1,553,000)
Funding will provide Spectrum Management technical, logistical, and administrative support, as well as ongoing oversight and advocacy at an inter-agency level in the National Capital Region. The DOE Spectrum Program is mandated under Title 47, U.S. Code of Federal Regulations, 901, et. seq., and manages DOE radio frequency spectrum-dependent resources for NNSA, Power Marketing Administrations (PMAs), Office of Secure Transportation, and National Laboratory spectrum-dependent assets. DOE is the 9th largest holder of radio frequencies with more than 7,300 individual radio assignments across 34 sites receiving services from OSM including Headquarters, the National Labs, the PMAs, and NNSA sites. Critical DOE missions and essential functions utilizing Spectrum services include the National Power Grid, Interstate Electricity Transmission, Satellite Missions, Nuclear Emergency Search, Radiological Assistance, Secure Transportation and Safeguards, and Protective Force Communications.

Activity: Coordinate Cyber Response, Cybersecurity Awareness, and Role-Based Training ($4,600,000)
This funding supports the continuation of role-based training to ensure the Department's authorizing officials, system owners and information systems security officers have the best training available to provide critical risk management support. The Cyber Forensics and Incident Response Exercise (CyberFIRE) program is a flagship training program that develops cyber incident responder specialized skills needed to defend information technology (IT) and operational technology (OT) infrastructure, to mitigate cyber threats through extensive training and enables the development of advanced teams of incident responders. This funding provides for two events per year, bringing together incident responders from across DOE, the public sector, private sector, and international partners. Smaller events are held with members of the private sector and academia. Funding in this activity is to develop and improve cybersecurity training and awareness by:

- Developing world-class cyber leadership and workforce to improve recruitment and retention;
- Building a cybersecurity community within DOE and externally through partnerships with other Federal stakeholders;
- Improving Authorizing Official (AO) and risk-based investment training for DOE leader enablement;
- Improving cyber professional workforce through education and training opportunities via community moderated forums, cloud-based technology, and hands-on education channels; and
- Enhancing workforce engagement through enriched cybersecurity training curriculums; awareness and learning opportunities; and collaboration with internal and external cybersecurity communities of interest.

Activity: Operations Technology (OT)/ Control Systems (CS) Technology ($1,000,000)
This funding will support testing of new processes and piloting of technologies that improve the Department's ability to detect, monitor and protect these critical systems. As a member of the DHS CISA-led Control Systems Interagency

Working Group and with the responsibility to manage and oversee a vast number of industrial control systems and critical infrastructure supporting the electrical grid, DOE is expected to engage and act on Executive Order (EO) 3920, *Securing the United States Bulk-Power System*. DOE has commissioned an internal Control Systems Working Group to define the DOE control systems environment and execute a strategy to remediate cybersecurity control gaps and institute process improvements to ensure the security of the nation's Bulk-Power System while maintaining compliance with the North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection standards.

Activity: Control Systems (CS) and Operational Technology (OT) Modernization ($2,158,000)
Funding will provide expansion of cloud-based data storage, analytics platforms, communications links to move data, sensors and analytical tools designed for CS/OT and training from industry experts in the field of control systems and operational technology to improve visibility, increase monitoring, shared situational awareness, and collaboration.

Activity: Emerging Technologies ($1,800,000)
Funding will support strategy and architecture activities for the Department through the Innovation Foundry. The Emerging Technology architects gather and analyze business opportunities; establish and validate risk mitigation strategies; identify use cases; develop architecture designs that show efficiencies in areas such as business processes, decision making, and cost reductions; and pass technical specifications to Innovation Foundry build teams. The effort will help the agency align with the objectives outlined in EO 13859, *Maintaining American Leadership in Artificial Intelligence*, and will assist in the adoption of new technologies. This activity includes the following:

- Provide technical evaluations and recommendations
- Identify promising technologies for possible Departmental integration
- Recommend ways to integrate products and services into an operational environment

Activity: Cybersecurity Program Management Support ($581,000)
Funding will provide support for OCIO leadership in the areas of cybersecurity program management and administrative support for cybersecurity projects to include tracking, monitoring, and reporting project status and providing strategic guidance and recommendations to OCIO leadership to accomplish the strategic goals of the organization.

Activity: Program Management Oversight for Cybersecurity ($2,625,000)
Funding will provide program integration and innovation support for managing IT Support Services strategic sourcing vehicle for OCIO contracts in the areas of Cybersecurity:

- Provide program management in support of projects, including tracking, monitoring, and reporting project status and providing strategic guidance and recommendations to OCIO leadership to support evidence-based and data-driven decision-making to accomplish strategic goals of the organization.
- Support IT projects assessing and shaping the demand pipeline for services across the agency to enable the OCIO to streamline the investment decision process for new IT products and services.
- Provide strategic design and innovation in order to clearly define and map issues, uncovering the customer pain points at project onset and developing an understanding of customer needs, preferences, and behaviors to design future state operations and enhance service delivery.
- Provide organizational change management in support of IT projects in order to account for the impact new initiatives have on operations, culture, and employees; and ensures the capability to sustain continual IT refresh and innovation.

Activity: Anonymized Browser ($500,000)
Funding is for Anonymized Remote Browser Isolation solution to provide an additional layer of protection for DOE users and assets by separating browsing activity from endpoint hardware, thereby reducing the device's and the organization's attack surface. If a user clicks on a malicious link in a browser session, that payload would be executed in the Remote Browser instance and not on the DOE user's desktop and when the session is ended, anything malicious is deleted. Planned accomplishments for FY24 include full scope analysis of browser isolation solutions to improve overall cybersecurity posture.

Activity: Platform Engineering ($1,500,000)
Funding will support the Platform Engineering work required for the following:

- Near-term: Bring the EITS Azure cloud environment into parity with the EITS Amazon Web Services environment to ensure that current state capabilities, security configuration, governance, and monitoring are consistent across platforms.
- Longer-term: Develop and implement standardized policies, procedures, and governance to mature current state EITS cloud platform services into a Polycloud capability end state.

Initial maturity efforts will include: developing a Polycloud strategy to ensure consistency in operational security implementation of vulnerability scanning and configuration compliance monitoring; developing automation opportunities with cloud offering to increase the efficiency and further reduce compliance risk by minimizing opportunities for human error; expanding existing Infrastructure as a Service (IaaS) services to include Platform as a Service (PaaS) and Marketplace offerings; leveraging opportunities to securely offer containers, and developing policies and capabilities for leveraging data at rest encryption across Polycloud capabilities. The Platform Engineering effort work is necessary to move away from segmented cloud service implementations and into an EITS Polycloud services that caters to many needs but delivers and offers those services and capabilities in a secure, compliant, and consistent manner. Planned accomplishments for FY24 include full Polycloud environment with documented strategy, governance and cloud services offerings. Accomplishments also include optimization of current and future workloads and leveraging cloud native capabilities to reduce overall cost.

Activity: Advanced Wireless Implementation ($6,735,619)

The OCIO, as the policy lead for 5G and spectrum management within the Department, will codify an advanced wireless strategy and develop an implementation program to support advanced wireless activities, including the research, development, and deployment of advanced wireless to fulfill DOE and national missions, and provide both structure and leadership to ensure coordinated and effective curation, sharing, and innovation. Achieving the intent of this scope will require a long-term commitment by the OCIO and the ability to cooperatively engage other DOE elements and appropriately fund the National Laboratories to provide cutting edge reliable solutions. We will be encouraging multi-Lab collaborations. The type of work envisioned may include such things as development of a Grid Flexible Energy Resource Security Test-platform (Grid FERST) to focus on security, resilience, and removing cost barriers to fast-track testing, integration, and verification of new energy resource systems; maturing techniques for dynamic spectrum sharing and use of millimeter wave frequencies; and providing wireless broadband capability to rural and disadvantaged communities by engaging and assisting energy transmission and distribution agencies to develop, engineer, and evaluate wireless broadband solutions. This effort directly supports implementation of the Secure 5G and Beyond Act of 2020 and the National Strategy to Secure 5G. This is a new activity for FY 2024.

Customer funding provided as part of Energy Information Technology Services (EITS) ($3,424,572)*

*Cyber for EITS Protect ($3,424,572)**

Funds secure data transmissions to include credentialing and access management, data safeguarding, secure data transmission, and system security testing and analysis for EITS customers. Planned accomplishments for FY24 include improved capabilities surrounding data loss prevention with an overall increase in secure data transmissions. Accomplishments also include implemented and automated security testing.

** WCF and customer fund dollars include OCIO contributions*

**Budget Line: Detect, Analyze, and Mitigate Intrusions – Detect and Respond ($31,431,000 – Request; $5,572,828 Customer) (TOTAL= $37,003,828)**

Expand operational visibility of the DOE complex through increased real-time information availability, integrated incident reporting data and metrics, and tool modernization to increase data integration. Visibility into cybersecurity operations across the DOE sites, labs, and offices is a critical component of ensuring strong cybersecurity. Oversight into current processes will help identify gaps and vulnerabilities in our systems. Programs being able to create this visibility and plug those gaps will be critical in the Department's cybersecurity strategy moving forward.

Activity: Security Operations Center (SOC) Assessment/Pursuit/Hunt ($250,000)

Establishing a standardized Security Operations Center (SOC) assessment model to evaluate SOC maturity across the DOE enterprise and enable better visibility of gaps and prioritization of requirements across the enterprise. The funding will be used to establish, train and test concepts for cybersecurity incident response Pursuit/Hunt teams which will significantly enhance our ability to proactively respond to and defeat a wide range of cybersecurity threats.

Activity: Integrated Joint Cybersecurity Coordination Center (iJC3) ($14,300,000)
Enhancing and maturing the iJC3 will lead to greater enterprise visibility to stay ahead of adversaries and cyber threats. iJC3 leads the coordination of all cyber information for the Department, identifies trends, and gains significant insight into cyber operations, helping to inform critical decision making and enhance situational awareness. This will enable stronger stakeholder awareness and cross-collaboration amongst the various department elements, ensuring that resources are being allocated efficiently across the Department.

Activity: Automated Indicator Sharing Modernization ($900,000)
Funding for this activity enables sustainment of a commercial off-the-shelf solution supporting machine-to-machine sharing of cyber threat intelligence, speeding up proactive defense and distributed detection for the DOE enterprise. This will provide automated signature delivery and indicators of compromise to automatically update cyber defenses, such as intrusion detection systems, intrusion prevention systems, and firewalls.

Activity: Big Data Platform ($9,181,000)
Continuing maturation of Big Data Platform (BDP) and incremental planned growth for Amazon Web Services GovCloud storage and compute will enable improved data analytics and visualization of Department-wide cybersecurity threats and trends. The funding will add storage enabling the Department to meet the increased logging requirements by aggregating the most critical data needed to support Department-wide incident response and threat hunting. This will allow OCIO to be more accountable to the Department and the broader federal government through performance metrics and improved reporting.

Activity: Cybersecurity Tools and Licensing ($4,200,000)
Funding supports sustainment, modernization, and operationalization of cybersecurity products or services, such as hardware, software, applications, and equipment designed to protect the DOE IT infrastructure and improve the iJC3‘s ability to detect, report, respond, and recover. Operationalizing cybersecurity products and services will enable more timely access to critical data and automated process support.

Activity: Deployable Incident Response Teams, Network Modeling, and Enhanced Exercise Program ($248,000)
Funding supports the identification, exercising, and equipping of incident responders across the DOE enterprise that can support crisis action planning and virtual or on-site incident response support during a major cybersecurity incident. Providing enhanced tools to perform on-site network modeling of effected networks.

Activity: Cyber Modernization Continuation/Maturity ($2,000,000)
Funding will be used to fund prioritized efforts in the Departmental Elements and National Laboratories to conduct pilots of new technology and sustain current efforts aligned to building a Zero Trust Architecture and securing cloud infrastructure across the Department to better defend DOE’s critical information and infrastructure.

Activity: FireEye PCAP ($202,000)
FireEye PCAP (Packet Capture) is an application programming interface for capturing network traffic. In keeping with the White House OMB Memo 21-31, PCAP is the requirement for Enterprise Logging Level 1 application-level traffic. The network forensic tool will help detect a broad array of security incidents, assist in investigations to determine scope and impact, effectively contain threats, and provide quicker recovery from events. The equipment is for monitoring and analyzing network traffic and protocol-based communications. Planned accomplishments for FY24 include increased and improved monitoring of network traffic by 10%.

Activity: Encase ($150,000)
Encase is used in forensics to recover evidence from compromised hard drives. It allows the OCIO to conduct in-depth forensic analysis of user files to collect evidence such as documents, pictures, internet history and Windows Registry information. Encase is also vital to preserve the chain of custody in an event that evidence is needed for litigation

purposes. Encase also plays a critical role in all incident response investigations by allowing the incident response team to remotely triage workstations that may have malicious code, potential compromise, attempted intrusions, etc. It is also used during classified data spillage incidents to remotely keyword search workstations. The requested funding will be dedicated to licensing renewal for cybersecurity software used for digital forensics analysis and reporting by Enterprise Assurance Incident Response Team. Planned accomplishments for FY24 include increased and improved chain of custody procedures for EITS customers.

Customer funding provided as part of EITS ($5,572,828)*

*Cyber for EITS Detect ($5,572,828*)*

Funding anti-phishing and malware defense, intrusion prevention and incident management and response for EITS customers.

** WCF and customer fund dollars include OCIO contributions*

**Budget Line: Shaping the Cybersecurity Environment – Identify and Recover ($29,945,000 – Request; $9,602,253 Customer) (TOTAL = $39,547,253)**

To enable DOE to identify, assess, select, monitor, and report on risks, DOE will continue to mature its cybersecurity risk methodology to blend qualitative and quantitative risk management principles and demonstrate business use cases to answer tough questions. DOE will sustain and improve its supply chain as a service program, continue to improve business processes, streamline the security authorization process, and continue to emphasize operational risk versus compliance gaps.

Activity: Vulnerability Disclosure Program/Crowdsourced Penetration Testing (Sustain Bug Bounty) ($3,100,000)

In accordance with DHS/OMB requirements, the Department will continue to mature its Vulnerability Disclosure Program (VDP) across all public facing systems and websites. This funding will sustain the existing contract to manage the DOE VDP solution. Providing the portal for responsible vulnerability disclosure, triage of submissions, coordination of remediation and communication with researchers and sustain crowd source penetration testing. VDP and crowd source penetration testing are critical assessment tools that enable the identification, remediation and/or mitigation of vulnerabilities before they can be exploited by our adversaries.

Activity: Cybersecurity Modernization ($2,700,000)

Funding supports modernizing DOE's infrastructure and cloud-based security through a secure, robust, and capable infrastructure and network, built on interoperable standards and architecture principles. Projects that make up the initiative, when completed, will support continued maturation and automation of the EITS Site Security Operations Center (SOC) capabilities in alignment with the overall DOE Enterprise. Specifically, FY 2024 funding will support continued modernization and automation of cybersecurity operations capabilities, including the transition from legacy on-premises capabilities and technologies to cloud native tools and capabilities, deployment of Artificial Intelligence (using Machine Learning) solutions to support automated log correlation activities, implementation of controls and methodologies to align with the DOE Controlled Unclassified Information (CUI) Order, support for enterprise initiatives, such as Metadata Taxonomy and Risk Management dashboards. Planned accomplishments for FY24 include documented polycloud architecture with associated security architecture. Accomplishments also include fully automated SOC capabilities to enable increased threat hunting.

Activity: Supply Chain Risk Management as a Service ($4,000,000)

This funding is to sustain the enterprise Supply Chain Risk Management (SCRM) program that provides proactive supply chain security support for the DOE Enterprise. The program provides critical capabilities that guide, educate, and manage supply chain risks to National Security Systems and Information and Communications Technology (ICT) components and includes shared services, a common lexicon, and best practice procedures in procurement, delivery, and deployment of IT products and services that are used across the enterprise and select Federal Departments/Agencies. This program is a critical enabler in supporting the Department's ability to meet FITARA requirements as well as regulatory requirements levied on the Power Marketing Administrations by NERC and FERC.

Activity: Enterprise Architecture (Previously Requirements Analysis and Integration) ($1,450,000)

Funding this activity supports maturing the DOE Enterprise Architecture Program initially focusing on management of the Technical Reference Model (TRM) on commercial off the shelf (COTS) software and expansion and Application Rationalization. This activity will continue furthering Business Architecture through DOE Business Reference Modeling, defining and integrating the Application Reference Model and defining a DOE Security Reference Model. A major objective of the Enterprise Architecture program is to conduct application rationalization to incrementally consolidate and retire systems and applications performing similar functions. The goal of the Enterprise Architecture program is to have a clear line of sight from the business and mission drivers to applications supported by COTS products captured in the Technical Reference Model. Funding will also support the expansion of the Enterprise Architecture repository tools to the broader DOE community.

Activity: Cybersecurity Strategic Communication Support ($720,000)

This funding is to add contractor support to help to drive cybersecurity by advancing our priorities through enhancing OCIO public advocacy/diplomacy and communications (including via social media and multimedia), executing thorough communications research, crafting quality briefing materials, and supporting various other executive-level actions. This activity provides cybersecurity strategic communications support to OCIO leadership in advancing the Department's cybersecurity missions through policy, standards, and services for the enterprise information system.

Activity: Cybersecurity Emergency Management Support ($300,000)

Operational and mission support for continuity of operations (COOP) and disaster recovery (DR) planning. Support includes planning and training for a comprehensive array of potential emergencies or disasters that may impact the continuity of operations and the performance of mission essential functions. This includes the development of tabletop exercises, SOPs, creating metrics to measure success and inform decision-making, updating portfolio plans, testing emergency communications and personnel accountability, maintaining vital records, and preparing for devolution and reconstitution contingencies. Planned accomplishments for FY24 include a planned and executed tabletop exercise to test and refine SOPs and emergency communications.

Activity: Enterprise (EITS Customer Base) Identity ($2,369,000)

Funding is requested to provide additional licenses for Identity Governance and Administration system. Saviynt will provide for centralized collection of user identity data, full identity lifecycle management, and automated account provisioning. The new system will replace the legacy Management Information System (MIS) identity management data collection system. Scope of this system increased from an initial user base of EITS active directory (AD) users to a larger user base that accommodates all users of EITS systems including DAYS (ServiceNow) and Azure Active Directory. It also includes customers outside the EITS user base who use the contractor sponsorship workflow in MIS. Expansion of the scope of the project allows us to be a service provider to customers beyond our AD user base. Additional licenses are needed to support the expanded user base. This is a recurring annual fee for Saviynt SaaS services. This funding request accounts for both licensing and labor associated with implementing Identity and Access Management (IAM) driving towards compliance with EO 14028. Planned accomplishments for FY24 include implementation of service catalogue management and automation of catalogue items and life cycle events. Additional accomplishments include expansion of single sign-on capabilities with Azure Active Directory and automated and reporting of analytics through MyIdentity (Saviynt).

Activity: Strategy and Program Management, Security Authorization and Physical/Personnel Security Support and Planning, Policy, and Enterprise Risk Management ($12,890,000)

Funding is requested to continue to support contractor labor capacity to account for tasks and demands related to: Mature and expand Enterprise Cyber Risk Management (ECRM) program; Mature Security Authorization Process; Optimize DOE- sponsored authorizations under the FedRAMP program; Compliance and Oversight Process Improvements; EO implementation Program Management and the continued management of the OCIO led Control Systems Working Group (CSWG) to develop a holistic roadmap to secure Operational Technology systems.

Activity: Continuous Diagnostics and Mitigation (CDM) Modernization CM License Lifecycle Maintenance of Enterprise Renewals ($1,616,000)

As responsibilities shift from DHS to DOE, funding is required to sustain enterprise licenses for critical CDM capabilities. Improving operational visibility and continuous monitoring relies heavily on our ability to know what is on our networks and the attack surfaces associated with those networks. DOE, in partnership with DHS and their CDM program office, has made major investments in hardware and software asset management, continuous monitoring and reporting

capabilities for the Department. The CDM program provides critical resources to help DOE comply with federal monitoring and reporting requirements through capability deployments and centralized data.

Activity: CDM Contract Labor FTEs ($800,000)
The funding request is for contract labor to support Software Asset Management, continuous monitoring, and reporting requirement. (In accordance with M-20-04, agencies are required to submit separate, CDM-specific line items in budget submissions.)

Customer funding provided as part of EITS ($9,602,253)*
*Cyber for EITS ($9,602,253)**
Funding provides for authorization and policy and continuous diagnostics and mitigation (CDM) for EITS customers. Planned accomplishments for FY24 include reducing agency threat surface, increasing visibility into the federal cybersecurity posture, and improving federal cybersecurity response capabilities.

** WCF and customer fund dollars include OCIO contributions*

## Cybersecurity

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Cybersecurity $92,361,000** | **$99,096,619** | **+$6,735,619** |
| **Protecting Networks and Information (Protect) $**30,985**,000** | **$37,720,619** | **+$6,735,619** |
| Funds will support a Coordinated Cyber Response, Network Security Modernization- Infrastructure IT Modernization, Network Security Modernization- Data Center Modernization, Network Security Modernization- DOEnet/Esnet (Energy Sciences Network) & Trusted Internet Connections (TIC)/ Independent Assessment, Identity Credential and Access Management (ICAM), IT Modernization Support, Cybersecurity Training and Awareness, Bug Bounty, Program Management Oversight Emerging Technologies, Spectrum, and Cybersecurity Program Management, Anonymized Browser (Isolation), Emerging Technologies, Coordinated Cyber Response/Cyber Training and Awareness, Control Systems (CS) and Operational Technology Modernization (site Assessment & Tools), Operations Technology (OT) / Control Systems (CS) Initiatives and Platform Engineering are the planned initiatives. | Continue FY 2023 program activities with new requests for FY 2024:<br>Advanced Wireless Implementation (+$6,735,619) | New initiatives of Advanced Wireless Implementation (+$6,735,619). |

**Activities and Explanation of Changes Continued**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Detect, Analyze, and Mitigate Intrusions (Detect and Respond) $31,431,000** | **$31,431,000** | **+$0** |
| Funds will support the following initiatives: Integrated Joint Cybersecurity Center**,** Big Data Platform, Cybersecurity Tools and Licensing, Deployable Incident Response Teams, and Automated Indicator Sharing Modernization. SOC Assessment/ Pursuit/ Hunt (iJC3), EO Cyber Reserve Pilot Continuation/Maturity, FireEye PCAP, Encase. | Continue FY 2023 program activities in FY 2024. | No Change |

**Activities and Explanation of Changes Continued**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Shaping the Cybersecurity Environment (Identify and Recover) $29,945,000** | **$29,945,000** | **+$0** |
| Funds will support the following initiatives: Planning, Policy and Enterprise Risk Management; Cyber Supply Chain, MEGABYTE Act Tool, Requirements Analysis and Integration; iJC3 Cyber Operational Technology (OT) Protection; Strategy and Program Management; Security Authorization and Physical/Personnel Security Support; Data Center Optimization Initiative; 21st Century IDEA Act; Cybersecurity Strategic Communication; and Cybersecurity Emergency Management. Continuous Diagnostics and Mitigation (CDM) Modernization CM License Lifecycle Maintenance of Enterprise Renewals; CDM Contract Labor FTEs, Cybersecurity Modernization, Enterprise Identity (EITS Customer Base), Strategy and Program Management, Security Authorization and Physical/Personnel Security Support and Planning, Policy and Enterprise Risk Management, Vulnerability Disclosure Program/ Crowd Source Pen Testing. | Continue FY 2023 program activities in FY 2024. | No Change |

## Cyber Modernization Response and Recovery

**Overview**

The FY 2024 President's Budget requests $59,006,000 which is an increase of $18,731,000 over the FY23 Enacted amount. to address the impacts of cyber incidents at the Department of Energy. The purpose of the funding is to address enhancement and modernization needs and does not focus on wholesale replacement of IT systems at this time. The funding request targets critical cybersecurity needs and prioritizes basic cybersecurity enhancements, including: cloud security, Security Operations Center (SOC) enhancements, encryption, Multi-Factor Authentication (MFA), increased logging functions, and enhanced monitoring tools. The additional funding will go towards supporting the Identity Services and Implement Zero Trust Principles.

**Funding Breakout and Analysis**

This section summarizes the program, activities, and the budget lines associated and aligned with the overall OCIO Cyber Modernization Response and Recovery:

- Cloud Technology Adoption
- Detection and Response (EDR/Logging)
- Multifactor Authentication (MFA) and Data Encryption
- Zero Trust Architecture

**Budget Line**: **Cloud Technology Adoption - ($18,800,000 – Request) (TOTAL = $18,800,000)**

Activity: Cloud Technology Adoption ($18,800,000)

Funding will be used to continue to migrate applications to the cloud to meet the requirements of EO 14028. This effort will define cloud adoption standards and commonly used cloud architecture patterns for the major Cloud Service Providers (Amazon Web Services, Azure, and Google Cloud Platform). The cloud architecture patterns will be based off common migration use cases derived from asset inventories and discovery and will consider different stages of cloud maturity. An integrated platform service offering, and enterprise repository will be established for pre-configured architecture components to allow for re-usable accelerators for cloud technology adoption. Development, security, and operations (DevSecOps) is the approach for automation and platform design to integrate security with cloud migrations. Funding will be used to implement DevSecOps tools to ensure consistent standards are applied for cloud migrations and runtimes. Funding will support defining cloud policy and governance, including cloud services configuration, integration, and authorized use to maintain security and compliance standards across providers. Funds will be used to continue to establish a Cloud Center of Excellence (CoE) to support Cloud Technology Adoption understanding and planning. This effort will enable the front door for enterprise cloud knowledge management, providing the cloud education and expert support necessary for customers.

**Budget Line**: **Detection and Response (EDR/Logging) - ($20,700,000 – Request) (TOTAL = $20,700,000)**

Activity: Upgrade Boundary Monitoring Sensors ($3,350,000)

Funding will be used to continue to monitor the footprint of network sensors, and further facilitate the tech refresh of the Cooperative Protection Program (CPP) legacy hardware solution. Funding will be used to procure security monitoring sensors and AWS Gov cloud infrastructure to serve as phase one of a full technology refresh of the Cooperative Protection Program (CPP) custom government-off-the-shelf (GOTS) system. The tech refresh will include 43 sensors to support 22 DOE field sites, National Laboratories, and PMA sites, as well as retain sufficient inventory to pre-stage new sensors and support the replacement of faulty equipment.

Activity: Logging and Endpoint Detection and Response (EDR) ($11,350,000)

Funding will be used to continue integrated endpoint security solution that combines real-time continuous monitoring and collection of endpoint data to mitigate cybersecurity threats. Integrating automation throughout these capabilities will improve the response to these threats and provide analytic tools to thwart future attacks. Funds will support monitoring services and provide enterprise visibility into infrastructure and applications to continuously monitor vulnerabilities. Funds will also be allocated towards implementing cyber analytic tools that analyze anomalous behavior to improve threat detection. Funds will be allocated towards implementing user and entity behavior analytics using commercial tools. Cyber Analytics will assist in baselining user traffic, perform anomaly detection, insider threat detection and enable custom alerting. Using analytics, teams can act on detection, automate quarantine, and review user behavior history. Funding will be used to continue to implement logging as a service with event correlation for incident and problem management to enable visibility into data for security and operations. Standardizing logging for applications will simplify monitoring and alerting layers placed on top of the logging data.

Activity: Operational Technology (OT) Cybersecurity ($1,500,000)
Funds will support the ongoing establishment of operational technology (OT) cybersecurity maturity assessment as well as development of OT cybersecurity best practices and governance. Funding will be used to document and assess the current state and establish governance for OT cybersecurity. Funds will also continue to support OT education and training to address any knowledge gaps.

Activity: Security Operations Centers (SOC) Capability Maturity ($4,500,000)
Funds will support ongoing implementation of Security Information and Event Management (SIEM) and Security Orchestration, Automation, and Response (SOAR) capabilities to aid DOE in preventing, detecting, assessing, responding, and investigating cyber incidents. Assessments of the current SOC maturity will inform areas of improvement. Funds will be allocated towards streamlining SOC operations and improving maturity. This effort also aligns with the Information Sharing EO category.

**Budget Line**: **Multifactor Authentication (MFA) and Data Encryption - ($8,003,000 – Request) (TOTAL = $8,003,000)**

Activity: Identity Services ($8,003,000)
Funding will enable enterprise sites and entities to utilize mature enterprise identity offerings for application integration. Funds will support completion of the roadmap for enterprise identity services in support of AWS, Azure, and Google Cloud Platform (GCP), including application integration and Privileged Access Management (PAM). Providing a suite of capabilities to strengthen identity proofing for temporary staff not included in the scope of HSPD-12 to elevate all staff to the highest Identity Assurance Level (IAL3) defined by NIST in Special Publication 800-63-3. To acquire software licenses promulgated by USAccess to issued derived PIV credentials which are impersonator resistant to both mobile devices and Yubikey containers, expand PKI impersonator resistant software certificates, develop requirements to integrate internal identity service with USAccess, acquire Yubikey devices to replace legacy smartcards, accelerate adoption of single sign-on using multifactor authentication, license and support enterprise privilege access management (PAM) solution to protect accounts with elevated rights, implement PKI key recovery services for USAccess and internal DOE PKI, and modernize the Energy Global Directory Service exchanging PKI certificates DOE-wide supporting encryption of sensitive information.

**Budget Line**: **Zero Trust Architecture - ($11,503,000 – Request) (TOTAL = $11,503,000)**

Activity: Implement Zero Trust Principles ($11,503,000)
Funding will be used for continued development ofthe Zero Trust (ZT) Framework and Maturity Assessment Model. The ZT framework will be used as a guide for applications adopting ZT in accordance with EO 14028 and ZT standards. After ZT maturity assessments are conducted, ZT technical roadmaps will be developed for applications. A standard ZT adoption progress report will be developed for applications to report progress . Activities will also include establishing and promoting cyber workforce training opportunities and developing ZT related shared services. This effort will include implementing ZT pilots and support network engineering and configuration for network segmentation. Zero Trust Principles also align with the Unclassified data EO category.

**Activities and Explanation of Changes Continued**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Cyber Modernization Response and Recovery $40,275,000** | **Cyber Modernization Response and Recovery $59,006,000** | **+$18,731,000** |
| Funding will be targeted to support cloud security, Security Operations Center (SOC) enhancements, encryption, multifactor authentication, increased logging functions, and enhanced monitoring tools. | Continue FY 2023 program activities in FY 2024 for the following: Cyber response and recovery needs at the Department and enhances DOE's security posture to ensure protective measures are in place to prevent further incidents like SolarWinds. | Increase for Cyber Modernization / Response and Recovery (+$18,731,000). |

## Corporate IT Program Support

**Overview**

OCIO is requesting $32,435,000 which is an increase of $1,200,000 to support the new activity Technology Transformation Services for Corporate IT Program Support, which provides capital planning guidance, robust privacy and records management, IT products and services, and an efficient and effective IT platform.

**Highlights of the FY 2024 Budget Request**

- Enhanced services and automation in Enterprise Governance and FITARA operations
- Increased support for information technology service management platforms and engineering skills for new projects
- Preparation of cloud based tools and FedRamp sponsorship for expanded enterprise use of EITS Cloud Network
- Increased support for building business architecture models and Innovation Foundry Development
- Additional funding for professional services for sandbox subscriptions, tools, and advanced configurations.
- Funding for a new activity called Technology Transformation Services which is a reimbursement program for the General Services Administration (GSA).

**Budget Line: IT Portfolio Summary ($24,081,000– Request; $8,767,000 – WCF) (TOTAL = $ 32,848,000)**

Activity: IT Investments for Mission Delivery and Management Support ($1,410,000)

Funding supports enterprise-wide solution delivery and transformation with improved data ingestion, curation, usage and sharing of solutions ensuring compliance with the Federal Data Strategy, Geospatial Data Act, and Foundations for Evidence-Based Policymaking Act. Outcomes include agile methodology and assist with transitioning from legacy practices through approaches, such as Learning Agendas. The Innovation Foundry will help DOE entities to adopt new ways of doing business through both technology and processes. This funding supports product management and enterprise-wide adoption and transformation of products and services, online capabilities such as knowledge bases, communities of interest, and exchanges that allow for information to be shared across the agency.

Activity: Program Management Oversight ($4,875,000)

Funds will provide Program Integration and innovation support for managing OCIO IT Support Services contracts. Specifically, funds will support:

- Providing program management on projects, including tracking, monitoring, contractor oversight, and reporting project status and providing strategic guidance and recommendations to OCIO leadership to support evidence-based and data-driven decision-making to accomplish strategic goals of the OCIO.
- Supporting IT projects, assessing and shaping the demand pipeline for IT services across the agency, which will enable the OCIO to streamline the investment decision process for new IT products and services.
- Providing strategic design and innovation in order to clearly define and map issues, uncovering the root cause of customer pain points at project onset and developing an understanding of customer needs, preferences, and behaviors to design future state operations and enhance service delivery.
- Providing organizational change management in support of IT projects in order to account for the impact new initiatives have on operations, culture, and employees; and ensuring the capability to sustain continual IT refresh and innovation.

Activity: Proof of Concepts and Pilots ($557,000)
The project drives innovation by using technology in new ways to create a more efficient organization and improve alignment between technology initiatives and business goals. Funding is requested for resources to develop use cases and to showcase next generation IT solutions to the DOE enterprise such as by using Artificial Intelligence for service automation and low-code to centralize processes and explore rationalization. The resources will perform customer outreach, prototype high-level IT solutions, and determine the path to production. Existing governance and OCIO cloud offerings will be leveraged, if feasible, to provision the environment and deploy the solution.

Activity: Enterprise IT Portfolio Management (ITPfM) and IT Budgeting ($2,500,000)
Supports Enterprise-wide coordination of Clinger-Cohen and Federal Information Technology Acquisition Reform Act (FITARA) requirements as pertain to IT Portfolio Management (ITPfM), IT investment performance oversight, and IT budgeting. Funding will enable OCIO's continued leadership of the Department's annual IT Portfolio submission process, implementation of the Technology Business Management (TBM) methodology, management of the ITPfM Help Desk, and cross-Departmental collaboration on IT budgeting and cloud cost management. Funding also supports applications used to manage the Department's IT Portfolio, meet OMB reporting requirements, and perform TBM analytics.

Activity: Enterprise FITARA Management, IT Governance, Policy, and Federal-wide Initiatives ($3,344,000)
Supports leadership, guidance, and management of DOE IT Governance, FITARA, Section 508, Information Collection, E-Government, and IT policy. Funding will support continued management of an integrated governance framework that enables informed decision making, mission enhancement, operational excellence, IT acquisition, and risk management across the Enterprise; strategic and tactical IT policy development, maintenance, and implementation through coordination with internal and external governance groups; OCIO's IT acquisition processes as required by FITARA; and leadership and coordination of DOE's E-Government, Section 508, IPv6, FITARA, Paperwork Reduction Act (PRA), and other Federal-wide IT initiatives. Funding supports Section 508 compliance.

Activity: Enterprise IT Data Collection, Reporting, and Analytics ($1,500,000)
Supports Departmental collection, validation, and analysis of Enterprise IT data in response to the annual Federal Information Security Management Act (FISMA) and Privacy Report to the Department of Homeland Security (DHS), Office of Management and Budget (OMB), Congress and the Government Accountability Office (GAO); the Integrated Data Collection to OMB; and several other routine and ad hoc IT data calls. Funding will enable continuing data call automation, enhanced data call efficiency, and improved respondent experience. Funding also supports applications for data collection, analysis, and reporting.

Activity: Technology Transformation Services (General Services Administration) ($1,200,000)
Funding would be used to support a new Technology Transformation Services reimbursement program for the General Services Administration (GSA). This will include the transition of three existing programs (FedRAMP, the U.S. Web Design System, and the Data & Analytics portfolio) that are currently funded by GSA appropriations to a reimbursable model.

Activity: Policy and Performance Management ($4,045,000)
Funding will support the DOE Enterprise Records Management, Controlled Unclassified Information (CUI), Forms Management, and Privacy Programs, as described in the sub-activities below.

*Sub-Activity: Records Management ($2,280,000)*
Funding supports preserving individual rights, keeping mission critical information available to the Department, and preserving the history of the United States by managing DOE's federal records in accordance with National Archives and Records Administration (NARA) and other Federal agency requirements. Additional funds requested support configuration of automated records management solutions within existing tools following EITS's successful implementation of NARA's Capstone Approach to managing emails. Planned accomplishments in FY24 will include expanding current pilot efforts to identify legacy electronic records and migrate them into a compliant records management environment in Office 365; acquiring and configuring a tool to capture carrier-based text messages; and configuring existing tools to identify records and manage records in an automated manner. The records management solution will support Departmental elements, both as they currently operate, and as they participate in the

consolidation to Office 365. The end result will be a secure and scalable enterprise-wide solution, providing a consistent, accessible, and automated approach to electronic document and records management requirements.

*Sub- Activity: Privacy Information Management ($1,765,000)*

Funding fosters the protection of individual privacy interests and the promotion of fair information practice principles by supporting HQ-driven enterprise-wide privacy information management activities in accordance with Privacy Act, E-Government Act, and OMB Privacy directives to ensure compliance with federal laws, regulations, and standards, under the direction of the DOE Senior Agency Official for Privacy (SAOP), who is also the CIO. Additional funds are requested to procure an automated privacy compliance workflow management solution that will service the DOE enterprise. An automated solution is necessary to ensure that privacy documentation is compliant with federal requirements for the creation and management of electronic information and forms. In addition, the Privacy Program will continue to grow and leverage the DOE Privacy Compliance Monitoring Program (PCMP) to review and assess DOE Element compliance with new requirements flowing from revisions to DOE Order 206.1 and other applicable Federal privacy laws and OMB privacy requirements. The PCMP will use site visits to meet with key field personnel, provide training, and conduct preliminary compliance evaluations. Planned accomplishments in FY24 include a revised Privacy Impact Assessment (PIA) process and template set to provide a streamlined and automated approval process, enhanced transparency, and reflect a transition to a risk-based approach to privacy assessment.

Activity: FedRAMP ($650,000)

Funding will foster automation of privacy enhancing technology and records management tools by supporting FedRAMP preparation, compliance and sponsorship for expanded enterprise use on EITS Cloud Network of cloud-based tools including automated privacy dashboards, automated PIA workflows, and data loss prevention tools.

Activity: Controlled Unclassified Information (CUI) Implementation ($1,500,000)

The CUI program provides the means to identify and protect the Department's most sensitive unclassified information. The program was created by EO 1356 and is codified at 32 CFR part 2002. The request will support the development of guidance to DOE programs and officers, the development and delivery of enterprise-wide outreach and training, and the acquisition and implementation of novel technological solutions to support records identification and digital marking capabilities. Planned accomplishments in FY24 include a fully compliant marking solution for documents and emails in EITS; publication of playbooks to aid in implementing CUI in additional environments across the DOE enterprise; acquiring and implementing intelligent data management tools to identify sensitive CUI material in existing records; and continuing to grow awareness of program requirements through community engagement, training, and customer support.

Activity: Records and Forms Digitization (was: *Digital Forms Modernization)* ($2,500,000)

This program will create a modern, cost effective, automated, and user-friendly approach to electronic records management. DOE currently holds more than 13,000 cubic feet of permanent and temporary federal records in paper format. By mid-2024, the National Archives and Records Administration (NARA) will cease accepting paper records from Federal Agencies. This means all existing paper records not sent to NARA before then will need to be digitized before they are sent to NARA. Currently, DOE lacks the ability to digitize a large volume of records. This request will help establish scanning and quality control processes, whereby the records program can have confidence that newly generated electronic copies can serve as the authoritative record copy. The program will first focus on existing HQ records but will also help jumpstart the effort across the Department. This program will also generate a fully electronic environment to develop and manage DOE forms across their entire lifecycle, from creation and approval to operational use and approval routing. It will incorporate processes for OMB review and Paperwork Reduction Act, Privacy Act, and compliance with Section 508 of the Americans with Disabilities Act. This effort will reduce the creation of paper records requiring digitization and meet agency requirements to manage all records electronically.

Summary of Funding from Working Capital Fund – Interagency Transfers business line ($8,767,000)*

*Records Storage at NARA*

Funding supports the annual agreement with NARA to provide records services and storage consistent with approved records schedules.

- *Integrated Acquisition Environment*
  Provides for Interagency Agreement with the General Services Administration (GSA) to provide packaged services.

- *E- Government initiatives*
  Initiatives include consolidation studies of lines of businesses and other intergovernmental systems.

- *OPM Credit Monitoring*
  Funds credit monitoring services for all DOE employees following the Office of Personnel Management (OPM) Personally Identifiable Information (PII) data breach.

**WCF and customer fund dollars include OCIO contributions*

**Budget Line: End User – IT Infrastructure ($4,170,000 – Request) (TOTAL = $4,170,000)**

Activity: MEGABYTE Act Tool ($250,000)
Request will support tools to aggregate software deployed across DOE into the enterprise architecture repository for real time access by elements across DOE. The resulting data is consumed into the enterprise architecture tool to form the DOE-wide Technical Reference Model containing COTS software products deployed across DOE. Software contained in the Technical Reference Model is reviewed for conformance to the DOE enterprise architecture policies to assure COTS software no longer supported by the vendor is removed from the environment. The Technical Reference Model informs the DOE Enterprise-wide Agreement program to achieve the objectives of the MEGABYTE Act to consolidate software acquisitions to achieve savings from aggregated acquisitions using DOE, GSA, and other Government-wide acquisition vehicles. The DOE Enterprise Architecture Governance Board (EAGB) reviews candidate software for addition to the Enterprise-Wide Agreement program on a bi-monthly basis.

Activity: 21st Century IDEA Act ($2,020,000)
The agency has procured an enterprise cloud service to provide digital forms with electronic signatures and enterprise Web Modernization tools to fix and validate the 20 most visited websites. The agency is required under the 21st Century IDEA to report annually on the 21st Century IDEA web modernization and other efforts to meet requirements set forth in the Act. This activity includes the sub-activities listed below:

*Sub-Activity: Web Modernization Enterprise Tool to perform 508 compliance across the Agency ($500,000)*
To ensure the agency is compliant with the 21st Century IDEA Act and the Web Modernization guidelines, this tool will be run against the 20 domains and numerous sub-domains across the agency. The tool and expertise are needed to support compliance.

*Sub-Activity: Digitization of Paper-based Forms ($1,220,000)*
Funding supports managed cloud infrastructure as well as provides the professional services to document and automate workflows and approvals in order to continue support of paper-based forms to digital.

*Sub-Activity: Electronic Signature ($300,000)*
In support of M-19-17 and M-00-15, this funding will support the infrastructure needed to provide electronic signatures to the public domain. This will include the information technology service management platform licenses and staff that will provide helpdesk support, maintenance, and operations support of the platform.

Activity: Data Center Optimization Initiative (DCOI) Program ($1,900,000)
This initiative is aligned with the federal Data Center Optimization Initiative (DCOI) and will assist in driving the Department towards compliance while driving down Total Cost of Ownership (TCO) by leveraging cloud native solutions to automate workflow. Continued funding supports:

- Migration of on-premises data center workloads to the DOE enterprise cloud Infrastructure as a Service (Iaas), Software as a Service (SaaS), Platform as a Service (PaaS) environments in Amazon AWS and Microsoft Azure.
- Optimization of poly-cloud operations and applications within the cloud environments to include deployment of additional PaaS and SaaS solutions within the AWS and Azure environments.
- Automated reporting and development work of the Enterprise Data Analytics Repository System (eDARS).

**Budget Line: End User - EITS ($4,184,000 – Request; $42,482,000 – WCF; $94,683,445 Customer) (TOTAL = $141,349,445)**

Activity: EITS Payment ($3,996,000)
Funds desktop services for the EITS business line.

Activity: Customer Advocacy Support ($188,000)
To provide a dedicated forum to understand our customers lines of business. The formal standup of Customer Advocacy is pivotal and central to an effective Information Technology Service Management (ITSM) strategy. Funding is for personnel to perform customer engagement in support of ITSM. Planned accomplishments for FY24 include full alignment of customer engagement program with information technology infrastructure library (ITIL) principles and guidelines. Accomplishments also include regularly scheduled hybrid forum with designated organization representatives.

Summary of Funding from Working Capital Fund – Telecommunications business line ($42,482,000)*
Provides connectivity for DOE Headquarters and field operations through Local and Wide Area Networks and telecommunications (telephone) services. LAN connections provide access to the EITS application host systems and cybersecurity for the internet, e-mail, and other applications. Provides for the annual network technology refresh as part of lifecycle management, which is necessary to address current risks in the areas of security and availability in the core and distribution layers of existing DOE network infrastructure. By investing in a more modern network infrastructure, the Department will enhance network cybersecurity controls and will further support the collaboration capabilities being requested within the Department.

Summary of Funding from Customers – Shared Services direct billing ($94,683,445)*
Provides for End User Services, including asset management, help desk and deskside support, and information technology service management platform application support.

**WCF and customer fund dollars include OCIO contributions*

## Corporate IT Program Support

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Corporate IT Program Support $31,235,000** | **$32,435,000** | **+$1,200,000** |
| **IT Portfolio Summary $22,881,000** | **$24,081,000** | **+$1,200,000** |
| Funding will support the following activities: IT Investments for Mission Delivery and Management Support; Program Management Oversight; Proof of Concepts; IT Investments for Governance, Federal Information Technology Acquisition Reform Act (FITARA), TBM Implementation, Paperwork Reduction Act (PRA), FITARA, Section 508, IPv6, Digital Transformation and OCIO Functions; Policy and Performance Management; Enterprise Project Management Office(ePMO) Tools; Folio/ Electronic Capital Planning and Investment Control (CPIC) Tools and FedRAMP. | Continue FY 2023 program activities in FY 2024. Funding will support a new activity: Technology Transformation Services for (+$1,200,000). | Increases: Technology Transformation Services (+$1,200,000). |

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **IT Infrastructure $4,170,000** | **$4,170,000** | **+$0** |
| Funding will support MEGABYTE Act Tool; Data Center Optimization Initiative; and 21st Century IDEA Act. | Continuation of FY 2023 activities. | No Change |
| **End User - EITS $4,184,000** | **$4,184,000** | **+$0** |
| This is funding for the EITS services that EITS itself consumes – it is a customer of its own services. | Continuation of FY 2023 activities. | No Change |

## Program Direction

**Overview**

OCIO is requesting $54,631,569 for Program Direction to provide funding for 143 FTEs and associated costs for the overall management OCIO corporate program management and operations, acquisitions/contract administration, human capital management and budget support, as well as Working Capital Fund requirements.

**Highlights of the FY 2024 Budget Request**

The Office of the Chief Information Officer (OCIO) is responsible for managing and executing critical cybersecurity defense, data protection, and policy and program oversight. Additionally, in FY 2021 the release of EO 14028, *Improve the Nation's Cybersecurity*, levies requirements for moving to a Zero Trust Architecture, enhancing Cloud Security, and improved incident response to accomplish program management, governance, and execution of required tasks. Specific projects are focused on secure cloud implementations, data encryption, supply chain risk management, and zero-trust architecture. Identification and security of critical information, to include records and privacy data are critical elements of the Department's strategy to improve the cybersecurity posture of the Department.

**Program Direction**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Headquarters** | | | | | |
| Salaries and Benefits | 25,663 | 30,963 | 32,439 | +1,476 | +5% |
| Travel | 330 | 336 | 400 | +64 | +19% |
| Support Services | 3,325 | 3,325 | 3,575 | +250 | +8% |
| Other Related Expenses | 14,383 | 16,505 | 18,217 | +1,712 | +10% |
| **Total, Program Direction** | **43,701** | **51,129** | **54,631** | **+3,502** | **+7%** |
| | | | | | |
| Federal FTEs- Program Direction Funded | 124 | 143 | 143 | - | 0% |
| Federal FTEs- WCF Funded | 3 | 3 | 3 | - | 0% |
| | | | | | |
| **Support Services** | | | | | |
| Technical Support Services | 1,515 | 1,515 | 1,765 | +250 | +17% |
| Business, Finance, and Procurement | 1,810 | 1,810 | 1,810 | - | 0% |
| **Total, Support Services** | **3,325** | **3,325** | **3,575** | **+250** | **+8%** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Training | 160 | 160 | 185 | +25 | +16% |
| Working Capital Fund (WCF) | 11,228 | 13,162 | 13,500 | +338 | +3% |
| Desktop Services | 2,483 | 2,671 | 3,932 | +1,261 | +47% |
| Security Investigations | 512 | 512 | 600 | +88 | +17% |
| **Total, Other Related Expenses** | **14,383** | 16,505 | **18,217** | **+1,712** | **10%** |

## Program Direction

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **$51,129,188** | **$54,631,569** | **+$3,502,381** |
| **$30,963,000** | **$32,439,520** | **+$1,476,520** |
| Funding supports federal staff salaries and related benefits for 143 FTEs. | Funding supports federal staff salaries and related benefits for 143 FTEs. | This increase provides for a 5.2% pay raise and FERS increase for 143 FTEs. |
| **$336,000** | **$400,000** | **+$64,000** |
| Funding supports mission-critical travel for federal staff. | Funding supports mission-critical travel for federal staff. | Increase outreach activities to collaborate with field sites on technology enhancements and OCIO priorities. |
| **Support Services $3,325,000** | **$3,575,000** | **+$250,000** |
| ($1,515,000) Funding sustains operations within the front office of the CIO. Funds support contractor activities and memberships/subscription services for the CIO and senior staff. | ($1,765,000) Continuation of activities with an increase for IT professional support services. | Increase for IT Management support services/consulting for management. |
| ($1,810,000) Funding used to maintain contractor activities in the areas of Financial Management, Budget and Internal Controls; Acquisitions; and Human Capital. These activities are critical to programmatic operations and accomplishment of program goals. | ($1,810,000) Continuation of activities. | No change from FY 2023 Request. |
| **Other Related Expenses $**16,505**,188** | **$18,217,049** | **+$1,711,861** |
| ($160,000) Training costs to ensure all FTEs are appropriately trained to perform their duties, and development opportunities are available to CIO's federal staff. | ($185,000) Continuation of activities increase associated with additional requirements for staff. | +$25,000 to cover anticipated Training costs. |
| ($13,162,188) WCF funding level accounts for estimated OCIO overhead expenses. | ($13,500,000) Continuation of activities consistent with estimates from the Working Capital Fund Board. | +$337,812 to cover anticipated WCF costs. |
| ($2,671,000) Desktop Services funds are used to provide IT services and hardware to employees. | ($3,932,049) Continuation of activities consistent with estimates from EITS Program. | +$1,261,049 to cover anticipated increase in EITS Shared Service costs. |
| ($512,000) Security Investigations | ($600,000) Continuation of activities. | +$88,000 to cover anticipated Security Investigations costs |

**Office of Management**
**Program Direction**

**Overview**

The Office of Management (MA) provides Department-wide leadership for a variety of corporate management functions including Acquisition, Real Property, Sustainability, Aviation, Departmental Directives, and several administrative functions. These services are critical in supporting the mission of the Department and its program offices, as well as keeping the Headquarters (HQ) operational. MA's activities include policy development and oversight, delivery of procurement services to DOE HQ organizations, Conference Management, and the management of HQ facilities. MA also fulfills the statutory and Executive Order responsibilities of the Senior Real Property Officer, Senior Procurement Executive, Chief Sustainability Officer, and the Department's Advisory Committee Management Officer.

In FY 2024, MA will accomplish its mission through its program office components and associated Departmental budget lines:

- Acquisition Management – Provide corporate oversight, leadership, and develop and assist in the implementation of DOE-wide policies, procedures, programs, and management systems pertaining to procurement and financial assistance, contract management, professional development, and related activities to provide procurement services to Headquarters elements. The Director, Office of Acquisition Management serves as the Senior Procurement Executive.
- Sustainability - Manage and implement DOE's Strategic Sustainability Performance Plan, DOE's Climate Adaptation and Resilience Plan, and provide oversight of energy, water, sustainable buildings, and resource assessments at DOE sites and National Laboratories. Manage electric vehicle activities to further the President's goal of electrifying the Federal motor vehicle fleet. The Director of the Office of Management serves as the Chief Sustainability Officer.
- Administration – Manage HQ facilities and support services, including operations management, leased and office space management, supply management, travel (domestic and international), transportation/courier services, concession services (through the General Services Administration), exchange visitor program, mail/printing/graphics services, and the Department's Freedom of Information Act program.
- Asset Management – Develop and maintain DOE policies, regulations, standards, and procedures while tracking performance pertaining to real estate, facilities and infrastructure management, and personal property to include motor vehicle fleet management. Assist senior leadership with planning and execution decisions related to the acquisition, utilization, condition, maintenance, and disposition as they relate to real and personal property. Manage DOE's real property database and excess screening process. Manage the professional development, training, and certification of personal property and realty specialists. Ensure implementation of statutory and executive requirements across the Department. Coordinate data collection, reporting, and analysis of DOE's sustainability data, including energy, water, petroleum, and resource use. Additionally, the Director of Asset Management serves as the Senior Real Property Officer, and the Head of the Contracting Activity for Real Estate.
- Aviation Management – Provide oversight for all DOE-owned aircraft, manned and unmanned, and contract aviation services world-wide by developing and implementing policies and procedures; provide technical and management assistance to program leaders and field elements with aviation responsibilities; and conduct oversight over all DOE elements that own or use aviation as a part of their mission.
- Directives Program – Manage the Department's Directive System, the primary system for establishing, promulgating, and maintaining long-term, crosscutting, departmental policies and procedures, thus, facilitate the achievement of DOE's strategic and operational goals, while ensuring safe, secure, efficient, cost-effective operations and compliance with applicable legal requirements. Support the Department's Secretarial Delegations of Authority system.
- Executive Secretariat – Facilitate quality document management of executive correspondence, departmental actions and decisions; ensure timely delivery of Congressional reporting requirements, executive commitments and information; serve as the Department's Advisory Committee Management Officer and manage the Department's Advisory Committee Management Program.

- Ombudsman – Provide independent, confidential, and informal option for all DOE federal employees to address any workplace issues and help the Department's senior leaders, managers, and supervisors minimize unwarranted distractions; increase employee engagement; and expeditiously address individual and organization matters.
- Secretary of Energy Advisory Board (SEAB) – Administer and coordinate the activities of the Board and its subcommittees for the Secretary to obtain timely, balanced, and independent external advice on issues of national importance related to the missions of the Department.
- Scheduling and Advance – Manage scheduling, logistical, and advance preparations for the Office of the Secretary.

**Highlights of the FY 2024 Budget Request**

The FY 2024 Budget Request of $103,245,000 is a $37,245,000 increase above the FY 2023 Enacted Budget and supports up to 208 full time equivalent employees. The additional funding provides essential support for MA's mission success. Highlights of specific activities, services, and initiatives are as follows:

- $45,088,000 (+$10,237,000) for payroll costs in support of up to 208 FTEs for the execution of MA's mission. Additional funding supports a pay raise adjustment, two positions for the Office of the Ombudsman, and critical mission focused acquisitions/procurement positions.
- $26,200,000 (+$24,200,000) for purchase of Zero Emission Vehicles (ZEVs) within agency-owned vehicles fleets or as part of a transition from GSA-leased gas-powered vehicles to GSA-leased ZEVs. This funding also includes related charging infrastructure and program management costs associated with executing this funding to further the President's goal of electrifying the Federal motor vehicle fleet. The funding is estimated to support 438 ZEVs purchases/leases, and 649 charging stations. $13,125,000 for Working Capital Fund (WCF) estimated expenses that support program operations, staff operations, staff benefits, and provide agency mission support.
- $4,670,000 (+$212,000) for Energy Information Technology Services (EITS) expenses to cover day-to-day operational requirements for laptops, software, support services, and other essential IT equipment/services. It also provides funding to cover equipment in support of the increased telework due to the increased hybrid work environment.
- $4,826,000 (+$741,000) for mission-focused contractual support services used for systems, services, staff, activities, and initiatives. The increase covers contractual support services for Records Management adherence to policies, eDocs module for the Office of Scheduling and Advance for increased efficiency, and escalation costs for contracts which support the Department's Directives Program System, MA's Cybersecurity initiative, Conference Management policy compliance, and travel policy support, as well as other MA activities, systems, initiatives, and services.
- $2,851,000 (+$83,000) for the Freedom of Information Act (FOIA) contractual support services in support of day-to-day operational support of processing costs for inquiries. Additional funding supports anticipated escalation costs.
- $2,207,000 (+$1,011,000) for the Strategic Integrated Procurement Enterprise System (STRIPES) Development, Modernization, and Enhancements (DME) Plan to increase efficiencies using Robotic Process Automation (RPA) and Artificial Intelligence (AI) for the DOE Acquisition and Financial Community.
- $2,270,000 (+$1,379,000) for Sustainability and Asset Management in support of the Sustainability Performance Dashboard to achieve and maintain sustainability goals in accordance with statutory and executive order requirements through data collection, analysis, reporting, and outreach. This funding also helps improve the capabilities and functions of the Dashboard, which will continue to reduce the reporting burden, enhance data quality, and allow programs to leverage the information for strategic operational decisions.

**Office of Management**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs. FY 2023 Enacted ($) | FY 2024 Request vs. FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| Salaries and Benefits | 34,126 | 34,851 | 45,088 | +10,237 | +29% |
| Travel | 567 | 867 | 867 | 0 | 0% |
| Support Services | 7,441 | 8,211 | 11,379 | +3,168 | +39% |
| Other Related Expenses | 17,267 | 20,071 | 19,711 | -360 | -2% |
| Electric Vehicles | 2,000 | 2,000 | 26,200 | +24,200 | +1210% |
| **Total, Program Direction** | **61,400** | **66,000** | **103,245** | **+37,245** | **+56%** |
| **Federal FTEs—MA** | **206** | **206** | **208** | **+2** | **+1%** |
| **Federal FTEs—WCF** | **38** | **38** | **38** | **0** | **0%** |
| **Federal FTEs—BIL/IIJA** | **12** | **12** | **12** | **12** | **0%** |
| **Support Services** | | | | | |
| Management Support | 4,909 | 5,655 | 8,128 | +2,473 | 44% |
| Other Support Services | 2,532 | 2,556 | 3,251 | +695 | 27% |
| **Total, Support Services** | **7,441** | **8,211** | **11,379** | **+3,168** | **39%** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Training | 151 | 151 | 151 | 0 | 0% |
| Energy IT Services (EITS) | 4,188 | 4,458 | 4,670 | +212 | 5% |
| Working Capital Fund (WCF) | 11,224 | 13,743 | 13,125 | -618 | -4% |
| Other Services | 1,7044 | 1,719 | 1,765 | +46 | 3% |
| **Total, Other Related Expenses** | **17,267** | **20,071** | **19,711** | **-360** | **-2%** |

**Explanation of Changes Table**
**Office of Management - Funding ($K)**

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $66,000** | **$103,245** | **+$37,245** |
| **Salaries and Benefits $34,851** | **$45,088** | **+$10,237** |
| Funding in support of up to 206 FTEs. Funding provides for salaries/benefits, overtime, lump sum leave, awards allocations, and performance awards. | Continued funding supports salaries/benefits, overtime, lump sum leave, awards allocations, and performance awards for up to 208 FTEs. Additional funding to cover a pay raise adjustment, two FTEs for the Office of the Ombudsman, and -additional funding to hire for critical positions up to the approved FTE level. | +$10,237 for pay raise adjustment/cost of living adjustment, two positions for the Office of the Ombudsman to increase support to the DOE workforce and create a pipeline for future growth and succession planning, and additional funding to support mission critical positions in the areas of acquisition/procurement and sustainability. |
| **Travel $867** | **$867** | **$0** |
| Funding in support of MA/SEAB staff travel; all travel associated with scheduling and logistics for Secretarial trips, travel associated with program oversight and evaluation, and procurement management activities. Includes the rental of vehicles from the General Services Administration motor pool and the DOE fleet. | Funding in support of MA/SEAB staff travel; all travel associated with scheduling and logistics for Secretarial trips, travel associated with program oversight and evaluation, and procurement management activities. Includes the rental of vehicles from the General Services Administration motor pool and the DOE fleet. | No change |
| **Support Services $8,211** | **$11,379** | **+$3,168** |
| Funding supports MA activities including Acquisition Career Management Program (ACMP) Cross Agency Priority Goals/Council Payment, Sustainability Performance Division (SPD) contractual requirements, FOIA processing costs, Directives Program Support, and other contractual requirements. | Funding supports continuation of MA activities including ACMP, Cross Agency Priority Goals/Council Payment, SPD contractual requirements, FOIA processing costs, Directives Program System, and other contractual requirements. Additional funding supports FOIA escalation costs, Sustainability Performance Dashboard support services, STRIPES DME initiatives, Records Management support, eDocs module for Scheduling and Advance and other contractual support services cost escalations. | +$83 for FOIA cases processing costs.<br>+$1,379 for the Sustainability Performance Dashboard maintenance.<br>+$1,011 for STRIPES DME to increase efficiencies.<br>+$618 for Records Management and Scheduling and Advance module.<br>+$77 for contractual support services cost escalations. |
| **Other Related Expenses $20,071** | **$19,711** | **-$360** |

| FY 2023<br>Enacted | FY 2024<br>Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| Other related expenses funding to cover EITS, WCF, training and other services necessary for organizational mission support. | Other related expenses funding supports continuation of EITS, WCF, training and other services necessary for organizational mission support. Additional funding covers operational EITS expenses and escalation costs for contractual services. | +$212 for EITS costs to cover laptops, software, support services, and other essential equipment/services.<br>-$618 for WCF estimated costs decrease.<br>+$46 for contractual support services cost escalations. |
| **Electric Vehicles $2,000** | **$26,200** | **+$24,200** |
| Funding for electric vehicles purchases and leases to further the President's goal of electrifying the Federal motor vehicle fleet. | Funding for electric vehicles purchases and leases to further the President's goal of electrifying the Federal motor vehicle fleet. | +$24,200 for electric vehicles purchases, leases, and charging equipment. |

**Office of Project Management**
**Program Direction**

**Overview**

The Office of Project Management (PM) provides the Department of Energy (DOE) leadership and assistance in developing and implementing DOE-wide policies, procedures, programs, and management systems pertaining to project management. The Director, Office of Project Management (PM-1) serves as the Deputy Secretary's senior advisor for project management. PM-1 is directly accountable to and supports the Deputy Secretary as the Executive Secretariat of the Department's Energy Systems Acquisition Advisory Board (ESAAB) and the Project Management Risk Committee (PMRC). The Deputy Secretary chairs the ESAAB. PM conducts statutorily required independent cost estimates and conducts external independent reviews to validate performance baselines as required by DOE Order 413.3B for capital asset projects with a Total Project Cost (TPC) of $100,000,000 or greater. PM manages the Department's Project Management Career Development Program (PMCDP) for DOE's Federal Project Directors.

In FY 2024, PM will accomplish its mission through its program office functions:

- **Energy Systems Acquisition Advisory Board (ESAAB).** The PM Director serves as Executive Secretariat (and member) of the ESAAB and the PMRC for the Deputy Secretary. The Board reviews all capital asset projects with a Total Project Cost (TPC) of $100,000,000 or greater. The Board focuses on projects at risk of not meeting their performance baselines and on making critical decisions for capital asset projects with a TPC of $750,000,000 or greater. The ESAAB is a standing board that meets at least once quarterly and is supported by the PMRC, which meets at least monthly. Additional ESAAB and PMRC meetings are scheduled as necessary to support departmental objectives and Program Office and project team schedules.
- **Project Management Policy and Systems (PMPS).** PM provides DOE-wide policy, guidance, and oversight for project management. PM provides senior leaders with monthly project status reports with independent assessments of all capital asset projects with a TPC greater than $50,000,000 with a goal of driving improvements in project management and project delivery outcomes. PM maintains the Project Assessment and Reporting System (PARS), the Department's independent central repository for project performance data, project management metrics, and key project documentation. Additionally, PARS provides data analytic tools for project performance assessments and performance forecasting to support and inform project team and Program Office decision-making across the department.
- **Independent Cost Reviews/Estimates.** PM conducts independent cost reviews (ICRs) or prepares statutorily required independent cost estimates (ICEs) at critical decisions including re-baselining, as required by DOE Order 413.3B for capital asset projects with a TPC of $100,000,000 or greater. All costs associated with the conduct of ICRs/ICEs, to include PM federal staff travel, is funded by the appropriate Program Office/Project.
- **Project Oversight.** PM conducts external independent reviews (EIRs) to validate the project performance baselines (scope, cost, and schedule) of all capital asset projects with a TPC of $100,000,000 or greater. Additionally, PM ensures projects are ready to be brought forward to the appropriate Project Management Executive (PME) for authorization to proceed prior to each critical decision.
- **Project Assessments.** PM conducts annual independent project peer reviews (PPRs) of all active energy programs capital asset projects with a TPC of $100,000,000 or greater under the purview of the Office of the Under Secretary of Science and Innovation, the Office of Petroleum Reserves, under the purview of the Under Secretary for Infrastructure, and all Office of Environmental Management projects with a TPC of $400,000,000 or greater and those projects that have experienced post CD-3 challenges. All costs associated with conducting PPRs, to include PM federal staff travel, is funded by the appropriate Program Office.
- **Earned Value Management System (EVMS) Certification.** PM conducts initial certification and periodic surveillance reviews to ensure contractors' EVMS, for capital asset projects, comply with industry standards. All costs associated with the conduct of Reviews for Cause (RFC) and recertification of a

contractor's system that had its certification withdrawn, to include PM federal staff travel, are funded by the Program Office/Project requiring the RFC or recertification reviews.

- **Project Management Support Office.** PM serves as the Project Management Support Office (PMSO) for all energy programs under the purview of the Office of the Under Secretary of Science and Innovation and the Office of Petroleum Reserves, under the purview of the Under Secretary for Infrastructure. In collaboration with the Program Offices, PM performs all PMSO functions in accordance with DOE Order 413.3B, as appropriate.
- **Professional Development.** PM manages the Department's Project Management Career Development Program (PMCDP) to include the professional development, training, and certification of Federal Project Directors (FPDs). The PM Director serves as co-chair and Executive Secretariat for the FPD Certification Review Board (CRB).

**Highlights of the FY 2024 Budget Request**

In FY 2024, the Department requests $14,953,000. The Director, Office of Project Management (PM-1) is the Deputy Secretary's senior advisor for project management. The Office of Project Management (PM) is accountable to and serves the Deputy Secretary as the Executive Secretariat for the Department's Energy Systems Acquisition Advisory Board (ESAAB) and the Project Management Risk Committee (PMRC). PM executes critical Department-wide functions to include preparing statutorily required independent cost estimates; performing external independent reviews to validate performance baselines; conducting earned value management system certification and surveillance reviews; providing project management policy, guidance, and oversight of all capital asset projects; and manages the Project Management Career Development Program (PMCDP).

**Program Direction**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted | FY 2024 Request vs. FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Program Direction** | | | | | |
| Salaries and Benefits | 6,044 | 6,554 | 6,895 | +341 | 5.2% |
| Travel | 274 | 274 | 325 | +51 | 19% |
| Support Services | 5,466 | 5,087 | 6,098 | +1,011 | 20% |
| Other Related Expenses | 1,541 | 1,635 | 1,635 | 0 | 0% |
| **Total, Program Direction** | **13,325** | **13,550** | **14,953** | **+1,403** | **10.4%** |
| **Federal FTEs** | **31** | **31** | **31** | **0** | **0%** |
| **Support Services** | | | | | |
| External Independent Reviews (EIRs) | 2,062 | 1,683 | 1,798 | +115 | 7% |
| Project Peer Reviews (PPRs) | | | 896 | +896 | 100% |
| Earned Value Management System (EVMS) Certification | 1,247 | 1,247 | 1,247 | 0 | 0% |
| Project Assessment and Reporting System (PARS) | 2,000 | 2,000 | 2,000 | 0 | 0% |
| Other Support Services | 157 | 157 | 157 | 0 | 0% |
| **Total, Support Services** | **5,466** | **5,087** | **6,098** | +1,011 | 20% |
| **Other Related Expenses** | | | | | |
| Training | 20 | 20 | 20 | 0 | 0% |
| Energy IT Services | 480 | 533 | 533 | 0 | 0% |
| Working Capital Fund (WCF) | 1,041 | 1,082 | 1,082 | 0 | 0% |
| **Total, Other Related Expenses** | **1,541** | **1,635** | **1,635** | **0** | **0%** |

## Program Direction

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $13,550,000** | **$14,953,000** | **+$1,403,000** |
| **Salaries and Benefits $6,554,000** | **$6,895,000** | **+$341,000** |
| Funding in support of 30 FTEs. | Continuation of FY2023 activities. | The increase assumes 5.2% pay increase in civilian salaries, FERS increase, and supplemental funds for performance award pool increase in FY 2024. |
| **Travel $274,000** | **$325,000** | **$51** |
| Funding in support of PM staff travel. Travel is necessary to support review activities (excluding Baseline Change Proposals (BCPs), Reviews for Cause (RFC), and Earned Value Management System (EVMS) recertification reviews) of program/project activities in the field. | Continuation of FY2023 activities. | Increase in PPRs scheduled |
| **Support Services $5,087,000** | **$6,098,000** | **$1,011,000** |
| Funding in support of contractual requirements, including External Independent Reviews (EIRs), Project Peer Reviews (PPRs), Earned Value Management System (EVMS) certification and surveillance reviews, Project Assessment and Reporting System (PARS). | Funding supports the continuation of FY2023 activities and establishment of PM-3 for PPRs target. | Increase in EIRs and PPRs scheduled resulting from new Secretary directed mission for PM to serve as Project Management Support Office (PMSO). (Previously funded with Energy Programs' program funds.) |
| **Other Related Expenses $1,635,000** | **$1,635,000** | **+$0** |
| Other related expenses to cover Energy IT Services (EITS), Working Capital Fund (WCF) and other services. | Continuation of FY2023 activities. | No Change. |

**Chief Human Capital Officer**
**Program Direction**

**Overview**

The Office of the Chief Human Capital Officer (HC) supports the Department of Energy's (DOE) mission through workforce services and solutions. In support of the Department, HC strives to provide the most efficient and effective human resources (HR) services and human capital programs and meet its fundamental deliverable to customers—enhancing the Department's ability to fill vacant positions in a timely manner with quality hires. This is accomplished through collaborative and responsive partnerships, proactive problem identification and resolution, and innovative and sound human capital management services. HC advises and assists the Secretary and Deputy Secretary of Energy (and other agency officials) in recruiting, staffing, developing, training, and managing a highly skilled, productive, and diverse workforce, in accordance with merit system principles and all applicable statutory requirements.

**Highlights of the FY 2024 Budget Request**

The Department requests $40,144,000 in FY 2024 for HC to support current operational levels and increase federal personnel to continue closing the gap between enacted and current departmental staffing levels. This increase is also needed to support the increases in DOE's workforce population over the employee lifecycle, and to maintain our vital customer service mission. This request will provide sufficient resources to support ongoing initiatives related to developing more agile, cost-effective operations and a long-term vision for modernizing hiring practices and improving the ability of the DOE workforce to deliver mission outcomes. This includes rebuilding capacity across DOE and reducing time-to-hire. Additionally, it will enable HC to enhance its operational capacity to carry out personnel actions and conduct strategic workforce planning and development of effective talent management strategies related to proposed Departmental programmatic changes in the FY 2024 budget. HC is strategically positioned to provide oversight of human capital matters that pertain to DOE programmatic priorities and guide the Department's strategy to obtain, develop, and engage our workforce of the future while simultaneously increasing targeted outreach to underserved communities. This level will allow DOE to surge hiring to close existing gaps as well as those needs created by the *Infrastructure Investment and Jobs Act and the Inflation Reduction Act.*

HC Shared Service Center ($27,892,000)

The HC Shared Service Center (HCSSC) continues to support the unique missions and Federal employees (executive and non-executive) of HC's 32 HQ customers and their associated field offices through an all-inclusive shared service approach on the full range of HC services and functions. This Budget Request provides for 138 FTEs to support core HC mission functions and to continue closing the gap between enacted and current departmental staffing levels, strengthening the Department's Intern Hiring program, and supporting the increased departmental population over the employee lifecycle.

The FY 2024 Request does not include $18,000,000 for 90 FTEs directed by HC for human capital work, which are funded by other DOE Programs via Memorandum of Agreements (MOAs): Environmental Management (30 FTEs), Energy Efficiency and Renewable Energy (12 FTEs), Energy Information Administration (2 FTEs), Fossil Energy and Carbon Management (15 FTEs), Nuclear Energy (5 FTEs) and Science (26 FTEs).

The FY 2024 Request does not include $18,000,000 for 90 FTEs directed by HC for human capital work, which are funded by other DOE Programs via Memorandum of Agreements (MOAs): Environmental Management (30 FTEs), Energy Efficiency and Renewable Energy (12 FTEs), Energy Information Administration (2 FTEs), Fossil Energy and Carbon Management (15 FTEs), Nuclear Energy (5 FTEs) and Science (26 FTEs).

Talent Teams and Assessments ($1,443,000)

In compliance with Executive Order 13932 Modernizing and Reforming the Assessment of Federal Job Candidates, HC has begun implementing new DOE Talent Teams in FY 2023. These teams will continue to work with subject matter experts from our serviced organizations to develop and/or implement new assessment tools for technical competencies as well as automated solutions to analyze and streamline the hiring process while more effectively assessing job applicants based on

demonstrated job-related competencies. Additionally, these teams will continue to work with our Office of Recruitment and Advisory services to increase our targeted outreach to underserved communities. This Budget Request provides $1,213,000 to support 6 FTEs to staff these teams.

In early FY 2023, HC implemented USA Hire, OPM's innovative and interactive assessment tool that integrates with DOE's hiring management system USA Staffing built by Industrial and Organization Psychologists and uses assessment methods that are better predictors of job performance than assessments that allow applicants to self-report on their level of expertise. Additionally in FY 2023, HC implemented a pilot program for OPM's Federal Supervisor Assessment (FSA), a powerful online tool for selecting the best applicants for supervisor positions. This Budget Request provides $230,000 for the development or procurement of assessment and outreach tools to include the continued use of USA Hire as well as the implementation of FSA across a wider group of DOE customers.

HR Information Technology Enhancements ($2,345,000)

The Department requests continued funding for the following IT enhancements. These investments will enable the Department to leverage data as a strategic asset for workforce management. HC will continue to explore DOE integrated IT solutions that reduce labor intensive data integration from multiple systems, improve data analytics, and automate recurring Human Capital processes.

*HR Information Technology Platform ($1,845,000)*

This request includes $1,356,000 to support the first phase/implementation of needed HRIT integrated corporate systems to upgrade the Learning Management System, Performance Management, HR Action Tracking & Reporting and Payroll systems. These systems are cumbersome and expensive to upgrade due to the degree of customization required and the lack of incremental upgrades over the years and/or the lack of continued industry support for the underlying architecture. All these efforts will enable HC to produce quantitative and qualitative analyses that help drive human capital business decisions and reduce labor intensive, ineffective, and costly methods for triangulating workforce information.

The remaining funds will be used towards the completion of the Corporate Human Resources Information System (CHRIS) migration to the upgraded PeopleSoft v9.2. This migration will allow the implementation of security patches that are vital in ensuring highly sensitive employee data is protected to the greatest extent. While this is a significant milestone it is only a stopgap solution for the greater overall need to update DOE's antiquated HRIT Framework, with many core systems including CHRIS, having been developed over 25 years ago.

*HR Dashboard ($500,000)*
In FY 2023 HC initiated the design and implementation of a Human Capital Management (HCM) dashboard initiative to support integration, enhanced recruit management dashboard capabilities, and real-time data access to assist DOE senior leaders and front-line managers' decision making aligned with a workforce of the 21st century. This request provides $500,000 for HC to work in conjunction with CFO and OCIO on continued expansion of this initiative, which will provide valuable context for data-driven management decisions. Additionally, HC seeks to expand the use of Dashboards to better collect and analyze Organizational Health data as well as data from the Federal Employee Viewpoint Survey (FEVS) to better understand the changing needs of the DOE workforce and plan strategies to better care for and engage employees.

**Program Direction**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 20,079 | 26,365 | 29,605 | +3,240 | +12% |
| Travel | 150 | 150 | 150 | - | 0% |
| Support Services | 709 | 1,100 | 1,160 | +60 | +5% |
| Other Related Expenses | 7,262 | 7,685 | 9,229 | +1,544 | +20% |
| **Total, Program Direction** | **28,200** | **35,300** | **40,144** | **+4,844** | **+14%** |
| **Federal FTEs*** | **120** | **134** | **144** | **+10** | **+7%** |
| **WCF Funded** | **14** | **14** | **14** | **-** | **0%** |
| **HC Shared Service Center (HCSSC) FTEs**** | **89** | **90** | **90** | **-** | **0%** |
| **IIJA Funded FTEs (18 HC + 3 EHSS)** | **21** | **21** | **21** | **-** | **0%** |
| | | | | | |
| **Support Services** | | | | | |
| Management Support | | | | | |
| Training and Education | 100 | 100 | 100 | - | 0% |
| Other Support | 609 | 1,000 | 1,060 | +60 | +6% |
| **Total, Support Services** | **709** | **1,100** | **1,160** | **+60** | **+5%** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Other Services | 2,344 | 2,074 | 3,430 | +1,356 | +65% |
| Energy IT Services | 865 | 973 | 1,022 | +49 | +5% |
| Working Capital Fund | 4,053 | 4,638 | 4,777 | +139 | +3% |
| **Total, Other Related Expenses** | **7,262** | **7,685** | **9,229** | **+1,544** | **+20%** |

*HC's FTE level of 144 includes funding for 23 FTEs supporting the HCSSC.
**HCSSC Operations and FTEs are funded separately through Memoranda of Agreements from six programs outside of HC (Energy Efficiency and Renewable Energy, Environmental Management, Energy Information Administration, Fossil Energy and Carbon Management, Nuclear Energy, and Science)

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $35,300,000** | **$40,144,000** | **+$4,804,000** |
| **Salaries and Benefits $26,365,000** | **$29,605,000** | **+$3,240,000** |
| Provides for a total of 134 full time equivalents (FTE). Fully supports approved staffing plan, additional FTE to accelerate hiring and outreach efforts and to establish Talent Teams, as well as workers' compensation payments. FTEs support core HC mission functions of policy development, oversight, and automation; learning and development; HR operations and services (including executive resources, staffing/classification, benefits, and labor management relations); strategic alignment and measurement of human capital management; and internal business management. | Supports increase to 144 FTE level, which supports core HC mission functions by fully funding the approved staffing plan to include Talent Teams, workers' compensation payments, and additional FTE to support the increased departmental population over the employee lifecycle. | Includes 10 additional FTE, 5.2% increase in civilian salaries, FERS increase, and supplemental funds for performance awards in FY 2024. |
| **Travel $150,000** | **$150,000** | **$0** |
| HC staff travel includes program oversight, program evaluation, recruitment, and permanent change of station moves. Primary travel need is associated with OPM-mandated accountability audits critical to maintaining agency-delegated HR authority. | Continuation of required HC staff travel activities and DC HQ visits of remote staff. HC uses WebEx and Teams for internal meetings and partners with other internal organizations and web and video conference as feasible. | |
| **Support Services $1,100,000** | **$1,160,000** | **+$60,000** |
| Includes funding for: HC staff training; HC core contractors and services for the HC Shared Service Center (HCSSC); implementation of new contractor support vehicle to perform surge staffing actions and increase hiring capacity to quickly close the Department's hiring gaps; HC share of DOE Consolidated HR Service Support (retirement calculator, Employee Assistance Program - Worklife); other HC Licenses & subscriptions; and other HR tools (Partnership for Public Service, CHCO Council, survey tool, CyberFeds, Federal Executive Board). | Continuation of HC core contract and consolidated HR service support; HC subscriptions and licenses; and augmentation of support services for HR surge work from contractor support due to variability of staffing within the department (separation, retirements, onboards). | Supports contract escalation increases. |

| Other Related Expenses $7,685,000 | $9,229,000 | +$1,544,000 |
|---|---|---|
| Other Related Expenses (ORE) provides for Working Capital Fund (WCF) and Energy IT Services (EITS). Includes funding for HC-internal office administration needs such as software and hardware, small automation system support, and rent for HR HC Shared Service Center (HCSSC) facility in Oak Ridge. Also includes funds for modernizing HR IT systems/tools, data analytic tools, workforce forecasting models, centralized DOE Corporate Recruitment initiatives, HR IT platform improvements, and customized tools to improve/automate manual HR processes (e.g., licenses for SharePoint, Business Intelligence, Lever, and Dashboard contractor support). | Continuation of WCF and EITS services, as well as HC Headquarters Security Investigations, and HR IT modernization efforts | Increase supports inflationary escalation of WCF and EITS costs as well as increases due to additional 10 FTEs, and the first phase/implementation of needed HR IT integrated corporate systems to upgrade the LMS, Performance Management, HR Action Tracking & Reporting and Payroll systems. |

## Office of Small and Disadvantaged Business Utilization
## Program Direction

**Overview**

The Office of Small and Disadvantaged Business Utilization (OSDBU) was established by the Small Business Act (SBA) of 1953, as amended by Public Law 95-507. The OSDBU is responsible for advocating the use of small businesses, including Small Disadvantaged Businesses (SDB), certified 8(a) businesses, small businesses from Historically Underutilized Business Zones (HUBZone), Service-Disabled Veteran-Owned Small Businesses (SDVOSB), and Women-Owned Small Businesses (WOSB). This involves promoting small business prime and subcontracting opportunities in accordance with Federal laws, regulations, and policies and reporting to Congress on DOE utilization of small businesses.

The goals of the OSDBU are to institutionalize the use of small businesses and to fully integrate them into the U.S. Department of Energy's (DOE) competitive base of contractors and to help the Department meet its statutory goals for small business utilization. To accomplish this goal, the OSDBU established and executes its mission through three strategic objectives: 1) make it easier for small businesses to do business with DOE; 2) maximize small business opportunities by cultivating more productive and collaborative relationships with internal DOE Stakeholders; and 3) maximize small business awards and improving performance in the four SBA socioeconomic categories.

The OSDBU is organizationally structured to accomplish this through four enabling activities:

1) Availing the technical advice and expertise of the OSDBU staff and the cadre of Departmental Small Business Program Managers (matrixed to OSDBU) to both DOE programs officials and small businesses;

2) Promulgating educational resources such as the DOE Acquisition Forecast, trainings and informational exchanges;

3) Adhering to OSDBU compliance requirements such as the 15 U.S. Code § 644(k), also known as the SBA Act, establishing a cadre of Small Business Technical Advisors within the agency to support the implementation of small business procurements, Form-4220 Reporting, Category Management considerations, threshold reviews; and

4) Planning and execution of outreach activities such as networking and matchmaking at DOE's Annual Small Business Forum and Expo, and targeted outreach events focused on socioeconomic categories. Administering and providing information and counseling concerning DOE's Mentor-Protégé Program, as well as customer support to small businesses.

The OSDBU serves as a liaison between the small business community and the DOE procurement offices.

**Program Direction**
**Appropriation Level and Program Level**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs. FY 2023 Enacted ($) | FY 2024 Request vs. FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salary & Benefits | $2,554 | $3,100 | $3,215 | $115 | 4% |
| Travel | $80 | $80 | $100 | $20 | 25% |
| Support Services | $378 | $405 | $1,432 | $1027 | 254% |
| Other Related Expenses | $788 | $615 | $725 | $110 | 18% |
| **Total, Program Direction** | **$3,800** | **$4,200** | **$5,472** | **$1,272** | **30%** |
| **Federal FTEs** | **12** | **16** | **17** | **+1** | **6%** |
| **Other Related Expenses** | | | | | |
| EITS | $188 | $95 | $95 | $0 | 0% |
| Working Capital Fund | $585 | $500 | $600 | $100 | 20% |
| Training | $15 | $20 | $30 | $10 | 50% |
| **Total, Other Related Expenses** | **$788** | **$615** | **$725** | **$110** | **18%** |

**Program Direction**
**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs. FY 2023 Enacted |
|---|---|---|
| **Program Direction 4,200,000** | **$5,472,000** | **$1,272,000** |
| **Salaries and Benefits $3,100,000** | **$3,215,000** | **$115,000** |
| Provides funding for 16 FTEs. | Provides full funding for 17 FTEs. | Allows OSDBU to be fully staffed to the Approved Staffing Plan. An additional FTE would allow OSDBU to meet the need to standardize its operational infrastructure through the development of more comprehensive policies, detailed procedures, and surveillance programs to more proactively and effectively execute its SB advocacy and compliance activities to ensure all requisite SB laws and regulations are being adhered to across the complex and within the operations of DOE M&O and major facility contractors. |
| **Travel $80,000** | **$100,000** | **$20** |
| Funding for participation in outreach events, training, and counseling, as well as one-on-one meeting with small businesses. | Funding for participation in outreach events, training, and counseling, as well as one-on-one meetings with small businesses. | Increase allows travel for staff to host annual Expo and Regional Expo's for the Director and staff to conduct outreach activities to Small and Disadvantage Businesses. |
| **Support Services $405,000** | **$1,432,000** | **$1,027,000** |
| Funding for contractor support for management support services and subscription services. | Funding for contractor support for management support services and data analysis, Supports both Annual and Regional Public Outreach events, Website and dashboard development/improvements, and subscription services. | Increase allows extra contractor support for data analysis. Supports the Regional Public Outreach events, and Website and dashboard development/improvements. |
| **Other Related Expenses $615,000** | **$725,000** | **$110,000** |
| Funding for Working Capital Fund, IT services, and staff training and development, and other services. | Funding for Working Capital Fund, IT services, staff training and development, as well as other services. | Increased funding for Working Capital Fund, and training investment for current staff. |

## General Counsel

### Overview

The Office of the General Counsel (GC) is responsible for providing legal services to all Department of Energy offices, and for determining the Department's authoritative position on any question of law with respect to all Department offices and programs, except for those belonging exclusively to the Federal Energy Regulatory Commission. GC's responsibilities include the provision of legal opinions, advice, and services to administrative and program offices, and participation in or management of both administrative and judicial litigation. GC is responsible for the coordination and clearance of proposed legislation affecting energy policy and Department activities. The General Counsel serves as the Department's Regulatory Policy Officer under Executive Order 12866 and is responsible for ensuring consistency and legal sufficiency of the Department's regulations. GC administers and monitors standards of conduct requirements, conducts patent program and intellectual property activities, and coordinates rulemaking actions of the Department with other federal agencies.

As requested by DOE Programs that manage their own National Environmental Policy Act (NEPA) policy and compliance reviews, GC environmental attorneys also provide legal advice and counsel regarding NEPA on an ad hoc basis.

### Highlights of the FY 2024 Budget Request

The Office of the General Counsel's Request supports 143 FTEs, an increase of 9 FTEs from FY 2023 Enacted. The FY 2024 Request does not include 61 FTE currently being funded by other DOE Programs via Memorandum of Agreements (MOAs): 1) 28 FTEs funded by NE to manage the Nuclear Waste Fund, administer the Standard Contract, and provide legal services for nuclear waste disposal activities, including interim storage; 2) 16 FTEs funded by EERE to provide legal counsel and review of all EERE rulemakings and guidance documents, statutory interpretation of EERE authorities, and legislative review of all EERE-related legislation; 3) 10 FTEs funded by OCED to lead efforts to deliver clean energy technology demonstration projects at scale in partnership with the private sector; 4) 2 FTEs funded by EM to support complex procurements, defend bid protests, and address environmental law issues, including Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERLA) clean-up; 5) 1 FTE funded by MESC to support comprehensive legal advice and assistance to MESC programmatic activities pertaining to manufacturing and energy supply chains program 6) 1 FTE funded by FECM to provide legal advice and assistance for programmatic activities related to carbon management programs; 7) 1 FTE funded by GDO to provide legal services and non-legal support pertaining to GDO's portfolio; 8) 1 FTE funded by FEMP to provide legal advice to allow FEMP to guide Federal agencies in meeting the statutory and Executive Branch energy and water goals for the Federal government; 9) 1 FTE funded by LM to provide legal advice and assistance to LM programmatic activities to include fiscal law matters, general administrative and operational matters, government ethics and intellectual property; 10) 1 FTE funded by SCEP to provide legal advice pertaining to SCEP's programmatic activities including but not limited to weatherization assistance, state energy program, community energy program, community engagement and partnerships;

The Office of General Counsel's FY2024 Request will support increased staffing levels to ensure the quality, availability and expertise of legal support required to confidently meet the Administration's new and expanded priorities. Additionally, FY 2024 Request satisfies continuing program mission needs and ongoing overhead costs such as rental space, telecommunications, IT equipment and support, patent application fees, legal material and annual maintenance of the Intellectual Property System (IP) implemented in FY 2021, and annual subscription costs for the Electronic Financial Disclosure System (e-450).

**General Counsel**
**Program Direction**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 26,389 | 30,315 | 34,425 | +4,110 | +14% |
| Travel and Training | 150 | 100 | 150 | +50 | +50% |
| Support Services | 1,751 | 1,374 | 1,374 | 0 | 0% |
| Other Related Expenses | 9,710 | 9,436 | 9,681 | +245 | +3% |
| NEPA (Supplemental) | | 500 | | | |
| **Total, Program Direction** | **38,000** | **41,725** | **45,630** | **+3,905** | **+9%** |
| FTEs Paid by GC DA Funds | 117 | 134 | 143 | +9 | +7% |
| FTEs Paid through MOAs | 61 | 61 | 61 | 0 | 0% |
| FTEs Paid through BIL | | 5 | 5 | 0 | 0% |
| **Total GC FTE's** | **178** | **200** | **209** | **+9** | **+5%** |
| **Support Services** | | | | | |
| Administrative Support | 825 | 430 | 430 | 0 | |
| Technical Support | 525 | 544 | 544 | 0 | - |
| Intellectual Property System | 150 | 150 | 150 | 0 | - |
| Financial Disclosure System | 251 | 250 | 250 | 0 | - |
| **Total, Support Services** | **1,751** | **1,374** | **1,374** | **0** | **-** |
| **Other Related Expenses** | | | | | |
| Energy IT Services | 1,500 | 1,325 | 1,530 | +205 | +15% |
| Working Capital Fund | 6,801 | 6,801 | 6,801 | 0 | 0% |
| Other Services | 1,409 | 1,310 | 1,350 | +40 | +3% |
| **Total, Other Related Expenses** | **9,710** | **9,436** | **9,681** | **+245** | **+3%** |

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY2024 Guidance Level vs FY 2023 Request |
|---|---|---|
| **Program Direction $41,725,000** | **$45,630,000** | **+$3,905,000** |
| **Salaries and Benefits $30,315,000**<br>Provides funding support for 134 FTE to include salaries, benefits, overtime, etc. | **$34,425,000**<br>Provides funding support for 143 FTE to include salaries, benefits, overtime, etc. | **+$4,110,000**<br>Reflects increase of 9 FTEs; 5.2% federal salaries pay increase; and FERS increase. |
| **Other Related Expenses $9,436,000** | **$9,681,000** | **$245,000** |
| Energy IT Services $1,325,000<br>Provides GC IT service including workstations and on-site support, FISMA reviews and reporting, etc. | $1,530,000<br>Provides GC IT service including workstations and on-site support, FISMA reviews and reporting, etc. | **+$205,000**<br>Anticipated increase due to increase in FTE, higher usage, increase in equipment purchases, etc. |
| Working Capital Fund $6,801,000<br>Provides for rent, telecommunications, I-Manage, supplies, copiers, printing, etc. | $6,801,000<br>Provides for rent, telecommunications, I-Manage, supplies, copiers, printing, etc. | **$0**<br>No change in service |
| Other Services $1,310,000<br>Provides for Online Legal subscription, Law Library Materials, US Patent Office charges for DOE patents, E-Gov, office furniture, etc. | $1,350,000<br>Provides for Online Legal subscription, Law Library Materials, US Patent Office charges for DOE patents, E-Gove, office furniture, etc. | **+$40,000**<br>Anticipated increase in legal subscription costs due to increased FTE. |
| **Support Services $1,374,000**<br>Provides for Administrative & Technical support and includes IP & Financial Disclosure Systems | **$1,374,000**<br>Provides for Administrative & Technical support and includes IP & Financial Disclosure Systems | **$0**<br>No change in service |
| **Travel & Training $100,000**<br>Provides for travel to attend court proceedings, site visits, conferences, and training | **$150,000**<br>Provides for travel to attend court proceedings, site visits, conferences, and training. | **+$50,000**<br>Anticipated increase in training and travel due to increased FTE, required training, and possible travel required with legal cases |

**Office of Policy**
**Program Direction**

**Overview**

The Office of Policy (OP) serves as the principal advisor to the Secretary, Deputy Secretary, and Undersecretaries on domestic energy policy and related integration of energy systems. Additionally, the Office of Policy provides analysis and input to Congress, the White House, other agencies, and offices throughout DOE on design and implementation of domestic energy policy. Areas of focus for the Office of Policy reflect the most pressing issues of the day: energy prices; American economic competitiveness and the energy supply chain; climate change and clean energy policy; energy jobs; community access to safe, clean, affordable energy; and scientific innovation. The Office of Energy Jobs is part of the Office of Policy. Funding for the Arctic Energy Office (AEO) comes from the Office of Policy.

The Office serves as a focal point for policy coordination within the Department on the analysis, formulation, development, and advancement of Secretarial and Administrative priorities. OP performs analysis, provides programmatic options, and works to design initiatives that support the transition to a secure, prosperous, equitable, and zero-emissions energy economy. OP coordinates policy and strategic cross-cutting functions across DOE elements and shapes strategy and policy consistent with service to the American people and the Secretary's vision for DOE. OP performs analysis necessary to inform DOE's approach to pursue the most efficient, affordable, beneficial, and equitable pathways to achieving national goals, including through cooperation with the Office of Economic Impact and Diversity in integrating equity and justice into strategic analysis. Much of OP's work is connected to expertise or information in the various program offices across the Department, and OP works closely with other offices to harmonize activities, maximize results, and avoid duplication, including holistically informing DOE's program development and prioritization.

OP is staffed by an interdisciplinary team of experts, with the technical and communications skills to formulate policy pathways to achieve the Secretary's strategic vision within the full breadth of DOE's statutory mission. OP carries out strategic studies and policy analysis and maintains and coordinates a supporting set of analytical capabilities. This work spans:

- technology policy, including energy decarbonization pathways and impacts analysis;
- deployment and infrastructure policy, including systems analysis and energy prices;
- state, local, territorial, and tribal policy analysis, including integrated approaches and permitting,
- and energy jobs.

The request would enable OP to enhance its energy policy and analysis work as an essential function to support urgently needed technology, economic, job creation, and energy-related goals. OP will develop a new statistical/analytical capability that will provide trend analyses of key energy indicators that can be used by policymakers across the entire government to inform decisions. The dedicated cadre of FTEs and analysis capabilities funded through this initiative will consult with the Energy Information Administration and with other agencies, such as Environmental Protection Agency (EPA), Department of Transportation (DOT), and Commerce. The initiative will address measurement, trends, and data presentation, to bring further visibility to changing indicators and associated options for impact.

The Office of Energy Jobs is a significant FY 2024 priority, with goals of supporting the creation of good-paying jobs in the energy workforce, while creating pathways for energy transitioning communities. This work includes a focus on workforce development standards to ensure equitable and good job creation that pays family-sustaining wages, while engaging the larger labor community on energy issues through the DOE Labor Working Group. The Office of Energy Jobs provides guidance to program offices and Labs throughout the DOE complex on fair labor practices, including regular workforce-related consultation on the design of DOE programs and on reports. The Office leads DOE-wide coordination on energy jobs and collaborates on interagency and Congressional activities. The Office of Energy Jobs will administer the DOE Jobs Council and Energy Workforce Advisory Board and publish the annual United States Energy and Employment Report, which is a vital and high-visibility source of data for those in the energy sector. The Office of Policy provides significant support to interagency working groups on several topics, including the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization, as well as job creation analysis and union stakeholder engagement.

The Arctic Energy Office (AEO), supported out of the OP budget, brings together assets from across DOE to work together in collaborative, innovative, and cross-cutting ways to meet the energy, science, and national security needs of the United States and its allies in the Arctic. AEO serves as the front door for DOE in Alaska and the global Arctic. AEO is focused on rapid and trans-regional energy transitions in the context of climate changes – natural, political, and their economic drivers and consequences. To accomplish its mission, AEO collaborates with the Office of the Secretary, relevant DOE program and staff offices, National Laboratories, federal and state agencies, universities, non-profits, the private sector, and local and Indigenous stakeholders. FY 2024 efforts will be aligned with the needs, opportunities and priorities set forth in the National Strategy for the Arctic Region, the DOE Arctic Strategy, and the multi-year/multi-organization Arctic research agenda developed in FY 2022 and refined more recently.

**Highlights of the FY 2024 Budget Request**

The FY 2024 Budget Request of $52,037,000 is a $28,087,000 increase above the FY 2023 Enacted Budget to reflect the growing need for OP to serve its functions and add a new data tracking capability.

Funding will support OP's domestic energy policy research, analysis, design, and implementation that will help the nation meet our ambitious energy manufacturing goals; grow quality energy jobs; and ensure for the American public accessible, affordable, reliable, and increasingly clean energy for electricity, transportation, buildings, and industry. OP is home to **the Office of Energy Jobs**, which publishes the annual US Energy and Employment Report and facilitates the Energy Jobs Council and the Energy Workforce Advisory Board. OP is home to **the Arctic Energy Office**, which provides guidance and support to key energy stakeholders in the arctic region. The budget increase reflects funding for an expanded statistical/analytical capability and associated 10 FTEs that will focus on trend analyses key energy indicators, as well as partnerships to make data available across the federal government.

**Program Direction**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 7,545 | 8,748 | 9,326 | +578 | +7% |
| Travel | 200 | 250 | 350 | +100 | +40% |
| Support Services | 10,078 | 13,044 | 40,103 | +27,059 | +207% |
| Other Related Expenses | 1,631 | 1,908 | 2,258 | +350 | -18% |
| **Total, Program Direction** | **19,454** | **23,950** | **52,037** | **+28,087** | **+117%** |
| **Federal FTEs** | **17** | **43** | **53** | **+10** | **+23%** |
| | | | | | |
| **Support Services** | | | | | |
| Other Support Services | 10,078 | 13,044 | 40,103 | +27,059 | +207% |
| **Total, Support Services** | **10,078** | **13,144** | **40,103** | **+27,059** | **+207%** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Working Capital Fund | 1,136 | 1,358 | 1,358 | 0 | 0% |
| Training | 75 | 100 | 300 | +200 | +200% |
| Energy IT Services | 350 | 380 | 500 | +120 | +32% |
| Other Expenses | 70 | 70 | 100 | +30 | +43% |
| **Total, Other Related Expenses** | **1,631** | **1,908** | **2,258** | **+350** | **+18%** |

**Office of Policy**
**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023Enacted |
|---|---|---|
| **Program Direction $23,950,000** | **$52,037,000** | **+$28,087,000** |
| **Salaries and Benefits $8,748,000** | **$9,326,000** | **+$578,000** |
| Provides funding for 43 FTEs to include salaries and benefits. | Funding for salaries and benefits for the 53 FTEs to support increased workload, including additional Energy Jobs and energy analysis staff. Includes funds for Arctic Energy Office. | Funding provides for salaries/benefits, overtime, lump sum leave, awards allocations and performance awards. Increase covers 5.2% civilian pay raise; funding for additional salaries and benefits for FTEs. |
| **Travel $250,000** | **$350,000** | **+$100,000** |
| Provides funding to support travel by staff, including travel to accompany the Secretary and DOE senior leadership. | Continuation of FY 2023 activities and travel to support Arctic Energy Office in Fairbanks, Alaska and Energy Jobs work across the country. | Funding supports travel by staff, including travel to accompany the Secretary and DOE senior leadership as well as regular long-distance travel for Artic Energy Office and Office of Energy Jobs. |
| **Support Services $13,044,000** | **$40,103,000** | **+$27,059,000** |
| Provides support services needed for FY 2023 technical analysis and administrative requirements including the U.S. Energy Employment Report (USEER). | Expansion of FY 2023 activities. Additionally, supports ability to obtain research tools, annual subscriptions, other contractor support used for analysis activities. Analysis activities include data processing, systems modeling, forecasting, strategic planning, evaluation, and other approaches. | Funding supports research and modeling tools, data subscriptions, expert analysis contractor support, and development of the survey and analysis for the US Energy Employment Report. The increase reflects funding for an expanded statistical/analytical capability and associated dashboard that addresses key energy indicators. Benefits include close to real-time updates on key indicators that can better inform energy policy and investment decisions across the federal government. |
| **Other Related Expenses $1,908,000** | **$2,258,000** | **+$350,000** |
| Provides funding to support business costs associated with the Department's Working Capital Fund; IT equipment and support. | Continuation of FY 2023 activities and increased services and equipment related to IT and training tools to support the increase of 10 FTEs. | Additional services to support the increase of 10 FTEs |

## Public Affairs
## Program Direction

**Overview**

The mission of the Office of Public Affairs (PA) is to communicate information about DOE's work in a timely, accurate, and accessible way to the news media and the general public.

PA directly supports the DOE mission by developing and implementing strategies for communicating the Department's mission, policies, initiatives, and information to the news media and the general public. PA is also responsible for managing and coordinating public affairs activities for DOE headquarters, field offices, and laboratories; serving as DOE's primary spokesperson in the news media; responding to requests for information from the public and the news media; arranging interviews with Department officials; providing speechwriting and media support services to the Secretary, Deputy Secretary and Under Secretaries; and preparing written press releases, fact sheets, electronic media and other products that communicate Departmental activities.

Through its Digital Strategy and Communications Office, PA continues to effect cost savings at the Department by consolidating website platforms, reducing duplication, and improving accessibility of information. The Digital Strategy and Communications Office drives the Department's mission online via the Energy.gov website, social networking tools, blog outreach, citizen engagement tools, and other emerging online communication technologies. Digital Strategy and Communications is an innovative and growing part of the mission, as PA seeks to serve the public in more efficient and effective ways online. It is through the Digital Strategy Office that PA is making government more collaborative, interactive, and engaging across the overall Department and directly with the American public.

## Program Direction
## Funding ($K)

| Program Directions | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs. FY 2023 Enacted ($) | FY 2024 Request vs. FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 3,274 | 3,488 | 3,789 | +301 | +9% |
| Travel | 150 | 190 | 190 | 0 | 0% |
| Support Services | 1,323 | 955 | 694 | -261 | -27% |
| Other Related Expenses | 1,189 | 1,303 | 1,292 | -11 | -1% |
| **Total, Program Direction** | **5,936** | **5,936** | **5,965** | **+29** | **+1%** |
| **Federal FTEs** | **22** | **22** | **23** | **+1** | **+5%** |
| **WCF FTEs** | **3** | **3** | **3** | **0** | **0** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Energy IT Services | 521 | 626 | 657 | +31 | +5% |
| Working Capital Fund | 668 | 677 | 635 | -42 | -6% |
| **Total, Other Related Expenses** | **1,189** | **1,303** | **1,292** | **-11** | **-1%** |

## Program Direction

### Activities and Explanation of Changes

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs. FY 2023 Enacted |
|---|---|---|
| **Program Direction $5,936,000** | **$5,965,000** | **+$29,000** |
| **Salaries and Benefits $3,488,000** | **$3,789,000** | **+$301,000** |
| Provides funding for 22 full time employees (FTEs). This includes DOE's team of media spokespersons, the media team managing digital communications and website efforts, the speechwriting team that supports the Secretary and other senior officials and program offices, and the administrative staff required to support DOE's mission. | Continuation FY 2023 activities and full funding for 23 FTEs. | Increase to fully fund staff of 23 FTEs and includes 5.2% pay raise for Federal employees in January of 2024. |
| **Travel $190,000** | **$190,000** | **$0** |
| Travel expenses support the office's ability to provide appropriate staffing to the Secretary and Deputy Secretary; staff travel for video production and presentations at conferences to communicate the DOE mission; enhanced video projects across complex; and other media projects. | Continuation of FY 2023 activities. | No change. |
| **Support Services $955,000** | **$694,000** | **-$261,000** |
| Support services include continued contractor support to upgrade and maintain the Department's digital communications and website efforts. | Continuation of FY 2023 activities. | Funding realigned to support various personnel costs. |
| **Other Related Expenses $1,303,000** | **$1,292,000** | **-$11,000** |
| Funding of Working Capital Fund and Energy IT services for 22 FTEs. | Funding of Working Capital Fund and Energy IT services for 23 FTEs | Resulting from a decrease in WCF and an increase in EITS bills. |

**DEPARTMENT OF ENERGY**

**Funding by Site**

TAS_0228 - Departmental Administration - FY 2024

(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| Strategic Partnership Projects | 16,631 | 21,745 | 21,700 |
| Other Revenues | -16,631 | -21,745 | -21,700 |
| Miscellaneous Revenues | -16,631 | -21,745 | -21,700 |
| Strategic Partnership Projects | 1,000 | 2,000 | 2,000 |
| Other Revenues | -1,000 | -2,000 | -2,000 |
| Miscellaneous Revenues | -1,000 | -2,000 | -2,000 |
| Strategic Partnership Projects | 100 | 150 | 100 |
| Other Revenues | -100 | -150 | -100 |
| Miscellaneous Revenues | -100 | -150 | -100 |
| Strategic Partnership Projects | 500 | 500 | 500 |
| Other Revenues | -500 | -500 | -500 |
| Miscellaneous Revenues | -500 | -500 | -500 |
| Strategic Partnership Projects | 14,969 | 4,305 | 4,400 |
| Other Revenues | -14,969 | -4,305 | -4,400 |
| Miscellaneous Revenues | -14,969 | -4,305 | -4,400 |
| Strategic Partnership Projects | 100 | 100 | 100 |
| Other Revenues | -100 | -100 | -100 |
| Miscellaneous Revenues | -100 | -100 | -100 |
| Strategic Partnership Projects | 6,700 | 11,200 | 11,200 |
| Other Revenues | -6,700 | -11,200 | -11,200 |
| Miscellaneous Revenues | -6,700 | -11,200 | -11,200 |
| **Washington Headquarters** | | | |
| Office of the Secretary | 5,582 | 6,642 | 6,737 |
| Congressional & Intergovernmental Affairs | 6,000 | 5,000 | 7,198 |
| Office of the Chief Financial Officer | 56,591 | 62,283 | 67,345 |
| Economic Impact & Diversity | 20,000 | 34,140 | 53,665 |
| Office of International Affairs | 28,000 | 32,000 | 50,142 |
| Chief Information Officer | 197,000 | 215,000 | 245,169 |
| Other Departmental Administration | 170,115 | 191,161 | 267,446 |
| Subtotal, Departmental Administration (Gross) | 483,288 | 546,226 | 697,702 |
| **Total Washington Headquarters** | **483,288** | **546,226** | **697,702** |
| **Undesignated LPI** | | | |
| Artificial Intelligence and Technology Office | 1,000 | 1,000 | 0 |
| Other Revenues | -60,578 | -60,578 | -60,578 |
| Miscellaneous Revenues | -60,578 | -60,578 | -60,578 |
| Subtotal, Departmental Administration (Gross) | -59,578 | -59,578 | -60,578 |
| Defense Related Administrative Support | -183,710 | -203,648 | -203,649 |
| **Total Undesignated LPI** | **-243,288** | **-263,226** | **-264,227** |
| **Total Funding by Site for TAS_0228 - Departmental Administration** | **240,000** | **283,000** | **433,475** |

# Inspector General

# Inspector General

**Office of the Inspector General**
**Proposed Appropriation Language**

For expenses necessary for the Office of the Inspector General in carrying out the provisions of the Inspector General Act of 1978, [$86,000,000] *$165,161,000,* to remain available until [September 30, 2024] *expended*.

**Public Law Authorizations**

- Public Law 95-452, "Inspector General Act of 1978"
- Public Law 103-356, "Government Management Reform Act (GMRA) of 1994"
- Public Law 106-531, "Reports Consolidation Act of 2000"
- Public Law 107-347, "Federal Information Security Modernization Act (FISMA) of 2014"
- Public Law 111-5, "American Recovery & Reinvestment Act (ARRA) of 2009"
- Public Law 111-258, "Reducing Over-Classification Act"
- Public Law 112-194, "Government Charge Card Abuse Prevention Act of 2012"
- Public Law 112-199, "Whistleblower Protection Enhancement Act of 2012"
- Public Law 113-6, "Consolidated and Further Continuing Appropriations Act of 2013/2014 Omnibus Appropriations Act"
- Public Law 113-101, "Digital Accountability and Transparency Act"
- Public Law 114-117, "Grants Oversight and New Efficiency Act"
- Public Law 115-53, "Cybersecurity Act of 2015"
- Public Law 114-261, "To Enhance Whistleblower Protection for Contractor and Grantee Employees"
- Public Law 116-117, "The Payment Integrity Information Act of 2019 (PIIA)"
- Public Law 117-58, "The Infrastructure Investment and Jobs Act (IIJA)"
- Public Law 117-169, "The Inflation Reduction Act of 2022 (IRA)"

**Office of the Inspector General**
**($K)**

| FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request |
|---|---|---|
| 78,000 | 86,000 | 165,161 |

**Overview**

The Office of the Inspector General (OIG) is dedicated to its mission to strengthen the integrity, economy, and efficiency of the Department of Energy's (DOE) programs and operations.

**Context and Urgency of FY 2024 Funding for OIG**

The FY 2024 budget request would increase our base budget to $165.2 million (M) to begin the transition to a resource benchmark of 0.35% of the Department's base budget. This constitutes a significant step toward correcting our base budget independent of the significant oversight budget shortfall resulting from the funding provided in the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA).

With a FY 2024 budget of $165.2M, the DOE OIG would remain significantly underfunded to oversee the hundreds of billions of dollars appropriated, or provided in direct loans and loan guarantee authority, to the Department under IIJA and IRA. The chart below shows the OIG-estimated supplemental oversight funding shortfall.

| BILLS | DOE | OIG | Percent OIG to DOE | OIG Estimated Requirements 0.35% | OIG Funding Shortfall |
|---|---|---|---|---|---|
| IIJA[1] | $64B | $62.5M | 0.10% | $224.8M | $162.3M |
| IRA[2] | $44B | $20.0M | 0.05% | $155.6M | $135.6M |
| TOTAL | $108B | $82.5M | 0.08% | $380.5M | $297.9M |

[1] The DOE amount of $64 billion includes $62.5 billion plus 3.2% of $46.6 billion in loan and loan guarantee authorized in IIJA. This 3.2% must be re-visited in the second installment of funding needed for the OIG.

[2] The DOE amount of $44 billion includes $35 billion plus 3.2% of $290 billion in loan and loan guarantee authorized in IRA. This 3.2% must be re-visited in the second installment of funding needed for the OIG.

Under IIJA, CHIPS and Science Act (CHIPS), and IRA, Congress authorized and/or appropriated $127.5 billion to DOE and increased DOE's direct loan and loan guarantee authority to $350 billion. However, IIJA, CHIPS, and IRA only appropriated a small amount of the money to the OIG to oversee these funds. DOE has already begun rolling out some of these enhanced programs, and it will continue to receive funding to do so over the next five years. The OIG will need additional funds to perform risk assessments, evaluations, data analytics, audits, inspections, and investigations in order to conduct appropriate oversight of these historic expenditures.

DOE OIG respectfully requests Congress to consider vehicles to provide the additional funding the DOE OIG needs to keep pace with funding distribution provided to DOE per supplemental funding. The incremental funding schedule necessary for DOE OIG to keep pace with the Department is shown below:

FY 2023: $221.2M (IRA and IIJA)
FY 2024: $ 26.9M (IIJA)
FY 2025: $ 27.1M (IIJA)
FY 2026: $ 22.7M (IIJA)
TOTAL: $297.9M

The DOE OIG does not include the amounts authorized under CHIPS in its estimate. In that Act, the Department was authorized $30.5 billion in new funding of the total $67 billion authorized under the Act. The DOE OIG respectfully requests

that the OIG be appropriated 0.35% of whatever funds are appropriated to the Department under the authorizations in the CHIPS Act of 2022.

The DOE OIG underfunding is particularly problematic because DOE and the National Nuclear Security Administration (NNSA) manage a high-risk portfolio and a highly diverse and technical mission. This mission includes maintaining the nuclear arsenal in a combat ready posture, the recently established Office of Clean Energy Demonstrations, operating the National Laboratory system, and cleaning up the nation's largest environmental legacy sites.

There are considerable risks associated with leaving the DOE OIG significantly underfunded for another fiscal year. It has been established that early and extensive support from Inspectors General on the "front end" assists the agencies to prevent fraud, waste and abuse. Because the DOE OIG is so poorly funded under IIJA and IRA, the OIG's efforts on the front end will be diminished. For example, the DOE OIG will have little resources to conduct near-term audits and inspections of internal controls for both new and pre-existing programs that received large increases in funding under these pieces of legislation. The DOE OIG will also have little resources to tailor our use of data analytics to IIJA and IRA, increase our cybersecurity capabilities, and allow for the use of subject matter experts, all of which would directly protect the new and enhanced programs under these statutes.

The Administration has proposed $150 million in additional funding for under-resourced OIGs and has identified the DOE OIG as one of the under-resourced OIGs. The Administration has not yet announced the amount of this funding that might be allocated to the DOE OIG. Over the next few years, the OIG will be requesting additional appropriations to offset the lack of funding provided to the OIG in the IIJA, CHIPS, and IRA Acts.

As you consider providing adequate upfront funding for the base budget and oversight of IIJA and IRA programs, please also consider designating any such funds as no-year funds. No-year funding would allow the DOE OIG to adequately plan our resources over the entire period that the funds will be expended by the Department, which is a combination of ten-year funds and no-year funds, and then continue to investigate the fraud matters that will be discovered and prosecuted for many years to come. Along the same lines, please note that IIJA and IRA create a complex landscape of enhancing numerous existing programs and creating numerous new programs. The end result is that the Department's footprint has grown substantially across the board. Therefore, the OIG respectfully requests that the additional funds be appropriated for the purposes set forth in the Inspector General Act of 1978 as amended[1].

**Highlights of the FY 2024 Budget Request**

The OIG will utilize these resources to prevent fraud, waste, and abuse and to enhance the efficiency and effectiveness of the Department's programs and operations. The OIG's focus will include:

- **Incurred Cost Audits of Management and Operating (M&O) Contracts.** The OIG will continue conducting, independent incurred cost audits of the Department's M&O Contracts, valued at $19 billion per year as of FY 2022. Additionally, the CHIPS Act authorized $50 billion for the Office of Science, for which the OIG will be responsible for conducting independent incurred cost audits of the funds that are distributed to the National Laboratories.
- **Audits.** The OIG performs audits on Departmental programs and operations, focused on providing reliable and credible financial and performance information. The scope of this work is determined through a risk-based approach focused on areas of greatest risk to the Department. Significant increases in the Department's funding correlate to a direct increase in the risk of fraud, waste, and abuse. Audits provide substantial deterrence and detection capabilities over taxpayer funds and give Departmental management and Congress a well-informed perspective.

[1] Public Law 117-286 (December 27, 2022) restated and incorporated the Inspector General Act of 1978, as amended, into a new Chapter 4 of Title 5 to the United States Code. That law changed references to "the Inspector General Act of 1978" to "chapter 4 of title 5, United States Code." This document, however, uses the Inspector General Act of 1978 as the references to the new code location have not yet been fully implemented. If such implementation occurs before submission, the suggested language will need to be revised.

- **Data Analytics.** The OIG will continue to expand its utilization of data analytics. For example, the newly established programs under IIJA, CHIPS and IRA present an exciting "ground floor" opportunity to collect quality data to allow us to identify trends and provide near term indications of fraud, waste, and abuse related to these expenditures.
- **Cybersecurity Oversight Efforts.** The OIG is responsible for the audit and evaluation of the Department's unclassified systems. The Department has experienced substantial problems with cybersecurity. As the Department's expenditures increase under IIJA, CHIPS and IRA, it will become increasingly important to secure these systems from vulnerabilities that could result in the loss of billions of dollars' worth of innovative or sensitive technologies developed using taxpayer dollars.
- **Inspections, Intelligence/Counterintelligence Oversight, and Special Projects.** The OIG's inspection teams will continue focusing on intelligence and counterintelligence oversight and will continue conducting timely and objective inspections of the programs and performance of the Department. The OIG's inspection teams are currently preparing to conduct the first round of inspections in order to begin evaluating the Department's internal controls developed to protect the expenditures under IIJA, CHIPs Act and IRA. Additionally, these teams will continue to address allegations received through the OIG's Hotline, and whistleblower complaints, which have increased dramatically in recent years.
- **Investigations.** In recent years, the OIG has experienced a 36 percent increase in the number of criminal investigations and a substantial increase in the dollar value of contractor fraud cases, resulting in additional work by the Office of Investigations. The increased level of information sharing and collaboration within the Department and among other federal agencies, the OIGs increased use of data analytics, and the OIGs performance of incurred cost audits have further increased Investigations workload. Additionally, the OIG will continue to utilize Special Assistant U.S. Attorneys to support the DOJ's prosecution of criminal matters and work with the Department's suspension and debarment officials with respect to administrative remedies.
- **Mandatory Disclosure Rule**. The Mandatory Disclosure Rule (MDR) is a significant element of the contract integrity framework. The MDR mandates that the contractors establish an employee concerns program and disclose potential fraud to the OIG. OIG inspections revealed significant deficiencies in MDR reporting. Therefore, the OIG is developing a comprehensive and modernized approach to MDR reporting. The new reporting format will allow for more complete and expedited reporting, which will increase the volume of OIG investigations, inspections, and audits.
- **Facilities/Technology.** The OIG will continue its efforts to open offices in strategic locations and acquire a sensitive compartmented information facility. Additionally, the OIG will be addressing IT solutions to the problem of the OIG operating on a multitude of networks, which results in delays, missed communications, and a loss of productivity in the performance of daily OIG operations.
- **NNSA Modernization Efforts.** NNSA has undertaken a modernization effort that involves major projects such as the weapons complex transformation. The OIG will conduct audits, inspections, reviews, and assessments to identify opportunities to improve the efficiency and effectiveness of these modernization efforts.
- **Environmental Management**. The Department's environmental cleanup and disposal liabilities of $519,660,000,000 remains on the Government Accountability Office's Biennial High Risk List. The OIG will continue its efforts to review the efficacy of the Department's environmental programs to prevent fraud, waste, and abuse.

**Office of the Inspector General**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Office of the Inspector General/Program Direction** | | | | | |
| Salaries and Benefits | 54,405 | 62,801 | 129,288 | +66,487 | 106% |
| Travel | 2,619 | 2,619 | 3,723 | +1,104 | 42% |
| Support Services | 12,355 | 9,439 | 14,525 | +5,086 | 54% |
| Other Related Expenses | 8,621 | 11,141 | 17,625 | +6,484 | 58% |
| **Total, Office of the Inspector General/Program Direction** | **78,000** | **86,000** | **165,161** | **+79,161** | **92%** |
| **Federal FTEs** | **335** | **355** | **602** | **+247** | **70%** |
| | | | | | |
| **Support Services** | | | | | |
| Management Support | 11,570 | 8,634 | 13,623 | +4,989 | 58% |
| Federal Information Security Modernization Act (FISMA) | 785 | 805 | 902 | +97 | 12% |
| **Total, Support Services** | **12,355** | **9,439** | **14,525** | **+5,086** | **54%** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Council of the Inspectors General on Integrity and Efficiency (CIGIE) | 216 | 283 | 661 | +378 | 134% |
| Information Technology | 1,910 | 2,672 | 7,087 | +4,415 | 165% |
| Infrastructure | 500 | 2,000 | 2,613 | +613 | 31% |
| Training | 1,585 | 1,656 | 2,354 | +698 | 42% |
| Working Capital Fund | 3,173 | 3,173 | 3,372 | +199 | 6% |
| Other Related Expenses | 1,237 | 1,357 | 1,538 | +181 | 13% |
| **Total, Other Related Expenses** | **8,621** | **11,141** | **17,625** | **+6,484** | **58%** |

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $86,000,000** | **$165,161,000** | **+$79,161,000** |
| **Salaries and Benefits $62,801,000** | **$129,288,000** | **+$66,487,000** |
| Funding supports 355 Federal staff with specialized skill sets (e.g., Certified Public Accountants, Cyber, Data Analytics, Technology Crime Investigators, and Certified Fraud Examiners) who identify significant Departmental program and operational challenges. | Increased staffing levels are needed to oversee the increasing risks at the Department, and the increased base funding. Additionally, continuing the internal independent incurred cost audit program and the identification of significant Departmental challenges with the FTE level of 602. | The funding increase reflects an increase in FTE usage by 247 FTEs. Additional FTEs will enable OIG to provide additional oversight of the Department's increasing risks, and the independent incurred cost audit program. Assumes 5.2 percent pay increase in civilian salaries, FERS increase, and supplemental funds for performance award pool increase in FY 2024. |
| **Travel $2,619,000** | **$3,723,000** | **+$1,104,000** |
| Funding supports travel to provide oversight at DOE's 25 geographically dispersed facilities. | Continue to perform audits, inspections, and investigations across the DOE complex. | Funding directly reflects support for increased personnel and workload, the expansion of audits, analytics, cyber, and forensic efforts in direct support of the OIG's mission. |
| **Support Services $9,439,000** | **$14,525,000** | **+$5,086,000** |
| Funding directly reflects interagency support services and contracts necessary to support the independent incurred cost audit program. Provides support for the Federal Information Security Modernization Act of 2014 (FISMA). Annual independent evaluations to determine whether the Department of Energy's unclassified cybersecurity program adequately protected its data and information systems. | Increased management support to the independent incurred cost audit program. Continued support for independent annual evaluations in accordance with FISMA. | Funding increase directly reflects an increase in interagency support services and contracts necessary to support the increased staffing for the independent incurred cost audit program within the OIG. The funding also includes increased FISMA support. |
| **Other Related Expenses $11,141,000** | **$17,625,000** | **+$6,484,000** |
| Funding includes critical training for the OIG staff to maintain required levels of proficiency and comply with the Inspector General Act. Funding also supports forensic hardware and software requirements needed to accomplish investigative responsibilities. Funds are included for mandatory support for Council of the Inspectors General on Integrity and Efficiency (CIGIE) and to fund OIG's share of the DOE Working Capital Fund and Energy IT Services. | Increased support to training, information technology needs, secure infrastructure, and other requirements in the performance of the OIG duties. | The funding increase reflects increased forensic efforts, training support, personnel security investigations, and building a secure infrastructure. The OIG will also need to increase its investments in cloud technology, forensic hardware, and software to sustain the data analytics program, cyber, and technical crimes capabilities. |

**Office of the Inspector General**

**Infrastructure Investment and Jobs Act**
**($K)**

The Office of the Inspector General was appropriated funds through the Infrastructure Investment and Jobs Act (IIJA) at a rate of one-tenth of one percent of the total annual amounts made available to the Department.

| Appropriated Funding Organization | FY 2022 IIJA Funding | FY 2023 IIJA Funding | FY 2024 IIJA Funding | Managing Organization |
|---|---|---|---|---|
| **Office of the Inspector General** | | | | |
| Departmental Oversight | 18,686 | 13,100 | 10,788 | N/A |

- **Departmental Oversight:** The OIG will perform risk assessments, evaluations, data analytics, audits, inspections, and investigations in order to conduct appropriate oversight of IIJA expenditures.

**Inflation Reduction Act (IRA)**
**($K)**

The Office of the Inspector General was appropriated funds through the Inflation Reduction Act of 2022 (IRA).

| Appropriated Funding Organization | FY 2022 IRA Funding |
|---|---|
| **Office of the Inspector General** | |
| Departmental Oversight | 20,000 |

- **Departmental Oversight:** The OIG will perform risk assessments, evaluations, data analytics, audits, inspections, and investigations in order to conduct appropriate oversight of IRA expenditures.

**DEPARTMENT OF ENERGY**

**Funding by Site**

TAS_0236 - Inspector General - FY 2024

(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| **Washington Headquarters** | | | |
| Program Direction - Office of Inspector General | 78,000 | 86,000 | 165,161 |
| **Total Washington Headquarters** | **78,000** | **86,000** | **165,161** |
| **Total Funding by Site for TAS_0236 - Inspector General** | **78,000** | **86,000** | **165,161** |

**U.S. Department of Energy**
**Fiscal Year 2024 Budget Justification**
**GAO-IG Act Required Reporting**

## Summary

The information in this report responds to requirements in The Good Accounting Obligation in Government Act (PL 115-414). The Act requires disclosure of certain information regarding the status of audit recommendations in the annual budget justification submitted to Congress, as submitted with the budget of the President under section 1105 of title 31, United States Code.

Table 1 provides a summary of the GAO and OIG audit reports issued during FY 2022.

**Table 1: Audit Reports Issued During FY 2022**

| AUDIT REPORTS | NUMBER OF IG REPORTS | NUMBER OF GAO REPORTS |
|---|---|---|
| **Final Reports Issued in FY 2022** | **44** | **56** |
| **Final Reports Issued in FY 2022 Not Requiring Corrective Actions** | **18** | **35** |
| **Final Reports Issued in FY 2022 Requiring Corrective Actions** | **26** | **21** |
| **Final Reports Issued in FY 2022 That Remain Open for Further Follow-up Actions** | **20** | **19** |

This Budget Request includes a listing of the GAO and OIG reports issued during Fiscal Year 2022 with recommendations that are considered by DOE to be open for further follow-up actions. Table 2 lists the relevant GAO reports and Table 3 lists the relevant OIG reports. Detailed information about the specific actions taken and planned in response to GAO and OIG recommendations is maintained by the Department and is available to Congress upon request.

**Table 2: GAO Reports issued during FY 2022 considered by DOE to be open for further follow-up actions as of October 1, 2023.**

| Field Name | Field Description |
|---|---|
| **DOE Lead Office** | Office of Advanced Research Projects Agency-Energy |
| **Report Number** | GAO-22-104677 |
| **Report Title** | Small Business Research Programs: Agencies Should Further Improve Award Timeliness |
| **Final Report Date** | 10/14/2021 |

| Field Name | Field Description |
|---|---|
| **DOE Lead Office** | Office of Clean Energy Demonstrations |
| **Report Number** | GAO-22-105111 |
| **Report Title** | Carbon Capture and Storage: Actions Needed to Improve DOE Management of Demonstration Projects |
| **Final Report Date** | 12/20/2021 |

| Field Name | Field Description |
|---|---|

| | |
|---|---|
| **DOE Lead Office** | Office of Cybersecurity, Energy Security, and Emergency Response |
| **Report Number** | GAO-22-105093 |
| **Report Title** | Lessons Learned for Responding to Disaster-Caused Grid Disruptions |
| **Final Report Date** | 6/9/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of the Chief Financial Officer |
| **Report Number** | GAO-22-104541 |
| **Report Title** | Financial Management: DOE and NNSA Have Opportunities to Improve Management of Carryover Balances |
| **Final Report Date:** | 7/25/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Environmental Management |
| **Report Number** | GAO-22-104490 |
| **Report Title** | Nuclear Waste Cleanup: DOE Needs to Better Coordinate and Prioritize Its Research and Development Efforts |
| **Final Report Date** | 10/28/2021 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Environmental Management |
| **Report Number** | GAO-22-104365 |
| **Report Title** | Nuclear Waste Disposal: Actions Needed to Enable DOE Decision that Could Save Tens of Billions of Dollars |
| **Final Report Date** | 12/09/2021 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Environmental Management |
| **Report Number** | GAO-22-105057 |
| **Report Title** | Waste Isolation Pilot Plant: Construction Challenges Highlight the Need for DOE to Address Root Causes |
| **Final Report Date** | 3/15/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Environmental Management |
| **Report Number** | GAO-22-104805 |
| **Report Title** | Nuclear Waste: DOE Needs Greater Leadership Stability and Commitment to Accomplish Cleanup Mission |
| **Final Report Date** | 5/3/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Environmental Management |
| **Report Number** | GAO-22-104772 |

| | |
|---|---|
| **Report Title** | Hanford Cleanup: DOE Has Opportunities to Better Ensure Effective Startup and Sustained Low-Activity Waste Operations |
| **Final Report Date** | 6/14/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Environmental Management |
| **Report Number** | GAO-22-105417 |
| **Report Title** | Nuclear Waste Cleanup: Actions Needed to Determine Whether DOE's New Contracting Approach is Achieving Desired Results |
| **Final Report Date** | 9/28/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Environmental Management |
| **Report Number** | GAO-22-105636 |
| **Report Title** | Nuclear Waste: DOE Needs to Improve Transparency in Planning for Disposal of Certain Low-Level Waste |
| **Final Report Date** | 9/29/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Fossil Energy and Carbon Management |
| **Report Number** | GAO-22-104637 |
| **Report Title** | Refined Coal Production Tax Credit: Coordinated Agency Review Could Help Ensure the Credit Achieves Its Intended Purpose |
| **Final Report Date** | 12/15/2021 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Fossil Energy and Carbon Management |
| **Report Number** | GAO-22-104824 |
| **Report Title** | Critical Minerals: Building on Federal Efforts to Advance Recovery and Substitution Could Help Address Supply Risks |
| **Final Report Date** | 6/16/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of the Chief Information Officer |
| **Report Number** | GAO-22-105065 |
| **Report Title** | Privacy: Dedicated Leadership Can Improve Programs and Address Challenges |
| **Final Report Date** | 9/22/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Office of Management |
| **Report Number** | GAO-22-103854 |
| **Report Title** | Department of Energy: Improvements Needed to Strengthen Strategic Planning for the Acquisition Workforce |
| **Final Report Date** | 11/16/2021 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | National Nuclear Security Administration |
| Report Number | GAO-22-104810 |
| Report Title | National Nuclear Security Administration: Actions Needed to Improve Usefulness of Common Financial Data |
| Final Report Date | 2/17/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | National Nuclear Security Administration |
| Report Number | GAO-22-104506 |
| Report Title | Nuclear Security Enterprise: NNSA Could Enhance Its Evaluation of Manufacturing-Related R&D Performance |
| Final Report Date | 5/20/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | National Nuclear Security Administration |
| Report Number | GAO-22-104195 |
| Report Title | Nuclear Weapons Cybersecurity: NNSA Should Fully Implement Foundational Cybersecurity Risk Management Practices |
| Final Report Date | 9/22/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of Nuclear Energy |
| Report Number | GAO-22-105394 |
| Report Title | Nuclear Energy Projects: DOE Should Institutionalize Oversight Plans for Demonstration of New Reactor Types |
| Final Report Date | 9/13/2022 |

**Table 3: OIG Reports issued during FY 2022 considered by DOE to be open for further follow-up actions as of October 1, 2023.**

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Carlsbad Field Office |
| Report Number | DOE-OIG-22-29 |
| Report Title | Fire Protection Concerns at the Waste Isolation Pilot Plant |
| Final Report Date | 4/15/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of the Chief Financial Officer |
| Report Number | DOE-OIG-22-19 |
| Report Title | Management Letter on The Department of Energy's Fiscal Year 2021 Consolidated Financial Statements |
| Final Report Date | 1/3/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of the Chief Financial Officer |
| Report Number | DOE-OIG-22-37 |
| Report Title | The Department of Energy's Payment Integrity Reporting in the Fiscal Year 2021 Agency Financial Report |
| Final Report Date | 6/24/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of Enterprise Assessments |
| Report Number | DOE-OIG-22-32 |
| Report Title | Corrective Actions on the Office of Enterprise Assessments Findings and Deficiencies |
| Final Report Date | 5/18/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of Economic Impact and Diversity |
| Report Number | DOE-OIG-22-18 |
| Report Title | Allegations Regarding Management Conduct within the Office of Economic Impact and Diversity |
| Final Report Date | 12/23/2021 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of Energy Efficiency & Renewable Energy |
| Report Number | DOE-OIG-22-02 |
| Report Title | Financial Assistance Allegations at the Golden Field Office |
| Final Report Date | 10/25/2021 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of the Chief Information Officer |
| Report Number | DOE-OIG-22-23 |
| Report Title | Management Letter on The Department of Energy's Unclassified Cybersecurity Program for Fiscal Year 2021 |
| Final Report Date | 1/14/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of the Chief Information Officer |
| Report Number | DOE-OIG-22-44 |
| Report Title | Follow-up on the Department of Energy's Implementation of the Geospatial Data Act of 2018 |
| Final Report Date | 9/27/2022 |

| Field Name | Field Description |
|---|---|
| DOE Lead Office | Office of Management |
| Report Number | DOE-OIG-22-17 |
| Report Title | Special Report on Summary of Findings on Audits of Selected Department of Energy Childcare Centers |

| | |
|---|---|
| **Final Report Date** | 12/23/2021 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | National Nuclear Security Administration |
| **Report Number** | DOE-OIG-22-04 |
| **Report Title** | Allegations Related to the Y-12 National Security Complex Fire Department |
| **Final Report Date** | 11/8/2021 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | National Nuclear Security Administration |
| **Report Number** | DOE-OIG-22-15 |
| **Report Title** | Subcontract Administration at the Kansas City National Security Campus |
| **Final Report Date** | 12/21/2021 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | National Nuclear Security Administration |
| **Report Number** | DOE-OIG-22-16 |
| **Report Title** | Sandia National Laboratories' Subcontract Closeout Process |
| **Final Report Date** | 12/21/2021 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | National Nuclear Security Administration |
| **Report Number** | DOE-OIG-22-25 |
| **Report Title** | Allegation of Unauthorized Derivative Classifier Reviewing Documents |
| **Final Report Date** | 1/27/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | National Nuclear Security Administration |
| **Report Number** | DOE-OIG-22-26 |
| **Report Title** | Los Alamos National Laboratory Steam Plant Energy Savings Performance Contract – Phase One |
| **Final Report Date** | 2/8/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | National Nuclear Security Administration |
| **Report Number** | DOE-OIG-22-41 |
| **Report Title** | Firearms Disposal at Los Alamos National Laboratory |
| **Final Report Date** | 8/15/2022 |

| **Field Name** | **Field Description** |
|---|---|
| **DOE Lead Office** | Oak Ridge National Laboratory |
| **Report Number** | DOE-OIG-22-43 |
| **Report Title** | The Management of Emergency Communications Systems at the Oak Ridge Reservation |
| **Final Report Date** | 9/21/2022 |

| Field Name | Field Description |
|---|---|
| **DOE Lead Office** | Richland Operations Office |
| **Report Number** | DOE-OIG-22-12 |
| **Report Title** | Audit of HPM Corporation Occupational Medical Service's Billings |
| **Final Report Date** | 12/7/2021 |

| Field Name | Field Description |
|---|---|
| **DOE Lead Office** | Science Consolidated Service Center |
| **Report Number** | DOE-OIG-22-05 |
| **Report Title** | Management of the Cybersecurity Program at the SLAC National Accelerator Laboratory |
| **Final Report Date** | 11/10/2021 |

| Field Name | Field Description |
|---|---|
| **DOE Lead Office** | Science Consolidated Service Center |
| **Report Number** | DOE-OIG-22-13 |
| **Report Title** | Allegations of Quality Assurance Irregularities in the National Spherical Torus Experiment Upgrade Recovery Project |
| **Final Report Date** | 12/7/2021 |

| Field Name | Field Description |
|---|---|
| **DOE Lead Office** | Science Consolidated Service Center |
| **Report Number** | DOE-OIG-22-21 |
| **Report Title** | Audit on Personal Property Held by Subcontractors at Lawrence Berkeley National Laboratory |
| **Final Report Date** | 1/12/2022 |

# Technology Transitions

# Technology Transitions

## Office of Technology Transitions
## Proposed Appropriation Language

For Department of Energy expenses necessary for carrying out the activities of technology transitions, $56,550,000, to remain available until expended: Provided, That of the amounts appropriated under this heading, $1,500,000 shall be for the establishment of the Foundation for Energy Security and Innovation authorized by section 10691 of Public Law 117–167: Provided further, That of the amounts appropriated under this heading, $29,500,000 shall be for payment to the Foundation for Energy Security and Innovation upon its establishment: Provided further, That of the amounts provided under this heading, $13,639,000 shall be available until September 30, 2025, for program direction.

## Office of Technology Transitions
## Overview

The mission of the Office of Technology Transitions (OTT) is to expand the commercial and public impact of the research investments of the DOE. OTT enhances the public return on investment from DOE's technology portfolio, including the National Laboratories, through a suite of outcome-oriented activities that enable commercialization of energy technology, enhance national security and competitiveness, mitigate climate change, and create jobs. Within DOE, OTT works to fill gaps and sharpen programmatic focus on commercialization across the research, development, demonstration, and deployment (RDD&D) continuum. OTT provides specialized tools, training, analysis, workforce development, and programs to improve the successful transition of technology from proof of concept to prototype to demonstration and, ultimately, market deployment. OTT also supports enabling policies for, tracks the outcomes of, and shares success stories from the Department's National Laboratory commercialization and partnering activities. Externally, OTT supports development of a robust ecosystem for energy entrepreneurs and technology start-ups and seeds public-private partnerships with a diverse set of actors. OTT's FY 2024 budget targets impact in the following areas:

- Stewarding development of commercialization pathways with private sector input and use of commercial-adoption risk frameworks to catalyze market-informed program design and industry engagement across the Department.
- Place-based approaches to commercializing innovation, which enables catalytic ecosystems that align federal funding with incubators, private companies, National Laboratories, universities, state and local officials, investors, and non-profits.
- Entrepreneurial training and workforce development programs for Lab researchers and students, which enable the current and future workforce to convert innovation into real-world outcomes.
- Access to and searchability of DOE's intellectual property, laboratory experts, and facilities, which enables direct public-private engagement leading to partnerships.
- Policy coordination to expand use of funding mechanisms in DOE program design and that reduce barriers in conducting business with the DOE National Laboratories and other federal, quasi-governmental, and non-federal entities.
- Seeding innovative approaches, partnerships models, and program designs, including use of prize authority and partnership intermediary agreements (PIAs), to maximize impact from the Department's RDD&D portfolio.
- Convening of and outreach to private sector and other external decision-makers to identify opportunities for partnerships to commercialize DOE technologies.
- Establishment of the non-governmental Foundation for Energy Security and Innovation (FESI), which has a statutory aim to support the mission of DOE and accelerate the commercialization of new and existing energy technologies by raising and investing funds through engagements with the private sector and philanthropic communities.

**Highlights of the FY 2024 Budget Request**

The Department requests $56,550,000 for OTT in FY 2024, of which $31 million is a one-time investment for the Congressionally authorized establishment of the new Foundation for Energy Security and Innovation, a 501c3 non-governmental organization tasked with raising philanthropic funds to make targeted investments that enhance the DOE mission. This level of funding will allow OTT to implement statutory authorities under the Energy Act of 2020 and CHIPS and Science Act of 2022, make targeted investments to enhance Departmental commercialization outcomes, and fully fund an ongoing regional clusters program focused on incubators and accelerators.

**Technology Transitions**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| **Washington Headquarters** | | | | | |
| Salaries and Benefits | 4,408 | 5,767 | 7,272 | +1,505 | +26% |
| Travel | 300 | 500 | 500 | 0 | 0% |
| Support Services | 2,817 | 5,777 | 4,576 | -1,201 | -21% |
| Other Related Expenses | 850 | 1,139 | 1,291 | +152 | +13% |
| **Total, Program Direction** | **8,375** | **13,183** | **13,639** | **+456** | **+3%** |
| **Total FTEs** | **28** | **38** | **40** | **+2** | **+5%** |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Working Capital Fund (WCF) | 570 | 570 | 690 | +120 | +21% |
| Other | 280 | 569 | 601 | +32 | +6% |
| **Total, Other Related Expenses** | **850** | **1,139** | **1,291** | **+152** | **+13%** |
| | | | | | |
| **Technology Transitions Programs** | | | | | |
| Commercialization Activities | 6,095 | 3,915 | 6,911 | +2,996 | +77% |
| Energy Program for Innovation Clusters (EPIC) | 5,000 | 5,000 | 5,000 | 0 | 0% |
| **Total, Technology Transitions Programs** | **11,095** | **8,915** | **11,911** | **+2,996** | **+34%** |
| **Total, Office of Technology Transitions** | **19,470** | **22,098** | **25,550** | **+3,452** | **+16%** |
| | | | | | |
| **Foundation for Energy Security and Innovation** | | | | | |
| Foundation for Energy Security and Innovation | 0 | 0 | 31,000 | +31,000 | N/A |
| **Total, Foundation for Energy Security and Innovation** | **0** | **0** | **31,000** | **+31,000** | **N/A** |
| | | | | | |
| **Total, Office of Technology Transitions + FESI** | **19,470** | **22,098** | **56,550** | **+34,452** | **+156%** |

Authorizations:
Public Law 109–58, "Energy Policy Act of 2005," Title V
15 U.S. Code § 3708(b and c) - Administrative arrangements – Corporation & Administrative authorization
15 U.S. Code § 3710(a) - Utilization of Federal Technology
42 U.S. Code § 2121(a) - Authority of Commission
42 U.S. Code § 16391(e) - Establishes the Energy Technology Commercialization Fund
Public Law 116-68 Consolidated Appropriations Act 2021 – reference "Energy Act 2020" Title IX

Public Law No: 117-167 – reference CHIPS and Science Act, Subtitles I and J

**Office of Technology Transitions**
**Program Direction**

Program Direction fully funds federal salaries and benefits, official travel, training, DOE Working Capital Fund, Energy Information Technology (IT) Services, associated support services contracts, and all program implementation expenses to execute the OTT mission, comply with authorizing statutes, and coordinate commercialization activities across the Department, including the National Laboratories. This funding supports a communications team, market and commercialization pathways analysis function, policy analysis and coordination, annual data collection and reporting, targeted stakeholder outreach and partnering efforts, Departmental support for use of prize authority and partnership intermediary agreements, and oversight and management of all programmatic activities, including the Technology Commercialization Fund (TCF), Energy Program for Innovation Clusters (EPIC), Lab Partnering Service (LPS), Energy I-Corps (EIC), the Energy Technology University Prize (ETUP), the OTT Technology Commercialization Internship Program, and other commercialization programs and activities.

Communicating Successes - Stakeholder engagement is assisted by a clear understanding of the capabilities, possibilities, and impact of the National Laboratories and the broader DOE RDD&D investment portfolio. OTT regularly amplifies success stories from across the DOE complex and develops communications content to showcase the DOE innovation story. A subset of success stories is reported to Congress annually to meet statutory requirements. OTT's communications bring to life the impacts that the DOE and the National Laboratories have had on companies, industries, the Nation, and the world, underscoring the potential for further external partnerships. FY 2024 funding supports continued communications support at a sustained level.

Data Collection and Reporting - OTT gathers, verifies, and validates unclassified technology transfer partnership and metrics data for all 17 DOE National Laboratories and four production facilities on an annual basis. This effort supports annual statutory reporting on National Laboratory utilization and provides unique visibility into the commercial impact of DOE's investments in the National Laboratories and Facilities and the breadth of beneficiaries and partners across the Nation. FY 2024 funding supports data collection and reporting at a sustained level.

Market & Commercialization Pathways Analysis - OTT will continue its market and commercialization pathways analytical efforts to illuminate technology market trends and drivers and enable transitions of technology across the RDD&D continuum. OTT analysis helps illuminate market structures and commercial-adoption risk and helps identify commercialization opportunities for energy technologies. OTT facilitates the development and use of market analysis content, methodologies, and data services across DOE offices in both the Under Secretary for Science and Innovation (S4) and Under Secretary for Infrastructure (S3), as well as convening the National Laboratory community to promote market awareness and information sharing around resources and methodologies to enhance commercialization opportunities for DOE technologies. OTT focuses its analytical efforts on crosscutting priorities and strategic topics and identifies and pursues technology commercialization opportunities based on these insights. OTT's market and commercialization pathways analysis complements the Department's analytical efforts to maximize the impact of DOE programs and funding.

In FY 2024, OTT will continue to deliver customer-driven market analysis in support of several high-priority, crosscutting areas to accelerate the commercialization of DOE-developed technologies.

Partnership Development - OTT pursues purposeful stakeholder engagement to increase awareness of the opportunities for partnership with the DOE and the National Laboratories. By working with a diverse group of capital providers and market actors with various investment time horizons, risk appetites, organizational structures, and constituencies, OTT is well-positioned to identify effective ways to help maximize the impact of the Department's RDD&D investments. FY 2024 funding will maintain funding for targeted partnership development efforts.

Policy Coordination and Prize Authority - OTT will continue its leadership role in coordinating commercialization policies and mechanisms across DOE and across the Federal Government. Within DOE, OTT oversees the implementation of national technology transfer and commercialization authorities and the policy priorities of the Administration and convenes the Technology Transfer Policy Board comprising DOE program office representatives and the Technology Transfer Working Group comprising National Laboratory tech transfer and commercialization professionals and DOE site office representatives. OTT also serves on various intra-agency working teams tackling challenges and opportunities around

National Lab licensing, manufacturing policy, and other critical issues with national security and economic competitiveness implications. Externally, OTT coordinates with other federal agencies through the Interagency Working Group on Technology Transfer and the Federal Laboratory Consortium for Technology Transfer. Additionally, OTT serves as co-chair of and participates in the Lab-to-Market subcommittee of the White House Office of Science and Technology Policy's National Science and Technology Council. These activities provide an opportunity for OTT to gain insights on best practices and program designs that can be shared across the Federal Government and considered for implementation at DOE.

In FY 2024 OTT continues and modestly expands efforts to implement Energy Act 2020 statutory authority by establishing a prize center of excellence that will enable wider and more effective Departmental use of prizes by S3 and S4 programs. OTT will also work to satisfy Congressional reporting requirements. Recently, OTT has been leading agency efforts to explore potential use of an expanded set of partnering mechanisms and authorities, including Other Transaction Authority (OTA) and the use of PIAs.

FY 2024 funding will support continued engagement by OTT staff with stakeholders on streamlining central policies and procedures, thus simplifying, and enabling private sector access to the capabilities and resources of the DOE National Laboratory enterprise. OTT will continue to assess, document, and disseminate best practices, including those related to use of prize authorities, and to update the DOE Technology Transfer Execution Plan in accordance with statutory requirements.

Program Management – Funding supports HQ oversight and management of all programmatic activities, including the Technology Commercialization Fund (TCF), EnergyTech University Prize (ETUP), Energy Program for Innovation Clusters (EPIC), Lab Partnering Service (LPS), Energy I-Corps (EIC), Technology Commercialization Internship Program (TCIP), and other commercialization activities that support OTT's mission. FY 2024 funding will support program management needs in line with the expanding OTT portfolio of high-impact program activity.

**Office of Technology Transitions**
**Program Direction**
**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2023 Enacted vs FY 2024 Request |
|---|---|---|
| **Program Direction $13,183,000** | **$13,639,000** | **+$456,000** |
| **Salaries and Benefits $5,767,000** | **$7,272,000** | **+$1,505,000** |
| Funding supports scale-up to about 38 FTEs responsible for managing OTT's commercialization portfolio and providing essential operations support. This includes management of all OTT programs, office operational support, and staff focus on creating public-private partnership opportunities and conducting market and commercialization analyses. | Funding will support an increase (+2) to 40 FTEs to establish a DOE Prize/PIA Center of Excellence. New staff will support expanded program management and implementation requirements and critical operations support. | Supports +2 FTE increase from FY23 Enacted approved staffing plan and 5.2% cost-of-living increase in civilian salaries and associated FERS increase in FY 2024. |
| **Travel $500,000** | **$500,000** | **$0** |
| Funding supports travel requirements associated with DOE's commercialization portfolio, such as OTT engagement with the National Laboratories at the bi-annual Technology Transfer Working Group meetings, information gathering from Principal Investigators, outreach at industry events and conferences, and OTT participation in National Laboratory events. In the absence of in-person events for much of FY 2021, OTT has supported virtual event expenses requiring technology platforms and services. | Continuation of activities in FY 2024. | No change in FY 2024. |
| **Support Services $5,777,000** | **$4,576,000** | **-$1,201,000** |
| Funding supports contractor support associated with management of OTT's programs portfolio, all communications support, access to tools and information for more informed industry engagement, market and commercialization pathways analysis, developing guidance and policies, implementing the Administration's technology transfer and commercialization priorities and best practices, and conducting other required data collection, verification, validation and reporting. | Continuation of activities in FY 2024 with modest increase to reflect right-sizing of contractor staff to align with updated assessment of contractor support needs. | Reflects the federalization of critical roles supporting management of statutory programs and recurring activities. |
| **Other Related Expenses $1,139,000** | **$1,291,000** | **+$152,000** |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2023 Enacted vs FY 2024 Request |
|---|---|---|
| Funding will support the business costs associated with the DOE's Working Capital Fund (office space, phones, utilities, etc.); Energy IT Services (IT equipment and support); specialized software licensing; security investigations; and staff development and training to maintain and enhance work related skills and capabilities. | Continuation of activities in FY 2024. | Increase driven by increasing staff size (+2 FTEs). |

**Office of Technology Transitions**
**Technology Transitions Programs**

**Description:**

In addition to the work of federal and HQ contractor employees funded through Program Direction, OTT requests $11.911 million in Technology Transitions Programs funding to support commercialization activities and continue the successful regional incubator and accelerator program.

**Commercialization Activities:**

Energy I-Corps - Energy I-Corps (EIC) is an eight-week training program pairing National Laboratory scientists and engineers with industry mentors to define the value proposition for the National Laboratory-based technology that they are developing. It directly addresses the OTT authorization language to "encourage students, energy researchers, and national laboratory employees to develop entrepreneurial skillsets and engage in entrepreneurial opportunities." Central to the program is a requirement to conduct extensive customer discovery interviews to deepen understanding of the market and other opportunities for a particular DOE-sponsored technology. This program fosters an entrepreneurial workforce and creates a cohort of DOE National Laboratory market-oriented researchers that have been immersed in an intense program of commercialization training centered on customer outreach and partnership with the private sector. Since the program's inception in 2015, 205 teams from 12 National Laboratories have conducted 11,513,60000 interviews and worked with many industry sectors to discover the commercial impact of technologies they have developed at the National Laboratories. Because of the teams' participation in the program, these technologies have reached a point of commercial viability that has attracted over $150 million in follow-on funding from both federal and private sources and more than 20 new companies have been launched. Additionally, over 75 licenses of DOE-funded technologies have been executed as a result of the Energy I-Corps program.

OTT funding primarily supports curriculum development and delivery of the training of the Energy I-Corps program, while participating DOE programs opt in by funding the cost of the participating researchers' time to complete the program. OTT will occasionally directly fund promising project teams that may not align well with any one office's priorities, such as crosscutting topic teams. OTT also supports efforts to help labs develop a pipeline for teams to participate in EIC and follow-on opportunities for some of the most promising EIC program graduates.

Lab Partnering Service (LPS) - OTT's LPS meets our Energy Act 2020 mandate to: "Establish a Lab Partnering Service Pilot Program to provide services that encourage and support partnerships between the National Laboratories and public and private sector entities, and to improve communication of research, development, demonstration, and commercial application projects and opportunities at the National Laboratories to potential partners through the development of a website and the provision of services, in collaboration with relevant external entities, and to identify and develop metrics regarding the effectiveness of such partnerships."

The Lab Partnering Service (LPS) provides information to small businesses; corporate entities; State, local and Tribal officials; investors and other external stakeholders interested in advancing energy innovation and connecting with leading DOE National Laboratory assets. Specifically, LPS facilitates access to National Laboratory expertise, technologies, facilities, and success stories. LPS streamlines access to unique capabilities that were previously difficult for investors, innovators, and others to find because the capabilities are distributed across the National Laboratory enterprise and presented primarily for the scientific community. In FY 2024, OTT will continue its focus on tracking impact and driving traffic to LPS, as well as continuing to maintain LPS content, especially in fields of high commercial relevance.

Technology Commercialization Fund (TCF) - In FY 2024, OTT will continue to implement the TCF, authorized in section 1001 of the Energy Policy Act of 2005. OTT has taken a more strategic view on implementation of the TCF by shaping an innovative program design structure that creates efficiencies and increases impact by forming crosscutting collaborations among RDD&D organizations and DOE National Laboratories. DOE's new, collaboratively developed approach offers program offices options for deciding how to obligate their TCF funding. Moving forward, OTT and all DOE program offices expect to learn from each subsequent cycle of TCF implementation and further refine and target its programming for

maximum commercialization impact. The goal for all TCF lab calls and resulting projects or programs, as set forth in TCF's authorizing statute, will continue to be "promoting promising energy technologies for commercial purposes."

EnergyTech University Prize – The EnergyTech University Prize (EnergyTechUP) is a university student competition to successfully identify a promising energy technology, assess its market potential, and create a business plan for commercialization. EnergyTechUP aims to cultivate the next generation of energy innovators while accelerating the transfer of energy technologies to the market. The prize seeks to attract the talented students of today and help them develop into the engineers, policymakers, entrepreneurs, market analysts, and project developers of tomorrow. Since the program's inception, 1,165 students have participated in the competition. Multidisciplinary student teams develop and present a business plan that leverages national laboratory-developed or other high-potential energy technologies. The prize is a high-leverage program sponsored by OTT, and multiple DOE RDD&D offices provide additional bonus funding. The FY 2024 budget will support a modest increase in the number of student prize winners.

Technology Commercialization Internship Program (TCIP) – OTT will continue its TCI Program for 15+ undergraduate students. This paid internship program will benefit a diverse cohort of participants by enhancing their education and training in technology commercialization-related fields and increasing their future marketability in these disciplines. In addition, participants will gain deep insight into the federal government's role in the creation and implementation of policies that will affect energy technology development and commercialization. Participants will also contribute to OTT mission-related research activities under the guidance of National Laboratories technology transfer and commercialization specialists and OTT staff. The Budget will sustain this program in FY 2024.

Other Commercialization Activities – OTT continuously assesses the spectrum of commercialization activities across the Department and seeks to seed gap-filling programs and activities with small, targeted investments. Areas of opportunity in FY 2024 may include catalyzing use of innovative program designs and partnering mechanisms, such as PIAs.

**Regional Incubator and Accelerator Program**

Energy Program for Innovation Clusters (EPIC) – EPIC is a competitive funding program for incubators supporting energy innovation clusters. OTT requests that $5M continue to be directed to this important area. The funds have been used to implement a multi-pronged strategy involving grants and prizes supporting a portfolio of impactful and geographically diverse incubators focusing on developing strong innovation clusters, connections, and support for energy-related technology and entrepreneurship.

**Technology Transitions**
**Programs**

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2023 Request vs FY 2024 Request |
|---|---|---|
| **Technology Transitions Programs $8,915,000** | **$11,911,000** | **+$2,996,000** |
| **Commercialization Activities $3,915,000** | **$6,911,000** | **+$2,996,000** |
| Funding supports execution of the Technology Commercialization Fund, Energy I-Corps Program, the Lab Partnering Service, EnergyTech University Prize, and targeted seed investments for new high-impact, gap-filling commercialization programs and partnering models. | Supports modest scale-up and continued improvement of existing programs. | This increase largely reflects the convergence of OTT's budget request level with anticipated funding requirements for the current program portfolio. Since FY 2021, OTT has been drawing down its historical carryover balances in a managed way. The increase will also support small, targeted scaling of programmatic reach (e.g. more student winners through ETUP) that are achievable with no associated growth in program management costs. |
| **Energy Program for Innovation Clusters $5,000,000** | **$5,000,000** | **$0** |
| Funding supports the Energy Program for Innovation Clusters initiative, including prizes, grants, and other competitive offerings. | Continuation of activities in FY 2024. | No change. |

## Foundation for Energy Security and Innovation

**Description:**

The Foundation for Energy Security and Innovation (FESI of Foundation) is a new, independent nonprofit organization that will enhance energy security can clean energy innovation by channeling private resources and philanthropic contributions toward the development and commercialization of innovative technologies. The Budget provides $31 million to establish the FESI and support FESI's core staff and initial operating expenses, as intended by the Partnerships for Energy Security and Innovation Act, which was signed into law as part of the CHIPS and Science Act (P.L. 117-167). The bulk of its long-term funding will be raised from philanthropic and private sources – the foundation will not depend on sustained DOE funds for its operation.

Commercialization of clean technologies is nonlinear and often fails because of inadequate support infrastructure including capital and tooling, as well as market, manufacturing, and industry expertise. Commercialization support infrastructure on national, regional, and local scales are essential to ensuring critical ecosystem players are onboard. Given the importance and complexity of technology commercialization, it is essential the DOE explore and leverage all authorities granted to the Agency, including establishment of the independent Foundation for Energy Security and Innovation as authorized by the CHIPS and Science Act.

The FESI is modeled after similar foundations already established at the National Institutes of Health, the Centers for Disease Control and Prevention, and the U.S. Department of Agriculture. These foundations have demonstrated a strong capacity to attract private-sector dollars that support rapid research and innovation in cutting-edge areas. Foundations that support other agencies are doing incredible things to advance their missions. In-Q-Tel, the not-for-profit entity supporting the CIA, is investing in companies commercializing technologies critical to our national security–many of these technologies have reached everyday consumers such as touchscreens for smartphones and digital stitching technology used by Google Earth. The CDC Foundation leveraged federal funding to raise nearly $600 million in donor funds and to hire over 3,000 surge healthcare staff to support COVID-19 pandemic relief efforts.[1] The National Fish and Wildlife Foundation is fostering public-private partnerships to work regionally to restore 16,000 acres of coastal habitats to help combat erosion caused by climate change.[2] These agency-related foundations are independent of the federal government and are different from other non-profit foundations due to their congressionally-authorized relationship with a federal agency. As such, the FESI can, "solicit and accept gifts, grants, and other donations, establish accounts, invest and expend funds" to support activities and programs of the FESI and – unlike any other non-profit foundation – can transfer funds, land, and equipment to the DOE. Agency-related foundations have demonstrated across the board that they can leverage their non-profit status to raise substantial private sector and philanthropic dollars in the pursuit of government agency objectives.

**Activities:**

FESI will support the mission of DOE, and more specifically, will increase private and philanthropic sector investments to accelerate the commercialization of energy technologies. The CHIPS and Science Act of 2022 provides FESI with broad authority to carry out its mission. To accomplish this mission, Congress authorized the FESI to engage with the private sector to raise and invest funds that support efforts to "create, characterize, develop, test, validate, and deploy or commercialize innovative technologies that address crosscutting national energy challenges".[3] To help enable and jump-start these activities, the CHIPS legislation includes authorizations for administrative and operational costs as well as a seed fund to help get the FESI up and running. These investments will enable the FESI to attract the talent and donors it needs to fill sizable gaps that remain within the energy innovation ecosystem.

In 2023, DOE established an internal FESI Working Group, as well as released a Request for Information (RFI) - Foundation for Energy Security and Innovation,[4] which represents the first of several opportunities to engage with DOE as it works to establish the FESI.

[1] https://www.cdcfoundation.org/making-an-impact-COVID-19
[2] https://www.nfwf.org/media-center/press-releases/nfwf-noaa-announce-record-136-million-coastal-resilience
[3] https://www.congress.gov/bill/117th-congress/house-bill/4346
[4] https://www.energy.gov/sites/default/files/2023-02/FESI%20RFI%20-%20FINAL_Signed_0.pdf

## Foundation for Energy Security and Innovation

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2023 Request vs FY 2024 Request |
|---|---|---|
| **Foundation for Energy Security and Innovation $0** | **$31,000,000** | **+$31,000,000** |
| No funds are appropriated for FESI in FY 2023, but staff from across the agency are engaged in a working group to scope out how the DOE would establish the FESI, pending appropriations. | $1.5 million will support DOE administrative expenses to establish the FESI and $29.5 million of initial capital will be provided to the FESI once established. | Establishes FESI, including funding for administrative and operational costs. |

**DEPARTMENT OF ENERGY**

**Funding by Site**

TAS_0346 - Office of Technology Transitions - FY 2024

(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| **Ames Laboratory** | | | |
| Technology Transitions Program Office | 36 | 0 | 0 |
| **Total Ames Laboratory** | **36** | **0** | **0** |
| **Argonne National Laboratory** | | | |
| Office of Technology Transitions Program Direction | 96 | 0 | 0 |
| **Total Argonne National Laboratory** | **96** | **0** | **0** |
| **Brookhaven National Laboratory** | | | |
| Technology Transitions Program Office | 44 | 0 | 0 |
| **Total Brookhaven National Laboratory** | **44** | **0** | **0** |
| **Fermi National Accelerator Laboratory** | | | |
| Technology Transitions Program Office | 20 | 0 | 0 |
| **Total Fermi National Accelerator Laboratory** | **20** | **0** | **0** |
| **Idaho National Laboratory** | | | |
| Technology Transitions Program Office | 15 | 0 | 0 |
| **Total Idaho National Laboratory** | **15** | **0** | **0** |
| **Idaho Operations Office** | | | |
| Technology Transitions Program Office | 240 | 0 | 0 |
| Office of Technology Transitions Program Direction | 498 | 3,434 | 2,958 |
| **Total Idaho Operations Office** | **738** | **3,434** | **2,958** |
| **Lawrence Berkeley National Laboratory** | | | |
| Technology Transitions Program Office | 88 | 0 | 0 |
| **Total Lawrence Berkeley National Laboratory** | **88** | **0** | **0** |
| **Lawrence Livermore National Laboratory** | | | |
| Office of Technology Transitions Program Direction | 42 | 0 | 0 |
| **Total Lawrence Livermore National Laboratory** | **42** | **0** | **0** |
| **Los Alamos National Laboratory** | | | |
| Technology Transitions Program Office | 51 | 0 | 0 |
| **Total Los Alamos National Laboratory** | **51** | **0** | **0** |
| **National Energy Technology Lab** | | | |
| Technology Transitions Program Office | 45 | 0 | 0 |
| Office of Technology Transitions Program Direction | 7 | 0 | 0 |
| **Total National Energy Technology Lab** | **52** | **0** | **0** |
| **National Renewable Energy Laboratory** | | | |
| Technology Transitions Program Office | 7,524 | 5,500 | 0 |
| Office of Technology Transitions Program Direction | 1,756 | 0 | 0 |
| **Total National Renewable Energy Laboratory** | **9,280** | **5,500** | **0** |
| **Oak Ridge Institute for Science & Education** | | | |
| Technology Transitions Program Office | 562 | 0 | 0 |
| Office of Technology Transitions Program Direction | 40 | 500 | 0 |

| | | | |
|---|---|---|---|
| **Total Oak Ridge Institute for Science & Education** | **602** | **500** | **0** |
| **Pacific Northwest National Laboratory** | | | |
| Technology Transitions Program Office | 0 | 40 | 0 |
| Office of Technology Transitions Program Direction | 225 | 0 | 0 |
| **Total Pacific Northwest National Laboratory** | **225** | **40** | **0** |
| **Princeton Plasma Physics Laboratory** | | | |
| Technology Transitions Program Office | 89 | 0 | 0 |
| **Total Princeton Plasma Physics Laboratory** | **89** | **0** | **0** |
| **Sandia National Laboratories** | | | |
| Technology Transitions Program Office | 195 | 0 | 0 |
| Office of Technology Transitions Program Direction | 20 | 0 | 0 |
| **Total Sandia National Laboratories** | **215** | **0** | **0** |
| **Savannah River National Laboratory** | | | |
| Office of Technology Transitions Program Direction | 22 | 0 | 0 |
| **Total Savannah River National Laboratory** | **22** | **0** | **0** |
| **SLAC National Accelerator Laboratory** | | | |
| Technology Transitions Program Office | 43 | 0 | 0 |
| **Total SLAC National Accelerator Laboratory** | **43** | **0** | **0** |
| **Washington Headquarters** | | | |
| Foundation for Energy Security and Innovation | 0 | 0 | 31,000 |
| Technology Transitions Program Office | 498 | 500 | 0 |
| Office of Technology Transitions Program Direction | 5,669 | 9,249 | 10,681 |
| **Total Washington Headquarters** | **6,167** | **9,749** | **41,681** |
| **Undesignated LPI** | | | |
| Technology Transitions Program Office | 1,645 | 2,875 | 11,911 |
| **Total Undesignated LPI** | **1,645** | **2,875** | **11,911** |
| **Total Funding by Site for TAS_0346 - Office of Technology Transitions** | **19,470** | **22,098** | **56,550** |

# Working Capital Fund

# Working Capital Fund

**Working Capital Fund**
**Program Mission**
**($K)**

| FY 2022 Obligations | FY 2023 Estimate | FY 2024 Estimate |
|---|---|---|
| 239,365 | 282,272 | 295,808 |

The Working Capital Fund (WCF or Fund) is a financial management tool for improving the financing and delivery of a range of common administrative services. Service delivery is assigned to business line service managers; financial responsibility resides in a Fund Manager and individual Business Line Managers are responsible for billing and funds control. The Fund creates a framework for business-like organization of support functions and market-like incentives for both customers and suppliers. The objectives of the Fund include:

- Improve the efficiency of administrative services by providing managers with the opportunity and responsibility to make choices on the amount, priority, and sources of administrative services used by their programs;
- Ensure that program mission budgets include a fair allocation of the costs of common administrative services; and
- Expand the flexibility of the Department's budget structure to permit service providers to respond to customer needs.

Funded businesses maintain performance-based plans that inform the budget and alert the Fund Manager of the need to change pricing policies. The Fund Manager reviews financial and business performance with Business Line Managers each quarter. These reviews culminate in quarterly and annual reports that include analyses of financial measures, including each business line's performance against its standards and its accomplishments.

WCF charges for full cost recovery for each business line in its budget and program billings. Full costs in Fund prices improve cost accounting for WCF activities, support improved decision-making for business line operations and program spending, and allow the Fund Manager to benchmark against other federal agency equivalent costs. Good budgeting practice incorporates full costing, as laid out in OMB Circular A-94, to promote efficient resource allocation through well-informed decision-making that incorporates societal costs and benefits by the Federal Government.

This information will allow the Department to improve the efficiency of WCF service offerings. The Fund Manager has created controls to satisfy oversight requirements, including regular budget reports on spending. This is consistent with other agency WCFs and satisfies the need to recover costs in reimbursable activities. WCF operations are valued by customers, serve the Department, and remain within the fiscal and policy guidelines established by the Department and by Congressional Committees.

The Department continues to examine ways to use the Fund to gain greater management efficiencies. The Fund has reported efficiency and effectiveness performance metrics since its inception and documents continuous improvement efforts to provide program customers with the best goods and services possible in accordance with other statutory requirements.

**Working Capital Fund: Business Line Budgets**

Table 1 summarizes projected customer billings by business line. These billings are the result of established pricing policies, which provide the basis for programs to manage their utilization of the WCF and control their budgets. FY 2024 guidance states that Program Office customers may utilize Program funding (as available and appropriate) for expenses that support program operations or agency mission/support and are independent of the number of staff: A-123/Internal Controls; Copy Services; Corporate Business Systems (all segments except Flexible Spending Accounts and Subsidy For Energy Employee Transit (SEET)); Financial Statement Audits; Interagency Transfers; Mail & Transportation; Pension Studies; Printing & Graphics; Project Management Career Development Program (PMCDP); and Procurement Management. WCF expenses that support staff operations or provide staff benefits and fluctuate based on the number of staff, are funded from Program Direction: Building Occupancy; Flexible Spending Accounts and Subsidy for Energy Employee Transit (SEET); Corporate Training Services; Health Services; Overseas Presence; Supply; and Telecommunications.

Table 1
FY 2024 Working Capital Fund Budget Business Lines[a]
($K)

| | FY 2022 Obligations | FY 2023 Estimate | FY 2024 Estimate |
|---|---|---|---|
| A-123/Internal Controls | 1,492 | 1,680 | 2,277 |
| Building Occupancy | 97,562 | 116,928 | 118,672 |
| Copy Services | 1,521 | 4,223 | 3,575 |
| Corporate Business Systems | 44,692 | 48,770 | 55,396 |
| Corporate Training Services | 2,910 | 2,984 | 4,013 |
| Financial Statement Audits | 9,828 | 12,160 | 12,152 |
| Health Services | 1,144 | 1,947 | 2,014 |
| Indirect WCF | 672 | 0 | 0 |
| Interagency Transfers | 7,754 | 8,822 | 8,767 |
| Mail and Transportation Services | 3,480 | 4,308 | 4,637 |
| Overseas Presence | 10,678 | 16,522 | 17,924 |
| Pension Studies | 516 | 553 | 785 |
| Printing and Graphics | 3,774 | 4,573 | 4,608 |
| Procurement Management | 10,365 | 16,253 | 14,311 |
| Project Management Career Development Program (PMCDP) | 1,635 | 1,678 | 1,699 |
| Supplies | 524 | 2,649 | 2,494 |
| Telecommunications | 40,818 | 38,223 | 42,482 |
| **Total, Working Capital Fund** | **239,365** | **282,272** | **295,808** |

[a] Numbers may not add due to rounding.

**Changes from FY 2023**

WCF Budget estimates for FY 2024 represent an increase of +$13,536K compared to the FY 2023 budget submission. This includes Secretary and WCF Board approved adjustments as follows: A-123/Internal Controls (+$598K); Building Occupancy (+$1,743K); Copy Services (-$648K); Corporate Business Systems (+$6,626K); Corporate Training Services (+$1,030K); Financial Statement Audits (-$8K); Health Services (+$67K); Interagency Transfers (-$55K); Mail & Transportation Services (+$329K); Overseas Presence (+$1,402K); Pension Studies (+$233K); Printing & Graphics (+$35K); Procurement Management (-$1,942K); PMCDP (+$21K); Supplies (-$154K); and Telecommunications (+$4,260K).

Table 2 summarizes projected customer billings by business line and by customer Program Office. Billing for customer organizations may change as a result of the final FY 2024 appropriations enacted for each Program Office, usage-based activities driven by consumption and/or any changes approved by the WCF Board.

Table 2
FY 2024 Working Capital Fund Budget Business Lines by Customer Program Office
($K)

| # | ORG CODE | A-123/INT CNTRL | BLDG OCCUP | COPY SVCS | CORPORATE BUSINESS SYSTEMS | CORP TRNG SVCS | FIN STMT AUDITS | HEALTH SVCS | INTER-AGENCY TRANS | MAIL & TRANSP | OVERSEAS PRESENCE | PENSION STUDIES | PMCDP | PRINT & GRAPH | PROC MGMT | SUPPLY | TELECOM | TOTAL ALL ACTIVITIES | ORG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TYPE $ * | P$ | PD$ | P$ | P$/PD$ (1) | PD$ | P$ | PD$ | P$ | P$ | PD$ | P$ | P$ | P$ | P$ | PD$ | PD$ | P$+PD$ | |
| 1 | AI | $ 0 | $ 165 | $ 1 | $ 4 | $ 0 | $ 1 | $ 0 | $ 0 | $ 15 | $ - | $ - | $ - | $ 3 | $ - | $ - | $ 23 | $ 212 | AI |
| 1 | AR | $ 26 | $ 3,322 | $ 28 | $ 595 | $ 12 | $ 140 | $ 18 | $ 70 | $ 32 | $ - | $ - | $ - | $ 20 | $ 8 | $ 0 | $ 791 | $ 5,061 | AR |
| 1 | BPA | $ - | $ 125 | $ - | $ 80 | $ 527 | $ - | $ 82 | $ 107 | $ 19 | $ - | $ - | $ - | $ 13 | $ - | $ 3 | $ 49 | $ 1,004 | BPA |
| 1 | CF | $ 3 | $ 5,090 | $ 161 | $ 627 | $ 56 | $ 15 | $ 77 | $ 15 | $ 132 | $ - | $ - | $ - | $ 91 | $ - | $ 90 | $ 1,576 | $ 7,933 | CF |
| 1 | CI | $ 0 | $ 664 | $ 33 | $ 37 | $ 3 | $ 2 | $ 8 | $ 1 | $ 39 | $ - | $ - | $ - | $ 31 | $ - | $ 21 | $ 128 | $ 969 | CI |
| 1 | CR (CESER) | $ 21 | $ 1,050 | $ 23 | $ 407 | $ 11 | $ 110 | $ 11 | $ 53 | $ 29 | $ 179 | $ - | $ - | $ 25 | $ - | $ 27 | $ 237 | $ 2,184 | CR |
| 1 | EA | $ 4 | $ 1,787 | $ 37 | $ 167 | $ 40 | $ 22 | $ 30 | $ 21 | $ 56 | $ - | $ - | $ - | $ 47 | $ - | $ 42 | $ 568 | $ 2,820 | EA |
| 1 | ED | $ 1 | $ 648 | $ 15 | $ 81 | $ 10 | $ 6 | $ 13 | $ 4 | $ 46 | $ - | $ - | $ - | $ 92 | $ - | $ 18 | $ 260 | $ 1,194 | ED |
| 1 | EE | $ 167 | $ 11,477 | $ 334 | $ 4,234 | $ 183 | $ 892 | $ 154 | $ 440 | $ 217 | $ 717 | $ 27 | $ 15 | $ 770 | $ 708 | $ 207 | $ 3,658 | $ 24,201 | EE |
| 1 | EHSS [AU] | $ 10 | $ 8,097 | $ 341 | $ 511 | $ 101 | $ 56 | $ 98 | $ 61 | $ 303 | $ - | $ - | $ - | $ 331 | $ 5 | $ 150 | $ 2,436 | $ 12,500 | EHSS |
| 1 | EI (EIA) | $ 7 | $ 7,703 | $ 131 | $ 859 | $ 107 | $ 35 | $ 137 | $ 29 | $ 160 | $ - | $ - | $ - | $ 85 | $ 88 | $ 82 | $ 1,520 | $ 10,943 | EIA |
| 1 | EM | $ 399 | $ 7,825 | $ 137 | $ 8,161 | $ 457 | $ 2,134 | $ 110 | $ 1,504 | $ 193 | $ 358 | $ 273 | $ 708 | $ 326 | $ 7,812 | $ 223 | $ 1,964 | $ 32,586 | EM |
| 1 | FE (FECM) | $ 41 | $ 3,296 | $ 129 | $ 2,688 | $ 252 | $ 218 | $ 69 | $ 151 | $ 142 | $ 358 | $ - | $ 80 | $ 175 | $ 585 | $ 69 | $ 1,110 | $ 9,365 | FE |
| 1 | FEMP | $ 8 | $ - | $ - | $ 111 | $ - | $ 45 | $ - | $ 21 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ 185 | FEMP |
| 1 | GC | $ 2 | $ 4,451 | $ 152 | $ 303 | $ 49 | $ 10 | $ 70 | $ 9 | $ 94 | $ - | $ - | $ - | $ 172 | $ - | $ 95 | $ 804 | $ 6,211 | GC |
| 1 | GDO | $ 4 | $ - | $ - | $ 59 | $ - | $ 24 | $ - | $ 11 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ 99 | GDO |
| 1 | HC | $ 1 | $ 2,009 | $ 138 | $ 266 | $ 63 | $ 8 | $ 38 | $ 10 | $ 89 | $ - | $ - | $ - | $ 114 | $ - | $ 38 | $ 1,016 | $ 3,790 | HC |
| 1 | HG | $ 0 | $ 1,211 | $ 9 | $ 30 | $ 12 | $ 1 | $ 6 | $ 1 | $ 34 | $ - | $ - | $ - | $ 55 | $ - | $ 5 | $ 102 | $ 1,464 | HG |
| 1 | IA | $ 2 | $ 1,645 | $ 59 | $ 137 | $ 18 | $ 10 | $ 30 | $ 7 | $ 69 | $ 717 | $ - | $ - | $ 35 | $ - | $ 7 | $ 432 | $ 3,168 | IA |
| 1 | IE | $ 4 | $ 102 | $ 11 | $ 69 | $ 4 | $ 20 | $ 2 | $ 10 | $ 19 | $ - | $ - | $ - | $ 7 | $ - | $ 4 | $ 66 | $ 318 | IE |
| 1 | IG | $ 4 | $ 1,876 | $ 50 | $ 411 | $ 139 | $ 21 | $ 41 | $ 18 | $ 76 | $ - | $ - | $ - | $ 51 | $ - | $ 19 | $ 667 | $ 3,372 | IG |
| 1 | IM (CIO) | $ 9 | $ 5,918 | $ 164 | $ 314 | $ 48 | $ 51 | $ 47 | $ 42 | $ 393 | $ - | $ - | $ - | $ 94 | $ 461 | $ 157 | $ 3,568 | $ 11,266 | IM |
| 1 | LM | $ 9 | $ 677 | $ 14 | $ 262 | $ 25 | $ 48 | $ 9 | $ 36 | $ 44 | $ - | $ - | $ 11 | $ 47 | $ 190 | $ 15 | $ 545 | $ 1,931 | LM |
| 1 | LP | $ 4 | $ 2,028 | $ 63 | $ 423 | $ 26 | $ 22 | $ 38 | $ 14 | $ 60 | $ - | $ - | $ - | $ 46 | $ - | $ 27 | $ 820 | $ 3,572 | LP |
| 1 | MA | $ 3 | $ 5,916 | $ 363 | $ 1,192 | $ 66 | $ 18 | $ 84 | $ 29 | $ 411 | $ - | $ - | $ - | $ 30 | $ 22 | $ 153 | $ 2,583 | $ 10,871 | MA |
| 1 | MESC | $ 1 | $ - | $ - | $ 18 | $ - | $ 7 | $ - | $ 3 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ 30 | MESC |
| 1 | NA (NNSA) | $ 924 | $ 22,521 | $ 593 | $ 17,538 | $ 689 | $ 4,939 | $ 368 | $ 3,817 | $ 876 | $ 12,368 | $ 380 | $ 443 | $ 341 | $ 2,429 | $ 517 | $ 12,128 | $ 80,871 | NA |
| 1 | NE | $ 80 | $ 2,260 | $ 54 | $ 1,569 | $ 103 | $ 428 | $ 49 | $ 351 | $ 119 | $ 2,689 | $ 7 | $ 76 | $ 957 | $ 869 | $ 56 | $ 749 | $ 10,416 | NE |
| 1 | NR | $ 94 | $ - | $ 0 | $ 1,625 | $ 46 | $ 503 | $ 51 | $ 500 | $ 0 | $ - | $ - | $ - | $ - | $ 331 | $ - | $ 102 | $ 3,253 | NR |
| 1 | OCED | $ 6 | $ - | $ - | $ 76 | $ - | $ 31 | $ - | $ 15 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ 18 | $ 145 | OCED |
| 1 | OE | $ 13 | $ 1,259 | $ 44 | $ 288 | $ 26 | $ 70 | $ 24 | $ 35 | $ 123 | $ 179 | $ - | $ 4 | $ 4 | $ 1 | $ 66 | $ 362 | $ 2,499 | OE |
| 1 | OP | $ 1 | $ 307 | $ 15 | $ 33 | $ 2 | $ 5 | $ 5 | $ 3 | $ 64 | $ - | $ - | $ - | $ 67 | $ - | $ 21 | $ 142 | $ 663 | OP |
| 1 | PA | $ 0 | $ 376 | $ 37 | $ 33 | $ 4 | $ 1 | $ 10 | $ 1 | $ 21 | $ - | $ - | $ - | $ 20 | $ - | $ 11 | $ 121 | $ 635 | PA |
| 1 | PM | $ 1 | $ 550 | $ 42 | $ 73 | $ 8 | $ 4 | $ 11 | $ 3 | $ 16 | $ - | $ - | $ - | $ 41 | $ - | $ 4 | $ 185 | $ 936 | PM |
| 1 | S | $ 0 | $ 1,660 | $ 92 | $ 35 | $ 4 | $ 2 | $ 10 | $ 1 | $ 265 | $ - | $ - | $ - | $ 13 | $ - | $ 28 | $ 145 | $ 2,254 | S |
| 1 | SB | $ 0 | $ 189 | $ 40 | $ 81 | $ 5 | $ 1 | $ 4 | $ 1 | $ 56 | $ - | $ - | $ - | $ 83 | $ - | $ 10 | $ 112 | $ 581 | SB |
| 1 | SC | $ 369 | $ 6,214 | $ 140 | $ 8,298 | $ 311 | $ 1,973 | $ 170 | $ 1,156 | $ 187 | $ 358 | $ 98 | $ 357 | $ 26 | $ 749 | $ 177 | $ 1,630 | $ 22,212 | SC |
| 1 | SCEP | $ 36 | $ - | $ - | $ 474 | $ - | $ 193 | $ - | $ 91 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ 794 | SCEP |
| 1 | SSA | $ 15 | $ 5,769 | $ 108 | $ 596 | $ 95 | $ 81 | $ 83 | $ 49 | $ 203 | $ - | $ - | $ - | $ 291 | $ - | $ 135 | $ 1,209 | $ 8,635 | SSA |
| 1 | TT | $ 1 | $ 366 | $ 18 | $ 41 | $ 5 | $ 5 | $ 7 | $ 3 | $ 18 | $ - | $ - | $ - | $ 77 | $ - | $ 15 | $ 135 | $ 690 | TT |
| 1 | WAPA | $ 5 | $ 119 | $ 0 | $ 2,594 | $ 510 | $ - | $ 50 | $ 71 | $ 19 | $ - | $ - | $ 4 | $ 27 | $ 52 | $ 3 | $ 521 | $ 3,976 | WAPA |
| | | | | | | | | | | | | | | | | | | | |
| 41 | TOTALS | $ 2,277 | $ 118,672 | $ 3,575 | $ 55,396 | $ 4,013 | $ 12,152 | $ 2,014 | $ 8,767 | $ 4,637 | $ 17,924 | $ 785 | $ 1,699 | $ 4,608 | $ 14,311 | $ 2,494 | $ 42,482 | $ 295,808 | |

*** Type $ -- P$ = Program funding; PD$ = Program Direction funding.**
*** Maximum amount is reflected for P$; Program Office customers can still opt to use PD$ funding at their discretion, within the authorization of their appropriation.**
*** A number of DOE Program Offices have no P$ funding, therefore their WCF share is financed with PD$.**
**1) Corporate Business Systems -- FSA & SEET segments = PD$; all other segments = P$.**

Table 3 summarizes the projected Federal Full Time Equivalents (FTEs) funded via the WCF by business line and the parent Program Office to which the FTEs are assigned in the DOE personnel system. Associated FTE costs are included as part of the indirect component of the amounts reflected in Tables 1 and 2 in line with the overall WCF goal of recovering full costs. Billing for customer organizations may change as a result of FTE vacancy status and/or any changes approved by the WCF Board.

Table 3
FY 2024 Projected FTEs Funded via the Working Capital Fund by Business Line and Parent Program Office

| Business Line | Managing Org | FY24 FTEs |
|---|---|---|
| A-123/Internal Controls | CF | 0.80 |
| Building Occupancy | MA | 30.70 |
| Copy Services | MA | 1.70 |
| Corporate Business System (CBS) | CF/HC/MA/PA | 32.15 |
| Corporate Training Services (CTS) | HC | 5.40 |
| CyberOne | IM | 0.00 |
| Financial Statement Audits | IG | 0.40 |
| Health Services | HC | 2.30 |
| Interagency Transfers | IM | 0.45 |
| Mail & Transportation | MA | 1.70 |
| Overseas Presence | NNSA | 27.00 |
| Pension Studies | CF | 0.50 |
| Printing & Graphics | MA | 5.40 |
| Procurement Management | MA | 1.30 |
| Proj Mgmt Career Dev Prog (PMCDP) | MA | 1.20 |
| Supplies | MA | 0.10 |
| Telecommunications | IM | 3.30 |
| Fund Manager/Indirect | WCF (CF) | 2.25 |
| | | |
| **Total FTE Estimate** | | **116.65** |

The following section includes a description of each business line, along with pricing policy and selected performance measures.

## A-123/Internal Controls

**Description**
The OMB Circular A-123, *Management's Responsibility for Internal Control* and Federal Managers' Financial Integrity Act (FMFIA), define management's responsibility for internal control and include guidance for management to assess the effectiveness of internal control.

A-123/Internal Controls will ensure the Department meets the intent of the Congress and the Executive Branch for internal control of financial reporting and has appropriate support for the Secretary's annual assurance statement, included as part of the Agency Financial Report. Because the requirements of OMB Circular A-123 apply to the Agency as a whole, each benefiting program must share the cost. In addition, DOE pricing policy incorporates the full costing requirements laid out in OMB Circular A-94 to promote efficient resource allocation through well-informed decision-making by the Federal Government for evaluating societal costs and benefits.

In order to support these goals, the business line will develop, provide, and maintain the capabilities needed to implement a comprehensive Department-wide evaluation of internal controls over financial reporting. The technical support resources to maintain and support the evaluation data collection tools are currently not fully available in-house. Furthermore, the Department's internal controls over financial reporting are examined during our yearly external Financial Statement audit, requiring as-needed technical support to document some Financial Statement related internal control processes with DOE-wide impact.

**Pricing Policy**
The A-123/Internal Controls charges customers a pro rata allocation of costs based on percentage share of three prior fiscal years' combined budget shares, using the Congressional request of the most recent year. Departmental programs that use proprietary financial systems are excluded from billing for this business line.

## Building Occupancy

**Description**
The core services in the Building Occupancy Business Line include space management (rent), utilities such as heat and electricity, cleaning services, snow removal, facility operation and preventive and restorative maintenance, pest control, trash removal, and waste recycling. Engineering and facilities services include drafting of construction documents, developing scopes of work, construction management and inspection, value engineering, leasehold administration, lock repair and key management, safety and occupational health, moving and warehousing services, and conference support. This business also provides electronic services, which involve audio/visual meeting and conferencing support, as well as repair and maintenance of Headquarters radio communications and electronic equipment. Approved improvements to the Headquarters complex are also included.

**Pricing Policy**
Policy is based on direct costs and allocations in the following manner:

- Each year, organizations sign occupancy agreements that define the space to be assigned to them.
- On a building-by-building basis, direct rental value of the space assigned to each organization is calculated, based on rent charged to the Department by the General Services Administration (GSA). Customer rent costs are based on areas assigned to each organization at the start of each fiscal year.
- Common use space costs in each building are divided among the tenants of that building based on their proportional shares of direct rental costs.
- Certain additional costs, such as common area improvements and health and life safety programs, are allocated as a pro rata addition to the building-by-building charges described above.
- Electronic Services charges are allocated according to direct building occupancy costs.
- In addition, tenants may arrange, at their own cost, alterations of office space.
- Charges related to property management are allocated based on program usage during the prior fiscal year.
- FY 2024 estimates reflect historical costs for utilities as well as information provided by GSA as to the anticipated rent for future years (as of FY 2022), and projections of space usage in future years (as of FY 2022) based on input from customer organizations, historical information, space availability, and Departmental objectives.

## Copy Services

**Description**
This Copy Services Business Line provides the following services:

- Staffed photocopy centers at Forrestal and Germantown capable of reproducing 25,000 impressions per document;
- Centralized (walk-up) photocopy rooms;
- Dedicated (customer-assigned) photocopiers, including needs assessment analysis to determine workload and most appropriate equipment;
- Digital document management, including optical scanning of paper copy documents and storage on electronic files; and
- Digital news clips to programs based on subscriptions.

**Pricing Policy**
Each office pays the full cost to maintain and supply its assigned dedicated photocopiers. For walk-up and staffed photocopiers, a cost per photocopy is calculated and programs are charged based on the number of photocopies made by program staff. The digitization pricing policy is to charge on a per-page basis to cover the costs of this business segment. FY 2024 estimates reflect amounts based on usage from the year prior to formulation (FY 2021).

## Corporate Business Systems

**Description**

Corporate Business Systems (CBS) is the Department's solution for managing enterprise-wide systems and data. CBS is consolidating and streamlining Department-wide systems and business processes to integrate financial, budgetary, procurement, personnel, program, and performance information. CBS is supported at the core by a central data warehouse/portal that links common data elements from each of the Department's business systems and supports both external and internal reporting. The line of business provides efficiencies in its administration that result in a single, senior business manager for DOE's corporate business systems. The business consists of STARS, STRIPES, Funds Distribution System (FDS) 2.0, iPortal, Payment Processing, CHRIS and related sub-segments, Digital Media and Payroll.

**Standard Accounting and Reporting System (STARS) Segment** provides the Department with a modern, comprehensive, and responsive financial management system that records and processes accounting transactions for general accounting, payments, and receivables; purchasing, including obligations and reservations, accruals, plant and capital equipment; nuclear materials accounting, and many other functions. STARS is also used for financial reporting including Governmentwide Treasury Account Symbol (GTAS), Standard Form (SF) 220.9, SF 224, and the Department's financial statements. Costs include all operations and maintenance support, including the Chief Information Officer's Application Hosting and annual Oracle Software licensing.

**Strategic Integrated Procurement Enterprise System (STRIPES) Segment** replaced and consolidated federal corporate, regional and local procurement-related systems across the Department. STRIPES automates all procurement and contract activities required or directly associated with planning, awarding, and administering various unclassified acquisition and financial assistance instruments, thereby increasing the internal efficiency of the Department. STRIPES is also fully integrated with STARS, creating efficiency between the two systems and improving the accuracy and timeliness of funding commitments and obligations. Costs include all operations and maintenance support, including the Chief Information Officer's Application Hosting and the annual Compusearch subscription fees.

**Budget Formulation and Distribution System (BFADS)** [formerly Funds Distribution System (FDS) 2.0] **Segment** is a corporate solution that automates, standardizes, and streamlines the funds distribution and formulation processes and procedures across the Department. Costs include all operations and maintenance support, including the Chief Information Officer's Application Hosting and annual Oracle Software licensing.

**iPortal/Information Data Warehouse (IDW) Segment** is the CBS face to its customers. It provides the gateway into all CBS applications and services. The IDW provides capability to integrate and store data from various corporate and/or program systems for reporting using Business Intelligence reporting tools. Costs include the operations and maintenance of the technical infrastructure, consisting mostly of Application Hosting and annual software licensing fees.

**Payment Processing Segment:** The Oak Ridge Financial Service Center processes all the Department's payments. It completes over 170,000 payments annually. Costs include operations and maintenance of Financial Accounting Support Tool (FAST), Vendor Inquiry Payment Electronic Reporting System (VIPERS), and the Department of Energy Payment and Collection (DOE-PAC) systems.

**Corporate Human Resource Information System (CHRIS) Segment** is a nation-wide operational portfolio of systems within the Department that serves as the official system of record for human resource management information for all employees. CHRIS supports the Administration's strategic human capital management initiative and expands e-government within DOE, combining electronic workflow and other best practices in work processes with a web-based IT architecture and suite of software applications based on off-the-shelf products (PeopleSoft and USA Staffing), and the legacy Employee Self-Service system. This budget also funds recruitment using social media and specific recruiting efforts to reach veterans and disabled veterans. In addition, costs for inter-agency contributions for electronic benefits are financed in WCF. Costs include all operations and maintenance support, including the Chief Information Officer's Application Hosting and annual Oracle Software licensing.

**Digital Media Segment** rationalizes hundreds of websites and streamline web operations, reducing duplicative spending, and improving overall digital communications. Costs will include the operations and maintenance of the technical infrastructure of the Department's Home Page (Energy.gov), consisting mostly of application hosting, iterative

development, and platform upgrades to meet ongoing scale and usage demands.

**Payroll Services Segment** encompasses three areas: Payroll, Flexible Spending Account (FSA) and Voluntary Early Retirement Authority (VERA) / Voluntary Separation Incentive Payment (VSIP) administrative fees, and Subsidy for Energy Transit (SEET). Civilian payrolls are prepared based on authenticated documentation. Through the Defense Finance and Accounting Service (DFAS) this segment: computes, deposits, and reports Federal, State, and local income taxes; maintains employee records related to Civil Service and Federal Employees Retirement Systems (CSRS and FERS); reports retirement information to the Office of Personnel Management (OPM); and performs reconciliation of account balances with DFAS, OPM and Treasury. Payroll services accounts for and reports on employees' health benefits coverage, thrift savings plans, transit subsidies (SEET), and unemployment compensation, among other non-salary employee payments. It also processes donated leave into the Defense Civilian Pay System. Additionally, it maintains and operates the Department's system of allocating payroll costs to the proper appropriation.

**Pricing Policy**

CBS activities charge programs a pro-rata allocation of costs based on percentage share of three prior fiscal years' combined budget shares, using the Congressional request of the most recent year. Exceptions to this pricing policy include:

- STRIPES charges based on the number of 1102 series system users recorded during the fiscal year prior to formulation (for FY 2024 this is FY 2021).
- ORFSC charges programs based on a pro-rata share of processed transactions during the fiscal year prior to formulation (for FY 2024 this is FY 2021).
- CHRIS and Payroll charges programs based on an allocation of Federal employment on-board by organization at the beginning of the formulation year (for FY 2024 this is FY 2022).
- SEET and FSA are charged to programs based on actual usage during the fiscal year. Estimates are derived from the twelve-month period prior to formulation.

## Corporate Training Services

**Description**

The Corporate Training Services (CTS) Business Line combines Training Delivery and Services (TDS), Learning Nucleus, OPM 360 Assessments and National Defense University (NDU) business segments to deliver courses which support the Department's mission at competitive pricing and fee for service pricing.

**Learning Nucleus Segment** is a web-based commercial off-the-shelf training system that provides access to online learning and training. The Learning Nucleus program provides access to online learning activities proven to improve learning outcomes and reduce costs independently or in combination with other training methods. The overall vision of the Learning Nucleus program is to provide all DOE employees with access to web-based training. The Learning Nucleus has been structured to meet DOE needs with a customized access process and DOE-specific information (including DOE-mandated training).

**Training Delivery and Services (TDS) Segment** includes the design, development, and delivery of competency-based courses to meet critical skills development needs in Project Management, Program Management, and Acquisition and Assistance Management. A series of Continuing Education courses present new topics and refresher training. Program offerings include modular course design and customized training for on-site and centralized delivery. The training management services are offered to customers on a negotiated basis only.

**Office of Personnel Management (OPM) 360 Degree Assessment Program Segment** provides the Department with services through an Interagency agreement with OPM. DOE's program is part of a larger effort to change the leadership culture throughout the agency. By administering leadership behavior assessments and simple, but targeted, evaluations of leadership training efforts, the Department can track changes in the perception of leadership behaviors over time and assess the effectiveness of leadership training. Participants are rated by people of varying relationships to the participant (e.g., peer, subordinate/direct report, and supervisor). Assessments will focus on leadership competencies most relevant to DOE's current strategic plan, and include items related to personal training experiences and the effectiveness of those experiences.

**National Defense University (NDU) Segment** provides services through an Interagency Agreement with the National Defense University (NDU/DOD) for DOE participation at the National Defense University (National War College) for Energy Master/Certificate Programs and the Advanced Management Program.

**Pricing Policy**
Pricing policy for Corporate Training Services Business Line is as follows:

- Learning Nucleus – Participating DOE organizations pay for Learning Nucleus access through a fixed annual fee per student and allocation of administrative costs based on the number, by program, of Federal employees in the personnel system and contract employees that are approved registered users in Learning Nucleus.
- TDS – Participating DOE organizations in the TDS pay $250/day for each employee enrolled in professional skills training courses.
- OPM 360 – Participation in the OPM 360 Assessments is financed by the benefitting program; fees per person are based upon specific assessment options.
- NDU – Participation in the NDU is financed by the benefitting program; fees per person are based upon the specific training program.
- Federal staff support consists of program management, developing curriculum, contractor oversight of distance learning, and managing classroom delivery by contractor staff.
- FY 2024 estimates reflect amounts based on usage from the fiscal year prior to formulation (FY 2021), except Learning Nucleus, which is based on an allocation of the number of Federal employees on-board by organization, and number of registered contract employee users, at the beginning of the formulation year (FY 2022).

**Financial Statement Audits**

**Description**
Support services relating to the audit contract are required to attain contractor expertise, needed primarily for financial statement audits required by the Government Management Reform Act (GMRA) [e.g., actuaries, petroleum engineers, information technology support personnel and vulnerability testing, as required by the Federal Information Security Management Act (FISMA)]. Oversight of this process and contract activities is provided by the Office of the Inspector General.

**Pricing Policy**
The business line charges customers a pro-rata allocation of costs based on percentage share of three prior fiscal years' combined budget shares, using the Congressional request of the most recent year. Departmental programs that use proprietary financial systems (e.g., the FERC and the PMA's) will be excluded from billing for this business.

**Health Services**

**Description**
The Health Services Business Line provides common administrative services to the DOE Headquarters community. These services include Headquarters health centers, a drug testing program (DOE-wide), an employee assistance program, and disability services. The Department's analysis shows cost reductions will result from consolidating these activities under one enterprise with a focus on program demand for these services.

**Health Center Segment** consists of two HQ facilities: one at Forrestal and one at the Germantown. Services provided include: emergency response; travel immunizations; fitness-for-duty and pre-employment physical exams; annual influenza vaccinations; and general occupational health concerns. The health center is operated under an Interagency Agreement with the Department of Health & Human Services, Federal Occupational Health (HHS/FOH) to provide packaged services, which reduces costs and DOE resource needs.

**Drug Testing Program Segment**, a DOE-wide program, provides for collection, testing, and medical review of alcohol and drug testing. This activity supports testing of DOE positions for fitness-for-duty, pre-employment, and random drug testing and positions which require a clearance (e.g., security, technical, and/or executive positions) in line with Federal mandates (Executive Order 12564; Department of Transportation Regulations; and 49 Code of Federal Regulations Part 40). The

Department has an existing Interagency Agreement with Department of the Interior to utilize their contracts, which reduces costs and saves DOE resources.

**Employee Assistance Program (EAP) Segment** at Headquarters finances professional EAP counselors to offer assistance to DOE federal employees for family, work, health, and other concerns (work-life) in line with Federal mandates (Executive Order 12564; Public Law 79-658; Public Law 99-570 (5 U.S.C. §§7361 and 7362); Public Law 98-24 (42 U.S.C. §290dd-1); Public Law 96-24 (42 U.S.C. §290ee-1); Sec. 7361 and Sec. 7362 of Public Law 99-570; and the Public Health Services Act).

**Disability Services Segment** coordinates contract vendors to provide sign language interpreting services for deaf and hard-of-hearing federal employees at Headquarters in line with Federal mandates (Rehabilitation Act of 1973, as amended). Includes Federal Relay Services, which provides equitable access to communications for federal employees who are deaf, hard-of-hearing, deaf/blind, or have speech disabilities.

**Pricing Policy**
Charges for Health Service segments are based on an allocation of Headquarters Federal employment on-board by organization at the beginning of the formulation year (for FY 2024, this is FY 2022). Charges for the Drug Testing segment are based on an allocation of DOE-wide Federal employment on-board by organization at the beginning of the formulation year (for FY 2024, this is FY 2022).

**Interagency Transfers**

**Description**
Interagency transfers are necessary to finance National Archives and Records Administration (NARA) storage and management of critical DOE records and the Integrated Acquisition Environment. Other activities include E-Government initiatives, which consist of consolidation studies of lines of businesses, agency assessments, and other intergovernmental procurement systems.

The DOE Records Management Program ensures compliance with the Federal Records Act of 1950, as amended, by promoting the management of records throughout their life cycle in an economical, efficient, and effective manner. DOE maintains an annual agreement with NARA on records storage costs and appropriate records management and disposition, consistent with approved records schedules.

Integrated Acquisition Environment (IAE) provides a secure business environment that facilitates and supports cost effective acquisition of goods and services in support of mission performance. To accomplish this mission, IAE focuses on the following goals:

- Create a simpler, common integrated business process for buyers and sellers that promotes competition, transparency and integrity.
- Increase data sharing to enable better business decisions in procurement, logistics, payment, and performance assessment.
- Take a unified approach to obtaining modern tools to leverage investment costs for business-related processes.

IAE is operated under an Interagency Agreement with GSA to provide packaged services, reduce costs, and save DOE resources by leveraging economy of services. GSA is charged with the fiduciary responsibility to work across government to provide acquisition services to support agency missions by delivering timely acquisition tools and services, including but not limited to, the Central Contractor Registration, excluded parties list, electronic subcontracting reporting, federal business opportunities, federal procurement data, wage determinations, and others, as business requirements are identified by the acquisition community.

Per OPM, agencies will need to contribute funding to cover credit monitoring and related services/benefits for the OPM cybersecurity incidents affecting Federal and contract employees. Coverage will include a suite of services (e.g., credit monitoring, call center/support services, and identity theft protection).

**Pricing Policy**
E-Gov and NARA – these activities will be charged to programs on a pro rata allocation of costs based on percentage share of three prior fiscal years' combined budget shares, using the Congressional request of the most recent year.

OPM Credit Monitoring – Program office cost shares are based on an allocation of HQ and Field credential numbers by organization from the beginning of the formulation year (for FY 2024, this is FY 2022).

### Mail and Transportation Services

**Description**
The Mail Center provides a variety of mail services for all official and other authorized mail for DOE and its employees. Services include the processing of all incoming postal mail, outgoing official mail, internal mail processing, accountable mail processing, pouch mail, a variety of overnight express mail services, messenger services, directory services, and pick-up and delivery services. In response to the threat of dangerous or hazardous items being mailed to the Department and its employees, the business line has implemented various processes for sanitizing and testing mail for dangerous or hazardous materials.

The Transportation Service includes shuttle services, Headquarters executive transportation, motor vehicle fleet administration, and courier service. The shuttle services operate between approved DOE Headquarters facilities. Executive transportation is provided to Headquarters executive staff for official business required to further the mission of the Department of Energy. Motor vehicle fleet administration includes fleet maintenance, monitoring and tracking fleet activity, conducting fleet management activities, and the vehicle maintenance program. Courier service is for the delivery and pick-up of sensitive and non-sensitive material within the Washington Metropolitan area.

**Pricing Policy**
Mail and transportation pricing has multiple components:

- Offices pay the actual dollar cost for outgoing United States Postal Service (USPS) mail and for Federal Express or other special mail services. Offices pay for internal mail distribution based on the number of mail stops.
- Offices pay for Mail Security based on their percentage of incoming USPS mail over the preceding six-month period.
- Offices pay for Express Mail labor based on their percentage of the total volume of incoming and outgoing special mail during the preceding six-month period.
- Offices pay for USPS Outgoing labor based on their percentage of actual outgoing mail for the preceding six months.
- Offices pay for specified special services on a negotiated basis.
- Programs pay for shuttle services based on the prior month's usage.
- Programs pay for courier and messenger services based on their prior year usage.
- Programs pay for Headquarters executive transportation services based on their prior year usage.

### Overseas Presence

**Description**
The Department has a long-standing presence in several diplomatic missions around the world, enabling the Department to promote American trade and support critical treaties with our allies.

DOE funds 27 federal positions and 20 locally employed staff in 22 countries that support the Secretary and, by extension, the entire Department. The business line provides administrative and operational support service to Departmental personnel traveling overseas for mission programs.

The budget finances federal salaries, overseas operating costs, and International Cooperative Administrative Support Services (ICASS) and Capital Security Cost Sharing (CSCS) programs. The Department utilizes State Department resources as shared services to ensure that costs are minimized.

**Pricing Policy**
The annual bill for these charges will cover the fixed cost of the program and be allocated to programs by the Overseas Presence Advisory Board (OPAB) based on negotiations with applicable program offices.

## Pension Studies

**Description**
Pension Studies provide program offices with an independent measure of contractor benefits and compare each contractor to both internal and external benchmarks. Program offices use the results of these studies in discussions with contractors regarding the need for reducing costs associated with contractor employee benefits. Results can be measured by the changes made to contractor employee benefit plans.

Pension Studies require access to actuarial expertise that is essential to understanding the implications on federal budgets of potential pension liabilities. Factors that impact pensions are dynamic and include: volatility of contributions, inflation, benefit plan provisions, workforce restructuring, and pension legislation. These studies support the Department's budget projections, financial statements analysis, Office of General Counsel, and pension and post-retirement benefit management plans. Additionally, the business line regularly provides analysis and assistance to DOE program offices and contractors facing difficult pensions and benefits issues that require objective Departmental expertise.

Under the terms of the contracts that the Department has with each of its management and operations (M&O) contracts, the Department reimburses the contractors for reasonable costs associated with fulfilling their duties under the terms of the contract. These reasonable costs include costs associated with providing benefits to the contractors' employees.

Beginning in 2009, the Department increased its oversight of these benefits and began regular reporting on the expected reimbursements for pension plans. DOE also reports on expected reimbursements for other postretirement benefits (primarily medical). A key goal of this oversight is to improve transparency among the contractors with respect to the benefits being provided to the contractors' employees, as well as the associated annual cost per employee. The collection and analysis of this data requires a great deal of personnel, including the use of external actuarial services.

Publicizing the results of the study has exerted pressure on the contractors to address the costs associated with their benefit plans. Given that there are over 80 pension and postretirement benefit plans, analysis across the entire complex requires a significant amount of resources.

The Pension Studies line of business and its systems also supports DOE's compliance with mandated financial reporting. This includes a Congressional mandate to provide semiannual reports to Congress in April and September with updated information on Department of Energy contractor defined benefit pension plans and mandated reporting of pensions and benefits information in the Annual Financial Report.

**Pricing Policy**
Programs will be charged based on each program's sites' ratio of the total pension and post-retirement reimbursements reported in the April Report to Congress for the prior fiscal year. Studies are conducted on a biannual cycle (currently the even fiscal years), with reduced billings required for off-cycle years (currently odd fiscal years).

## Printing and Graphics

**Description**
The Printing and Graphics Business Line provides procurement and liaison services with commercial printers through the Government Printing Office. It also provides design and development of pre-press graphics, electronic forms and exhibits, and court reporting services. Contractor staff distributes materials produced in-house as well as materials produced by other government agencies. This business line also provides professional photography, lab technicians, portrait studio operations, graphics, visual aids, and presentation materials. Centralized visual archives are provided through a repository of general interest photos.

**Pricing Policy**
Organizations pay direct costs for printing, printed products, Federal Register publications, and graphics services. Additionally, programs pay maintenance costs on graphics equipment and graphics supplies as a percentage allocation of costs incurred in the previous fiscal year. FY 2024 estimates reflect amounts based on usage from the fiscal year prior to formulation (FY 2021).

## Procurement Management

**Description**
Audit Services, Contract Closeout, and Purchase Card Surveillance business segments work together to help validate compliance with procedures and improve the internal controls of the Department. These segments also respond to specific issues raised by the Inspector General. Ultimately, savings to programs are realized by preventing fraud, waste, and abuse.

**Contract Audit Services Segment** of the business represents funding to various audit entities; however, the majority of the funding is provided to the Defense Contract Audit Agency (DCAA). DCAA provides audit services to the Department's program offices in support of their acquisition activities, at the request of their contracting officers. These services benefit DOE by supporting contracting officers in making determinations for reasonableness and realism, and also by validating contractor costs, indirect rates, disclosure statements, and accounting systems.

**Contract Closeout Segment** of the business is the final stage in contract administration support for DOE Headquarters elements. Services include ensuring that all contracted products and services have been delivered, final releases are obtained, final invoices and vouchers are processed for payment, and any remaining unexpended funds under the contract are released. During FY 2022, the return-on-investment calculation shows that for every one dollar invested in the contract closeout activity, $13 of uncosted funding was de-obligated from expired instruments.

**Purchase Card Data Mining Segment** monitors purchase card usage within the Department. DOE purchase cards are issued under a task order through the SmartPay3 program administered by GSA. Funding for this effort is derived from rebates DOE elements receive, based upon the dollar volume of purchases. The vendor provides a data mining system to DOE at no cost for the basic version. This segment provides surveillance over the use of purchase cards and oversees the data mining to track and resolve suspicious purchase card transactions through risk-based analytics. DOE has incorporated customizations to the data mining system in an effort to enhance security.

**Pricing Policy**
Procurement Management pricing has multiple components:

- Closeout – each Headquarters element pays the actual contract closeout cost, determined by the unit price of each contract type, and negotiated level of service.
- Purchase Card Data Mining costs are allocated based on the distribution of refunds resulting from the DOE purchase card program.
- Contract audits are charged to programs based on actual usage from the previous fiscal quarter.
- FY 2024 estimates reflect amounts based on usage from the fiscal year prior to formulation (FY 2021).

## Project Management Career Development Program

**Description**
The Project Management Career Development Program (PMCDP) establishes requirements and responsibilities for all federal project directors (FPDs) with line management responsibility for capital asset projects. The PMCDP defines the necessary project management knowledge, skills, and abilities; project management training requirements; a career development tracking system; and a project management certification program to successfully manage DOE/NNSA projects. Certification requirements and responsibilities are applied in accordance with the Certification and Education Guidelines (CEG) developed and maintained by the Office of Project Management Oversight and Assessments and approved by the PMCDP Certification Review Board. All candidates for PMCDP certification must have individual development plans (IDPs) that address planned training and course work, details, rotational assignments, mentoring agreements, and other developmental activities defined in DOE O 361.1C, Acquisition Career Management Program, Chapter V.

**Pricing Policy**
In FY 2024, the business line will continue to assess programs based on the number and value of their projects in the Department's portfolio, and the number of incumbent FPDs or potential FPDs identified by the programs. Fixed costs related to the PMCDP will be charged to programs based on their pro-rata share of the number of projects and the value of those projects in the Project Assessment and Reporting System (PARS). The variable costs of delivering courses will be charged to programs based on their pro-rata share of targeted participants. FY 2024 estimates reflect amounts based on

programmatic statistics reported in PARS and PMCDP Program participant profile data at the time of formulation (FY 2022). This data includes estimates of present and forecasted needs that include number of projects, portfolio value of projects, and the number of incumbent and candidate FPDs.

In addition, we expect some programs outside of the assessment pool to request participation in the training offered. In those cases, the business will allocate a certain number of slots, on a space-available basis, at the rate of $200 per day. These charges will offset other development costs and future charges to the programs.

**Supplies**

**Description**
This business line operates one self-service store, which carry a wide variety of consumable office products. At customers' request, it acquires specialty items, not stocked in the store. Products carried are based on review of equipment in the agency inventory and customer input and suggestions. This business operates the supply store as a commercial operation, which is paid only for the supplies purchased by DOE employees. In support of federal green purchasing Executive Orders and statutory mandates, the Headquarters supply store (located in Forrestal) offer a wide range of environmentally friendly supplies that are energy efficient or contain post-consumer waste (recycled) materials, bio-based materials (biological, agricultural or forestry-based), and biodegradable materials (decompose easily).

**Pricing Policy**
Each organization pays for supplies purchased by its employees. FY 2024 estimates reflect amounts based on usage from the fiscal year prior to formulation (FY 2021); extraordinary or unusual changes in usage patterns are not anticipated in the Fund's estimates.

**Telecommunications**

**Description**
The Telecommunications Business Line consists of comprehensive enterprise activities to include: Network and Voice Infrastructure Services, DOEnet Services, Video Teleconferencing and Cellular Services.

**Network and Voice Infrastructure Services Segment** provides connectivity for DOE Headquarters (HQ) and Field operations through Local, Metropolitan and Wide Area Networks. This connectivity provides interoperability for organizational Local Area Network (LAN) and Metropolitan Area Network (MAN) segments in two main Headquarters (DC Metro area) and associated satellite buildings; and connectivity to the Headquarters-located corporate applications. Wide Area Network (WAN) infrastructure provides access to/from and cybersecurity for Internet access, e-mail and other applications for information processing and sharing through non-HQ infrastructure.

Voice infrastructure connects two main Headquarters and satellite buildings for internal and external phone service. The infrastructure includes communication networks, installed telephones and processing switching equipment. Telephone services includes local, long distance and international dialing; and specialized services such as operator-assisted conference calls, voice mail, call forwarding and automatic ring-back.

**DOEnet Services Segment** provides connectivity to the entire national complex. DOEnet is a centrally managed DOE-Wide Area Network that provides a common standard service to carry business related data, access to the Trusted Internet Connection (TIC) compliant service, and access to Headquarters Corporate applications, systems and services DOE-wide.

**Cellular Services Segment** encompasses procurement of cell phones, smart phones, pagers and other cellular equipment. The cellular device costs are monitored regularly, and carrier plans are centrally adjusted to attain maximum savings.

**Direct Customer Charges Segment** supports above-standard services including: local, long distance and international person-to-person and operator-assisted calling; specialized services such as multiple-party conferencing and electronic voice mail; Wireless Access Point (WAP) hardware; cabling projects requiring use of external vendor support; toll-free services; circuit costs that support specific customer locations; and procurement of other telecommunications related equipment.

**Pricing Policy**
Charges for Telecommunications are based on usage of these services by program offices, including the following components:

- Network and Voice Infrastructure Services Segment – Infrastructure charges represent infrastructure costs which are composed of: (1) the cost of leased telecommunications circuits; (2) the cost of maintaining common infrastructure components and upgrades where needed; and (3) the cost of providing technical staff to install, repair and monitor/operate the various common infrastructure components. These services, charged monthly, are allocated among program organizations based on an inventory of network equipment (endpoints) for EITS-managed customers. The costs of dedicated communication circuits are allocated to organizations requesting installation of such lines. All long distance, local and international calls at Headquarters are allocated to the originating telephones and thus to programs based on the actual billing information.

- DOEnet Services Segment – DOEnet costs are predominately comprised of: (1) the cost of leased telecommunications circuits; (2) site hardware components and maintenance; and (3) the cost of technical support staff. DOEnet costs are allocated to participating sites based on the costs associated with providing the service – circuit costs, hardware and maintenance costs, and the costs of technical support staff.

- Cellular Services Segment – Cellular charges represent costs which are composed of: (1) administrative support involved with ordering, activation, rate analysis, rate selection, deactivation, accumulating, translating and validating commercial vendor billing data systematically for the record keeping, accounting and financial reporting and customer reporting; (2) cellular device costs; and (3) cellular plan costs. Administrative charges are allocated among program organizations based on the number of active cellular devices, as a monthly charge. All cellular device and plan costs are allocated to the program office owner.

- Direct Customer Charges Segment – Programs are billed in proportion to consumption of goods and services. FY 2024 estimates reflect amounts based on usage from the fiscal year prior to formulation (FY 2021). Extraordinary or unusual changes in usage patterns are not anticipated in the Fund's estimates.

# Crosscutting Activities

# Crosscutting Activities

## Department of Energy Crosscuts Overview

In FY 2024, the Department of Energy (DOE) will increase its emphasis on crosscutting efforts that enable the Department and the Administration to accelerate progress on climate and energy goals through fully integrated science and applied energy research, development, demonstration, and deployment.

DOE's climate and energy crosscuts enhance collaboration, coordination and integration across its science and applied energy programs with oversight provided by the Office of the Under Secretary for Science and Innovation and the Office of the Under Secretary for Infrastructure to ensure that resources are focused on achieving the Nation's most critical energy and climate challenges. This coordination also helps align the considerable capabilities of DOE's stakeholders including National Laboratories, universities, industry, and other partners. Within DOE, crosscutting initiatives may be coordinated through joint strategy teams, Science and Energy Technology Teams, working groups, or other mechanisms.

Where possible, program offices and functional offices have also highlighted crosscut information in their program narratives. Advancements enabled by DOE research and development to develop clean fuels and products, a net-zero power grid and increased electrification, and materials and manufacturing innovations for more efficient heating and cooling systems will support priority areas in the Administration's Net-Zero Game Changers Initiative.[1]

Alignment to key Bipartisan Infrastructure Law and Inflation Reduction Act provisions is noted in each science and energy crosscut narrative. Key contributing offices that are engaged in crosscut activities include Office of Technology Transitions, Loan Programs Office, Office of General Counsel, Office of the Chief Financial Officer, Office of Economic Impact and Diversity, and the Office of Policy. These offices may contribute staff time or funding as noted in specific crosscut narratives to enhance impact of the Department's efforts.

A major focus in key crosscutting efforts is the launch and execution of the Energy Earthshots Initiative™ that targets the major research, development, and demonstration innovation breakthroughs that we know we must achieve to solve the climate crisis and reach a net-zero carbon economy by 2050. The Energy Earthshots™ Initiative is an all-hands-on-deck call for innovation, collaboration, and acceleration of our clean energy economy by tackling the toughest remaining barriers to demonstrate and deploy emerging clean energy technologies at scale. With each Energy Earthshot™, the Department is setting tough, yet achievable cost or performance targets to transform these technologies on a decadal time scale—lowering costs, raising performance, creating new jobs, and clearing the way to our clean energy goals.

To date, DOE launched six Energy Earthshots: Hydrogen Shot™, Long Duration Storage Shot™, Carbon Negative Shot™, Enhanced Geothermal Shot™, Floating Offshore Wind Shot™ and Industrial Heat Shot™. In FY 2024, DOE anticipates scoping two final candidate Energy Earthshot concepts to complete the portfolio of the initiative. Each Energy Earthshot™ is guided by the relevant integrated DOE crosscut team that will create a multi-year roadmap and be implemented with extensive stakeholder engagement from research and National Laboratory, industry, environmental, environmental justice, and interagency partners.

The FY 2024 priority crosscut topic areas and corresponding Energy Earthshots are described below:

| Crosscut Narrative Topic Area | Energy Earthshots™ in Scope |
|---|---|
| Biotechnology | |
| Carbon Dioxide Removal | Carbon Negative Shot™ |
| Clean Energy Technology Manufacturing (rescoped from FY 2023 Advanced Manufacturing) | Floating Offshore Wind Shot™ |
| Critical Minerals and Materials | |
| Energy Storage | Long Duration Storage Shot™ |
| Energy-Water | |
| Grid Modernization | |

[1] U.S.-Innovation-to-Meet-2050-Climate-Goals.pdf (whitehouse.gov)

| Crosscut Narrative Topic Area | Energy Earthshots™ in Scope |
|---|---|
| Hydrogen | Hydrogen Shot™ |
| Industrial Decarbonization | Industrial Heat Shot™ |
| Subsurface Energy Innovations | Enhanced Geothermal Shot™ |

Additional DOE crosscuts include:

- Energy Sector Cybersecurity
- Infrastructure
- Pensions
- Research and Development
- Safeguards and Security (including Cybersecurity)
- Small Business Innovation Research/Small Business Technology Transfer

**Biotechnology Crosscut**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency - Energy | 996 | TBD | TBD | N/A |
| ARPA-E Projects* | 996 | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 59,750 | 50,214 | 50,250 | +36 |
| Bioenergy Technologies | 59,750 | 50,214 | 50,250 | +36 |
| Science | 686,892 | 768,951 | 831,992 | +63,041 |
| Advanced Scientific Computing Research | 10,000 | 11,183 | 22,067 | +10,884 |
| Basic Energy Sciences | 271,892 | 294,083 | 333,425 | +39,342 |
| Biological and Environmental Research | 405,000 | 463,685 | 476,500 | +12,815 |
| National Nuclear Security Administration | - | 20,000 | 25,000 | +5,000 |
| Defense Nuclear Nonproliferation | - | 20,000 | 25,000 | +5,000 |
| **Grand Total** | **747,638** | **839,165** | **907,242** | **+68,077** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview:**
Achieving a net-zero emissions economy in 2050 will require advances in every sector. Just as biotechnology is a significant tool in combatting the COVID-19 pandemic, it can also enable energy decarbonization efforts across major sectors such as transportation, industry, and agriculture. Biotechnology refers to a wide array of advanced techniques and tools that harness the power of biology, including bioengineering and bioprocessing technologies, to optimize microbes and plants for the production of biofuels and bioproducts and to enhance the ability of agriculture and forests to help sequester carbon in soils. The goal of this crosscut is to align and coordinate activities across DOE that can increase the impact of biotechnology innovation on decarbonization through efforts that will ultimately translate benchtop discoveries into commercial-scale bioeconomy applications.

Scientific and commercial achievements in biotechnology underpin the bioeconomy which accounts for five percent of U.S. Gross Domestic Product[1]. DOE has supported major advancements in biotechnology and genome sciences including the sequencing of the human genome and development of genetic editing technologies like CRISPR. To take full advantage of progress made over the last decade in genome sequencing cost and speed, and to accelerate the Nation's capabilities to apply biotechnology to address deep decarbonization challenges, integrated research, development, demonstration, and deployment efforts can bring together biological research, data science, high-performance computing (HPC), artificial intelligence (AI) and machine learning (ML), automation, and process engineering realize deep decarbonization benefits for transportation, industry, and agriculture. In addition, advancements in these areas can reduce national security risks associated with biotechnology and biomanufacturing.

**Coordination Efforts:**
DOE's Biotechnology Working Group is comprised of members from the Office of Science's (SC) Office of Basic Energy Science (BES), Office of Energy Efficiency and Renewable Energy's (EERE) Bioenergy Technologies Office (BETO), Office of Biological and Environmental Research (BER), and Office of Advanced Scientific Computing Research (ASCR), and the Advanced Research Projects Agency - Energy (ARPA-E). In FY 2021, the working group organized the "Designing for Deep Decarbonization: Accelerating the U.S. Bioeconomy" workshop. That workshop report found a substantial role for the bioeconomy in decarbonization across the transportation, industrial, and agricultural sectors potentially resulting in gigaton level reductions in U.S. net emissions. In FY 2022, a follow-on workshop, the AI and ML for Bioenergy Research: Opportunities and Challenges (AMBER) workshop to provide recommendations for how AI could contribute to the bioeconomy. In September 2022, Executive Order (EO) 14081, *Advancing Biotechnology and Biomanufacturing Innovation*

[1] NAS report: Safeguarding the Bioeconomy |The National Academies Press; Schmidt Futures report: Task Force on Synthetic Biology and the Bioeconomy - Schmidt Futures

*for a Sustainable, Safe, and Secure American Bioeconomy*, was issued, galvanizing a great deal of coordination and across the DOE Biotechnology Working Group member offices. EO 14081 calls for a coordinated approach to using biotechnology and biomanufacturing to advance societal goals, such as Climate and Energy. As a result, DOE is leading and participating in several interagency working groups, initiatives, and reports called for under the EO. These include calls to action for executive branch agencies including DOE to align resources and expand efforts on bioeconomy-related climate and energy goals.

In addition to the funding offices identified here, various crosscutting offices (including the Office of Economic Impact & Diversity, Office of Policy, the Artificial Intelligence and Technology Office, and the Office of Technology Transitions) contribute staff time and coordinate with the research, development, demonstration, and deployment (RDD&D) funding offices to enhance the impact of the Department's investments in biotechnology. The National Nuclear Security Administration also contributes expertise and capabilities that will anticipate and detect threats and strengthen biodefense.

**Objectives and Action Areas:**

- Objective 1 - Innovation built on strong foundations: Exploit and improve on genomic diversity within nature to identify new biological, bioinspired, and biohybrid functions.
- Objective 2- Enhance access to tools and facilities: Facilitate user access and interoperability between SC user facilities relevant to biotechnology, Bioenergy Research Centers (BRC), and the Agile BioFoundry.
- Objective 3 - Increase range of production of biofuels and bioproducts: Conduct research and development (R&D) to increase the variety of sustainable biofuels and bioproducts made from plants and microbes.
- Objective 4 - Develop advanced modeling and data analytics for biotechnology: Create integrative, collaborative, and open access computational platforms for biotechnology, with capabilities in AI and ML techniques.
- Objective 5 - Reduce risk by advancing biosafety and biosecurity: Assess biotechnology and biomanufacturing risks and develop approaches to reduce risks and integrate security into biotechnology development.

**Action Areas:**

1. Strengthen Cross-DOE Coordination and Collaboration: Ensure an integrated approach, including clearly defined "swim lanes" and "relay points," to increase collaboration and avoid duplication ; share best practices for management of user facilities and other community resources, facilitate workshops and Principal Investigator meetings, community/stakeholder engagement, and data/information sharing.
2. Support Fundamental and Applied R&D and Technology Transfer: Establish the foundational scientific infrastructure, knowledge base, innovation, and technology transfer to enable dissemination and scale-up for biotechnology.
3. Develop coordinated "use cases" and collaborations to identify technical and process (workflow) challenges: Establish informal working groups and formal collaborations to regularly assess the state of biotechnology and DOE's readiness to facilitate the entire biotechnology workflow.
4. Coordinate on Workforce/Science, Technology, Engineering, and Math (STEM) and Diversity, Equity, and Inclusion (DEI): Collaborate on best practices and accelerate progress towards common goals.

**Program Organizations:**

1. **Advanced Research Projects Agency-Energy (ARPA-E):** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational technologies to enhance the economic and energy security of the United States. ARPA-E funds high-potential, high-impact projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. In FY 2022, ARPA-E selected and/or obligated $996,000 in Biotechnology funding to projects aligned with the Crosscut through ARPA-E's Supporting Entrepreneurial Energy Discoveries (SEED) Exploratory Topic. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in Biotechnology will be determined in FY 2023.

2. **Energy Efficiency and Renewable Energy (EERE):** EERE's Bioenergy Technologies Office (BETO) focuses on developing bioengineering techniques to optimize production of targets (fuels, chemicals, and materials) in microbes. These research, development, and demonstration (RD&D) activities in FY 2024 include:

a. Agile BioFoundry, a consortium of seven National Laboratories that brings together world-class biotechnology capabilities to target a bring new bio-derived molecules to market by accelerating the Design-Build-Test-Learn cycles in partnership with industry.
b. Biological engineering including cell-free bioprocessing, enzymatic hydrolysis, fermentation, downstream separations, and catalysis to transform renewable carbon feedstocks into transportation fuels, renewable chemicals, and materials.
c. Biological methods for plastic deconstruction and upcycling including optimization of novel enzymes and organisms to achieve commercial relevance.

3. **Science (SC):** There are multiple programs within the Office of Science that are major contributors to the advancement of the biotechnology crosscut objectives and scientific discovery. In FY 2024, SC programs will focus on new and continued research and user facilities as described below.
   a. Advanced Scientific Computing Research (ASCR): ASCR employs HPC and the exascale ecosystem to accelerate progress in biotechnology across mission areas and national priorities. Through partnerships and collaborations within SC, DOE and related mission agencies (National Institutes of Health [NIH], U.S. Department of Agriculture), ASCR is advancing the foundational research, computational readiness, and HPC access for biotechnology applications that underpin predictive capabilities for climate, national preparedness and biosecurity, and other DOE missions. ASCR supports the DOE Energy Earthshots™ through research and advanced methods in applied mathematics, computer science, and high end scientific and engineering simulations, as well as through the capabilities at ASCR scientific user facilities. The ASCR Energy Earthshot funding will contribute computational tools and research to understand basic principles and potentially advance biotechnology concepts relevant to the current Hydrogen, Carbon Negative, and Industrial Heat Energy Earthshots™, as well as potential research in new focus areas.
   b. Basic Energy Sciences (BES): BES supports fundamental chemical and materials research to underpin the development of biotechnology (Objective 1). Research supported by BES may also use biotechnological approaches to understand molecular and atomic mechanisms in biochemical and chemical processes and structures which, in turn, may advance new biotechnologies. These detailed mechanistic studies can enable strategies for biohybrid tool development and biotechnology-based approaches for energy capture, conversion, and/or storage. BES provides tools for characterizing biotechnology-relevant materials and chemical processes through x-ray, neutron, electron beam scattering, and nano-science capabilities (Objective 2). The BES Energy Earthshot funding will contribute use-inspired fundamental research to understand basic principles and potentially advance biotechnology concepts relevant to the Carbon Negative, Industrial Heat, and Enhanced Geothermal Shots, as well as potential research in new focus areas.
   c. Biological and Environmental Research (BER): BER employs biotechnological approaches such as genome sequencing and analysis, proteomics, metabolomics, structural biology, high-resolution imaging and characterization, and integration of biological data into computational models to advance a predictive understanding of biological systems. BER programs have a track record of accomplishment to understand and design new biological systems for carbon management, bioenergy and bioproducts produced from sustainable plant biomass to replace those currently obtained from petroleum. BER supports four BRCs engaged in multidisciplinary genome-enabled biotechnology research to sustainably produce a range of bioenergy and bioproducts from renewable plant biomass. New quantum-enabled instrumentation for imaging biological processes will be explored in Biomolecular Characterization and Imaging Science for visualizing cellular metabolism non-destructively. BER also support the Joint Genome Institute (JGI) which provides users with high quality genome production and new analysis techniques for complex plant and microbiome samples. BER funding for Energy Earthshot Research Centers (EERCs) will contribute the basic research needed to understand carbon sequestration mechanisms within soils for Carbon Negative Shot™ and to also biobased approaches to solve the challenges in the Industrial Heat Shot™.

4. **National Nuclear Security Administration (NNSA):** The NNSA Bioassurance Program will contribute to DOE biotechnology efforts through innovations in biosecurity to reduce risk throughout the biotechnology R&D and biomanufacturing lifecycles. The NNSA Bioassurance Program will focus on anticipating and detecting national security threats and strengthening biodefense, identifying threat signatures, advancing forensics for attribution, and rapidly developing and validating safeguards and threat mitigation approaches. NNSA will integrate its high-security work with the Department's "open" science work, providing the full spectrum of capabilities essential for a bioassurance program

informed by national security expertise drawn from parallel and analogous work on nuclear threats, risks, export controls and licensing, nonproliferation, detection, and verification.

**Highlights and Major Changes from FY 2023 Enacted**

- Science (SC): The increased investment in the Office of Science focuses on enabling new insights and breakthroughs by leveraging foundational research and the unique capabilities of the scientific user facilities.
  - ASCR facilities provide new capabilities accessible only through large-scale computing resources. Researchers at the Oak Ridge Leadership Computing Facility (OLCF) used Frontier, the world's first exascale computer and the Distributed Accelerating Semiring All-Pairs Shortest Path algorithm, or DSNAPSHOT, uses AI to pinpoint potential links amid millions of concepts across decades of scientific publications. These efforts could accelerate bioproduct discovery.
  - The BES portfolio provided new insights that could potentially enhance bioinspired as well as biotechnology approaches for clean energy such as: understanding of photosynthesis in cyanobacteria, integration of state-of-the-art theory and computation with experimental efforts to understand how enzymes work, and studies of nitrogenase, the enzyme responsible for the reduction of nitrogen to ammonia.
  - Within BER, several improvements towards a better understanding of the capture, cycling and conversion of carbon in the environment and within industrial processes were made across the biological systems science program. Using instruments at the SLAC National Accelerator Laboratory researchers are leading to new ways to design and optimize biomolecules for $CO_2$ capture. Additionally, a jointly funded project by BER, DOE Bioenergy Technologies Office, and LanzaTech, engineered a bacterial species capable of utilizing gaseous $CO_2$ in an industrial waste stream and convert it to acetone and isopropanol, valuable chemical products. The work highlights an efficient approach to engineering organisms for industrial-scale purposes.
- National Nuclear Security Administration (NNSA): Defense Nuclear Nonproliferation program major changes include:
  - Initiate prioritized research in accordance with science and technology (S&T) plan to develop computational predictive models of potential threats and impacts, including threat model validation, detection, and characterization acceleration, and to develop safeguards and forensics R&D and threat mitigation approaches.
  - Develop initial operating capability and coordinated DOE program in biosciences, including infrastructure improvements and minor equipment purchases based on a prioritized technical roadmap.

**Carbon Dioxide Removal**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency - Energy | 45,500 | TBD | TBD | N/A |
| ARPA-E Projects* | 45,500 | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 16,000 | 23,300 | 15,000 | -8,300 |
| Bioenergy Technologies | 13,000 | 11,000 | - | -11,000 |
| Advanced Manufacturing Office (AMO) | - | 9,300 | - | -9,300 |
| Industrial Efficiency and Decarbonization Office (AMO successor office) | - | - | 14,500 | +14,500 |
| Water Power Technologies | 3,000 | 3,000 | 500 | -2,500 |
| Fossil Energy and Carbon Management | 49,000 | 70,000 | 70,000 | - |
| Carbon Dioxide Removal | 49,000 | 70,000 | 70,000 | - |
| Science | 46,700 | 70,628 | 102,962 | +32,334 |
| Advanced Scientific Computing Research | - | - | 20,000 | +20,000 |
| Basic Energy Sciences | 23,700 | 28,878 | 29,962 | +1,084 |
| Biological and Environmental Research | 23,000 | 41,750 | 53,000 | +11,250 |
| **Grand Total** | **157,200** | **163,928** | **187,962** | **+24,034** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview:**
Nearly all climate models that simulate scenarios for reaching net-zero indicate the need for a near-term focus on carbon dioxide removal (CDR) development and deployment in addition to carbon reduction efforts including mitigative point source carbon capture and sequestration. The Intergovernmental Panel on Climate Change (IPCC) modeling shows that only emissions scenarios including CDR achieve neutrality in 2050. CDR refers to multiple approaches that capture carbon dioxide ($CO_2$) directly from the atmosphere and durably store it in geological, biobased and ocean reservoirs or in value-added products to create negative emissions. Negative emission technologies at scale are necessary for achieving national and global net-zero greenhouse gas (GHG) emission goals in the coming decades, removing accumulated pools of carbon from the atmosphere, and avoiding the most critical climate consequences.

In recognition of the necessity of CDR, the Department of Energy (DOE) launched its third Energy Earthshot™, Carbon Negative Shot™ at COP26 in November 2021. Carbon Negative Shot™ is a decadal goal to reduce the cost of atmospheric carbon removal to less than $100/net metric ton of $CO_2$-equivalent ($CO_2e$). This effort is being deployed to achieve a net-zero carbon economy and eventually remove legacy carbon pollution to help address the climate crisis, with a dedicated focus on doing so in a just and sustainable manner.

Carbon Negative Shot™ defines four criteria that define goals for each CDR pathway: 1) less than $100/net metric ton $CO_2e$ for both capture and storage of $CO_2$; 2) robust accounting of full lifecycle emissions (i.e., ensures emissions created when running and building the removal technology are accounted for); 3) high-quality, durable storage with costs demonstrated for monitoring, reporting, and verification for at least 100 years; and 4) enables necessary gigaton scale removal.

The diverse suite of technologies and approaches in CDR requires integrated investment across the full research, development, demonstration, and deployment (RDD&D) spectrum such that breakthroughs are rapidly transferred and scaled, and deployment of first-of-its kind technologies quickly informs the next generation of innovation. CDR approaches include, but are not limited to, bioenergy with carbon capture and sequestration (BECCS), direct air capture (DAC) with durable storage (DACS), biological methods to stored products, enhanced mineralization, soil carbon sequestration, and direct ocean capture (DOC) with durable storage (DOCS). Within these approaches, the technology or mechanisms for $CO_2$

removal are variable, leading to challenges in how to quantify reductions via lifecycle analyses (LCA), and how to accurately define the economics and costs.

The Department has been supporting carbon capture and storage (CCS) research, development, and demonstration (RD&D) projects and programs such as the Carbon Storage Assurance Facility Enterprise (CarbonSAFE) Initiative for years with the goal of addressing the key gaps on the critical path towards CCS deployment. The unique expertise that DOE retains through the world-class group of scientists, engineers, and subject-matter-experts, along with the state-of-the-art technologies and resources in the National Laboratories, puts DOE in a unique position which makes the U.S. the leading nation in the world to drive the research and technology to combat the climate change.

**Coordination Efforts:**
In addition to developing and implementing a cross-agency CDR strategy, priorities include joint efforts on information sharing and engagement with external stakeholders, technology experts, and other government agencies. There is close coordination between the Department's efforts in the CDR crosscut, the interagency CDR Task Force led by DOE, and Mission Innovation's CDR Mission, which is a Global Initiative. The CDR crosscut group manages the Carbon Negative Shot™.

In addition to the funding offices identified below, various crosscutting offices (including the Office of Economic Impact & Diversity, Office of Policy, the Office of International Affairs, and the Office of Technology Transitions (OTT)) contribute staff time and coordinate with the RDD&D funding offices to enhance the impact of the Department's investments.

**Objectives and Action Areas:**
The CDR crosscut objectives and action areas are built to enable progress towards the Carbon Negative Shot™ goal and advance the state of the art for CDR technologies.

- Objective 1: Discover, innovate, and enable the deployment of low-cost and scalable CDR pathways to accelerate removal of $CO_2$ directly from the atmosphere and environment. Foster crosscutting, fundamental science and applied research and development (R&D) to enable breakthroughs along the carbon removal value chain. Identify and address critical barriers to reducing the costs and energy requirements for CDR systems and materials through targeted research investments. Promote and demonstrate the strategic deployment of diverse CDR systems and strategies.
    - Action Area: Advance the technical and commercial readiness for atmospheric carbon capture technologies.
        - Emphasize RD&D to support enhanced biological and natural solutions biomass, soil, ocean capture, mineralization, etc.
        - Execute R&D for carbon capture materials for engineered systems to increase the effectiveness and reduce the cost.
    - Action Area: Support the development of markets for CDR and enabling financing for new CDR projects.
        - Comprehensive technology innovation roadmaps, including commercialization opportunity and needs assessments in collaboration with OTT/Loan Programs Office (LPO) to engage industry in development of CDR solutions.
- Objective 2: Ensure adequate analysis and monitoring, reporting, and verification (MRV). Advance the state-of-the-art standards, and practices for ensuring that carbon is removed from the atmosphere and stored geologically or equivalent for nature-based pathways.
    - Action Area: Emphasize development of tools for assessing soil carbon content and LCA for novel soil capture approaches, as well as Artificial Intelligence (AI) tools for soil carbon sequestration and for characterization of the $CO_2$ mineralization feedstocks.
    - Action Area: Establish of studies for modeling and evaluation of climate change pathways to demonstrate additional carbon capture benefit in land sinks.
    - Action Area: Establish MRV protocols associated with CDR purchases.
- Objective 3: Engage stakeholders and communicate strategy. Host workshops and public meetings to share information. Engage with communities that could participate in or be affected by CDR including sovereign tribal nations, labor groups, and environmental justice (Justice40), and climate justice organizations. Build awareness, interactions, and community involvement in the siting, build out and management of this new industry.
    - Action Area: Build out Regional Sequestration Partnerships to develop core competencies and engagement tools and resources to promote CDR hub development across the U.S.

- Action Area: Development of the CDR Excellence Centers through partnership with the National Labs as one-stop-shop for stakeholders.

**Program Organizations:**

1. **Advanced Research Projects Agency–Energy (ARPA-E):** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational energy technologies to enhance the economic and energy security of the United States. ARPA-E funds high-potential, high-impact energy projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. In FY 2022, ARPA-E selected and/or obligated $45.5 million in CDR funding to projects aligned with the Crosscut through ARPA-E's Supporting Entrepreneurial Energy Discoveries (SEED) Exploratory Topic and Sensing Exports of Anthropogenic Carbon through Ocean Observation (SEA $CO_2$) programs. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in CDR will be determined in FY 2023.

2. **Energy Efficiency and Renewable Energy (EERE):** Within the Office of Energy Efficiency and Renewable Energy, there are two programs that support the efforts of the CDR crosscut:
    a. Industrial Efficiency and Decarbonization Office (IEDO): IEDO supports Objective #1 through the development of technologies and processes to utilize $CO_2$ as a feedstock for the production of key building block chemicals, like ethylene, to achieve overall emissions reduction of the chemicals sector; as well as the utilization and mineralization of $CO_2$ in the manufacturing of cement and concrete based building materials.
    b. Water Power Technologies Office (WPTO): WPTO will investigate the role of marine energy in marine carbon dioxide removal (mCDR).

3. **Fossil Energy and Carbon Management (FECM):** FECM focuses primarily on engineered CDR approaches that include chemicals, minerals, and biological pathways. FECM has been working on carbon capture, utilization, and storage (CCUS) projects for almost 20 years and has invested heavily in the development of technologies to capture $CO_2$ from power plants and industrial sources. Funding is focusing on DAC, BECCS, and mineralization concepts. The CDR subprogram builds upon past CCUS efforts which have been funded through FECM's CCUS activities, such as past work on DAC, mineralization, co-firing of biomass, and capture technology development. RDD&D activities include:
    a. DACS: FECM funds significant DAC RDD&D alongside all carbon storage research at DOE. This includes transformational DAC materials and components, pilot-scale testing, and FEED studies for large-scale demonstrations.
    b. DOCS: Leveraging FECM RDD&D activities on separations that focus on removal of $CO_2$ from ocean water and ocean alkalinity enhancement.
    c. Biomass waste R&D: R&D on biomass waste coupled with CCUS offers an opportunity for near-term deployment of CDR technologies. This includes gasification of waste feedstocks, such as plastics and sustainably-available biomass waste with CCUS.
    d. Enhanced mineralization: FECM has, and is continuing to, invest in RDD&D for in-situ, ex-situ, and surficial mineralization opportunities.
    e. Crosscutting RDD&D on MRV technologies to validate carbon removal and support LCA.
    f. Significant RDD&D investments and work for geological $CO_2$ storage and $CO_2$ transport. Coupled to $CO_2$ capture processes, such as bioenergy and DAC, reliable storage on timescales that will positively impact climate are of central focus. For example, reliable storage on the scale of 1,000s years is desired, which may include geologic storage deep underground, or the conversion of $CO_2$ to synthetic aggregates (replaces sand and gravel for construction) or plastics.
    g. Program support for Carbon Negative Shot™, Mission Innovation (MI) CDR Mission and/or CDR Task Force.

4. **Science (SC):** SC provides foundational knowledge and state-of-the-art capabilities in support of crosscut objectives and has supported theoretical and experimental science related to understanding chemical and biological processes, separations, materials, and geochemistry related to carbon capture for many years. Key activities in FY 2024 include:
    a. SC operates major x-ray, neutron, nanoscience, genome sequencing, and high-performance computing user facilities that provide advanced synthesis, fabrication, characterization, and computational capabilities that supports CDR efforts across the spectrum of basic and applied research. (Objective 1)

b. Basic Energy Sciences (BES) continues support for scientific discoveries and major scientific tools to transform our understanding of $CO_2$ chemistry, separation systems, and materials, including conversion to durable products (e.g., mineralization), important to CDR technologies. BES will continue to support CDR research, including DAC, that spans from single principal investigators to large teams including Energy Frontier Research Centers (EFRCs) and Energy Earthshot Research Centers (EERCs). (Objective 1)
c. Biological and Environmental Research (BER) supports fundamental systems biology research on 1) plants and plant microbiomes to capture atmospheric $CO_2$ and sequester stabilized forms of carbon in biomass and soil and 2) algal systems to convert gaseous $CO_2$ waste streams into a broad range of bioproducts in support of other CDR technologies. The EERCs will seek to remove barriers to clean energy production and implementing CDR innovations from basic research into applied solutions. Expanded university research involving Earthshot topics will focus on science at the nexus of carbon management and clean energy production.
d. Advanced Scientific Computing Research (ASCR) supports foundational investments in the applied mathematics and computer science tools, methods and algorithms needed to computationally define realistic physical systems used in CDR and storage models and simulations. In addition, ASCR funds fundamental AI research to ensure that the next generation AI tools are domain-aware, robust, and understandable. Simulations of carbon removal and storage technologies are running on ASCR production and leadership systems.
e. ASCR, BES, and BER will continue to support the EERCs, a new modality of research launched in FY 2023, to bring together multi-investigator, multi-disciplinary teams to perform energy-relevant research with a scope and complexity beyond what is possible in standard or small-group awards. Aligned with both SC and the technology offices, EERCs will address key basic research challenges with relevance to applied R&D activities. (Objective 1 and 2)

**Highlights and Major Changes from FY 2023 Enacted**

- Energy Efficiency and Renewable Energy:
  - Bioenergy Technologies: No funding is requested in FY 2024 in order to prioritize development of new feedstock-conversion pathways to sustainable aviation fuels (SAF), prior year funding will support projects in this area from previous competitive funding in 2022 and 2023.
  - Industrial Efficiency and Decarbonization Office (IEDO): As a successor office to AMO, IEDO will focus on utilization of $CO_2$ as a feedstock for commodity chemicals such as ethylene.
  - Water Power Technologies (WPTO): WPTO requests funding to investigate the role of marine energy in marine carbon dioxide removal (mCDR) in FY 2024.
- Fossil Energy and Carbon Management
  - Continues to make investments in direct air capture, biomass with carbon removal and storage, mineralization, direct ocean capture, and lifecycle analyses to reduce costs and continue to improve methodologies to confirm removal.
- Science (SC): The increased investment in the Office of Science focuses on enabling new insights and breakthroughs by leveraging foundational research and the unique capabilities of the scientific user facilities.
  - The increased investment in Advanced Scientific Computing Research facilities focuses on foundational research enabling new capabilities accessible only through large-scale computing resources.
  - The investment growth within the Biological and Environmental Research (BER) portfolio supports several improvements towards a better understanding of the capture, cycling and conversion of carbon in the environment and within industrial processes were made across the biological systems science programs.

**Related Bipartisan Infrastructure Law (BIL) or Inflation Reduction Act (IRA) Programs:**

In addition to the annual appropriations request, funding from BIL will support the planning and execution of technology development, demonstration, scale-up, and deployment of $CO_2$ DAC, storage, conversion, and transportation. These investments are essential in building out key components of a nascent industry, key funding opportunities related to DAC Hubs, CCS Demonstrations, $CO_2$ Storage (CarbonSAFE), Carbon Dioxide Transport front-end engineering and design (FEED) studies and the Carbon Dioxide Transportation Infrastructure Finance and Innovation (CIFIA) guidance have been released or are anticipated for release in the coming year. Expansion of tax credits resulting from IRA will offer additional incentives for CDR.

**Clean Energy Technology Manufacturing**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency – Energy* | - | TBD | TBD | N/A |
| ARPA-E Projects | - | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 545,545 | 321,143 | 417,682 | +96,539 |
| Advanced Manufacturing Office (AMO) | 416,000 | 183,500 | - | -183,500 |
| Advanced Materials and Manufacturing Technologies Office (AMO successor office) | - | - | 221,497 | +221,497 |
| Building Technologies | 5,000 | - | - | - |
| Bioenergy Technologies | 11,500 | 7,185 | 12,185 | +5,000 |
| Hydrogen and Fuel Cell Technologies | 22,000 | 30,000 | 20,000 | -10,000 |
| Solar Energy Technologies | 37,181 | 63,500 | 63,000 | -500 |
| Vehicle Technologies | 31,000 | 25,000 | 25,000 | - |
| Water Power Technologies | 5,500 | 1,500 | 3,000 | +1,500 |
| Wind Energy Technologies | 17,364 | 10,458 | 73,000 | +62,542 |
| Fossil Energy and Carbon Management | 7,500 | 8,000 | 4,500 | -3,500 |
| Carbon Management | 7,500 | 8,000 | 4,500 | -3,500 |
| Nuclear Energy | 33,000 | 8,800 | 15,000 | +6,200 |
| Crosscutting Technology Development | 8,000 | 8,800 | 15,000 | +6,200 |
| Transformational Challenge Reactor | 25,000 | - | - | - |
| Science | 25,353 | 27,000 | 27,000 | - |
| Basic Energy Sciences | 17,000 | 20,000 | 20,000 | - |
| Biological and Environmental Research | 5,000 | 3,000 | 3,000 | - |
| Fusion Energy Sciences | 3,000 | 3,000 | 3,000 | - |
| Isotope R&D and Production | 353 | 1,000 | 1,000 | - |
| **Grand Total** | **611,398** | **364,943** | **464,182** | **+99,239** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview:**
Clean energy technology manufacturing (CETM) is required for a transformation of the national and global energy system to meet our climate goals. It is also an engine that will create good-paying jobs and contribute to a competitive, resilient, and agile domestic manufacturing sector. Responsive to Executive Order (EO) 14017, *America's Supply Chains*, the Department of Energy's (DOE) first-of-a-kind report highlights the importance of a strong manufacturing sector in addressing national security concerns related to reliable supply chains and ensuring U.S. competitiveness and offers dozens of recommendations for executive and legislative action to do so.

Cross-DOE activities in this space will enable new and improved materials, processes, components, and systems across supply chains and product lifecycles for priority clean energy technologies. Working together, DOE can identify key gaps and technical, market, and policy barriers that can be addressed to drive down costs, improve domestic competitiveness, and accelerate technology commercialization.

Through the Energy Earthshots Initiative, DOE has identified six key areas of significant integrated opportunities with individual ambitious RD&D targets. Technology product based, each Earthshot has manufacturing components complementing their core technology suite. The CETM crosscut will most impact the fifth Energy Earthshot, the Floating

Offshore Wind Shot.™ The Floating Offshore Wind Shot™ targets a reduction in the levelized cost of energy to less than $45 per megawatt hour (MWh) by 2035. Keys to achieving this goal are low-cost serial manufacturing of large complex structures like floating platforms, large towers, and blades and development of a robust domestic floating offshore wind supply chain.

This crosscut encompasses multiple offices across DOE that sponsor research, development, demonstration, and deployment (RDD&D) to foster the innovations required to sustainably manufacture the clean energy technologies needed for deep decarbonization of the electricity, industrial, transportation, and buildings sectors. Development and commercialization of advanced approaches to producing these clean energy technologies will accelerate the transition to a decarbonized future and ensure U.S. manufacturing competitiveness as the world transitions to clean energy. Crosscut activities will enable new and improved materials, processes, and systems across clean energy supply chains and product lifecycles, including efforts to address specific challenges faced in clean energy sectors, such as the production of large-scale, heavy equipment or the need for secure and resilient material supply chains.

**Coordination Efforts:**
The participating DOE offices are increasing intra-departmental collaboration in their Clean Energy Technology Manufacturing activities, pursuing coordinated road mapping exercises, leveraging best practices and advances that are relevant across technologies, and identifying joint funding opportunities where appropriate. Participating DOE offices include Advanced Research Projects Agency – Energy (ARPA-E), Energy Efficiency and Renewable Energy (EERE), Fossil Energy and Carbon Management (FECM), Nuclear Energy (NE), the National Nuclear Security Administration (NNSA), and Science (SC). The Office of Manufacturing and Energy Supply Chain (MESC) will participate to ensure coordination across relevant BIL and IRA provision execution and related analysis work. The effort will be coordinated through the Clean Energy Technology Manufacturing (CETM) Science & Energy Tech Team (SETT).

In addition to the funding offices identified, various crosscutting offices (including the Office of Economic Impact & Diversity, Office of Policy, and the Office of Technology Transitions) may contribute staff time and coordinate with the RDD&D funding offices to enhance the impact of the Department's investments.

**Objectives and Action Areas:**
- Objective: Drive innovation to accelerate cost reductions, performance improvements, supply chain resilience, diversification, and domestic capacity for the manufacture of clean energy technologies. Address technical and non-technical barriers to clean energy manufacturing growth to enable aggressive climate goals, strengthen the U.S. economy, and create jobs for skilled American workers.
    - Action Area 1 - Rapid Development and Commercialization of Advanced Materials. Improve the development and use of advanced materials needed for innovative clean energy technologies. This includes research and development (R&D) in new, advanced functional materials that support one or more clean energy technologies, as well as activities to accelerate development, qualification, and transition to materials acceptance and first use. It also includes investments in critical materials technology that are crucially needed to accelerate the adoption of clean energy applications.
    - Action Area 2 - Advanced Manufacturing Process Development. Cross-cutting efforts will support the development and accelerated adoption of new manufacturing processes for clean energy systems and components that significantly reduce the cost (including environmental cost), improve performance, and improve manufacturing quality. This includes research, development, and demonstration (RD&D) for efficient manufacturing processes such as additive 3D manufacturing, composite fabrications, smart manufacturing processes, advanced automation and robotics, and use of alternate feedstocks including waste/recycled products to make clean energy products (e.g., batteries) that enable the circular economy.
    - Action Area 3 - Predictive Performance and Advanced Qualification and Certification. Develop and commercialize new approaches to provide system qualification of manufactured products for clean energy technologies. This will include model-based assessments of as-manufactured products without traditional destructive testing, qualification of processes in lieu of product testing, and new approaches to lifetime assessments and re-certification of existing or refurbished systems and components. This area will also identify and seek to address unique qualification challenges relevant to many emerging clean energy technologies – e.g., wind blade qualification, nuclear reaction qualification, etc.

- Action Area 4 - Scale up for Large-scale and "Heavy" Manufacturing. Support the transition of proof-of-principle or demonstration projects to large-volume manufacturing that drives costs down the learning curve, and also for those technologies that have low-volume production and/or intermittent production, such as for nuclear reactors or large power transformers. Specifically, this Action Area will provide support for manufacturing scale-up facilities and incubators working on large-scale product manufacturing.
- Action Area 5 - Resilient Supply Chain Development. Conduct RD&D to promote domestic sources for raw materials, refined materials, components, and manufactured systems for the clean energy economy. This includes activities to develop and commercialize pathways for cost-effectively recovering and recycling waste materials using advanced separation technologies. The Action Area will also support Educational and Workforce Development programming and career pathways for the workforce at all levels, to provide the domestic workforce needed; analysis to understand interconnected supply chains and pathways to meet 2050 climate goals; and demand-pull activities to catalyze investments in domestic supply chains.

**Program Organizations:**

1. **Advanced Research Projects Agency-Energy (ARPA-E):** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational technologies to enhance the economic and energy security of the U.S. ARPA-E funds high-potential, high-impact projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in Clean Energy Technology Manufacturing will be determined in FY 2023.

2. **Office of Energy Efficiency & Renewable Energy (EERE):** Many EERE technology programs support Clean Energy Manufacturing through advanced manufacturing work across programs and in close coordination with other DOE offices. Principal EERE program office activities and contributions include:
    a. Advanced Materials and Manufacturing Technologies Office (AMMTO): AMMTO plays a leading role in the decarbonization of the industrial sector and addressing the climate crisis by driving innovations that lead to a more resilient and competitive domestic manufacturing sector and that deliver the clean energy technologies needed to decarbonize other sectors. In FY 2024, AMMTO will partner with other DOE offices to invest in RD&D to support long duration storage manufacturing technologies that enables decarbonization of the grid; process development and manufacturing of power electronics needed for electrification, design and fabrication of highly efficient microelectronics; advance composite manufacturing processes relevant to wind turbine blades and other clean energy technologies; development of high conductivity materials~~,~~ systems; research to advance materials for harsh service conditions; and foundational manufacturing processes and systems that can apply across multiple clean energy technologies such as smart manufacturing, additive manufacturing, and roll-to-roll manufacturing. AMMTO will also increase its RD&D to support the circular economy including novel approaches to recycling, design for recyclability, and other circular economy approaches.
    b. Bioenergy Technologies Office (BETO): BETO supports the development of valuable chemicals and materials that can replace petrochemicals with renewable alternatives. This work includes R&D on bioderived polymers and other renewable chemicals that provide performance advantages to traditional materials.
        - Action Area 1: In FY 2024, BETO will continue R&D to identify and synthesize biomass-based polymers and renewable chemicals that can deliver performance advantages and lower carbon emissions than incumbent petroleum-based products. BETO will use machine learning and molecular simulation tools to predict properties and performance of novel biomass-based materials, and support synthesis and testing of these performance-advantaged bioproducts.
        - Action Area 2: In FY 2024, BETO will continue to develop biobased plastics designed with superior recyclability and biodegradability as well as new methods to recycle and upcycle existing plastic waste in collaboration with AMMTO.
    c. Hydrogen and Fuel Cell Technologies Office (HFTO): HFTO invests in advanced manufacturing processes to enable accelerating the deployment of hydrogen and fuel cell technologies to address decarbonization of the transportation and industrial sectors. Activities span manufacturing processes for carbon fiber for on-board physical storage, hydrogen refueling components, and materials compatibility.

- Action Area 1: HFTO work includes efforts relevant through collaboration and addressing industry's need to identify advanced materials for safe use of hydrogen and hydrogen blends across sectors in collaboration with FECM.

d. Solar Energy Technologies Office (SETO): SETO supports the RD&D and commercialization of advanced manufacturing relevant technologies to help develop new products for domestic manufacture, support new technologies to drive down domestic manufacturing costs, develop robust domestic supply chains, and mitigate issues related to material availability.
   - Action Area 3: Efforts include new rounds of the American-Made Solar Prize to incentivize and transition new solar technologies into prototypes ready for real world validation. Other efforts supported in the Request to enhance U.S. solar manufacturing include continued support for the American-Made Network to provide commercialization resources; a crosscutting initiative designed to support a qualified, diverse, and inclusive clean energy manufacturing workforce; connecting trainees with the industry; and, continued support for the Incubator program to accelerate the prototyping, development and demonstration of new solar energy technologies for commercialization and domestic manufacturing. :
   - Action Area 5: Activities support the development of a sustainable, robust, and resilient American solar supply chain. Domestic supply chains are critical to ensuring the U.S. has access to the volume of solar energy cells, modules, and system components to meet decarbonization goals.

e. Vehicle Technologies Office (VTO): In FY 2024, VTO priority focus areas include combining new technologies for multi-material structures required in order to incorporate these lightweight polymer matrix composites and other new lightweight materials (aluminum and magnesium) into vehicle applications for increasing fuel economy and reducing the environmental impact of vehicles; supporting the Lightweight Metals Core Program to develop scalable processing methods to locally enhance the properties of aluminum and magnesium; supporting battery materials scale-up at National Laboratories; and supporting Battery Processing Science and Engineering dedicated to solid state materials processing. VTO addresses two Action Areas:
   - Action Area 1: VTO will continue and scale up efforts related to solid state processing and new joining technologies for multi-material structures in vehicles. New joining materials will be required to incorporate these lightweight polymer matrix composites and other new lightweight materials (aluminum and magnesium) into vehicle applications for increasing fuel economy and reducing the environmental impact of vehicles. The Lightweight Metals Core Program will develop scalable processing methods to locally enhance the properties of aluminum and magnesium.
   - Action Area 2: VTO will continue electric vehicle battery innovations to develop novel processing technologies for conventional electrodes as well as lithium metal anodes and solid-state batteries. Projects involve either active materials scale-up or scientific investigations of novel processing approaches for lithium intercalation cathode materials, lithium metal batteries, or solid-state electrolytes.

f. Water Power Technologies Office (WPTO): WPTO has been funding foundational and application-based research for advanced manufacturing opportunities for hydropower. Opportunities analysis is being performed that will support development of a roadmap that will inform the hydropower program and industry towards future research and engagement. The goal of FY 2024 activities is to encourage and enable the hydropower industry to recognize the opportunities to apply advanced manufacturing technologies and techniques to hydropower challenges for existing and new infrastructure. Another opportunities analysis for advanced manufacturing applications for hydropower is currently being prepared by Oak Ridge National Laboratory (ORNL). Outputs will be used to inform a roadmap in FY 2023, and then will build a program in partnership with the Manufacturing Demonstration Facility at ORNL to provide support and validation of technologies for hydropower.
   - Action Area 1: WPTO activities addresses marine energy and builds on a materials strategy, which will be released in FY 2023. WPTO supports advancement of composites and other materials that can withstand the forces and ocean environment necessary to advance marine energy technologies at all scales.

g. Wind Energy Technologies Office (WETO): WETO uses advanced manufacturing to address the issues and challenges associated with turbine scaling for both land-based and offshore wind technologies. These activities will enable wind turbine technologies that overcome transportation constraints, allow for larger and lightweight turbine components through novel designs and materials, and increase material and component production throughput.
   - Action Area 2: WETO activities in FY 2024 continues work leveraging prior R&D in additive manufacturing, in addition to broadening into other advanced manufacturing methods such as high-performance

computing (HPC), artificial intelligence (AI), and advanced machine learning (AML). The use of these methodologies will allow WETO to address issues associated with the scaling of wind turbines through component design and material optimization, and reduction of critical rare-earth materials. This work explores the use of these technologies and their application to wind turbine blades, generators, foundations, and towers. Demonstration activities of these technologies will also be examined in the short to longer term.

3. **Office of Fossil Energy and Carbon Management (FECM):** FECM plays a leading role in the decarbonization of the industrial sector and power sector by developing crosscutting carbon capture, carbon removal, $CO_2$ conversion, and carbon storage, to decarbonize manufacturing processes and power generation, and clean hydrogen production and utilization technologies to enable fuel switching to zero-carbon fuels. FECM's RDD&D program focuses on technologies that help to ensure clean and affordable energy for all and facilitates the transition towards a carbon-pollution-free economy. This RDD&D is targeted at improving overall system efficiency, reducing capital and operating costs, enabling affordable carbon management, and enabling fuel switching to zero-carbon fuels. Carbon management technologies have an important role in the decarbonization of the manufacturing sector for industries such as steel, cement, and chemicals. Additionally, advanced manufacturing capabilities such as roll-to-roll manufacturing and 3-D printing, can help enable many of the advanced carbon management and hydrogen technologies that are under development today and on the verge of commercial deployment. By applying these techniques to reduce material costs, improve designs and manufacturability of these technologies, advanced manufacturing will enable the potential deployment and buildout of point-source carbon capture and storage, carbon removal, carbon conversion, and clean hydrogen production and utilization technologies. As the Department moves to establish a clean hydrogen economy, additional hydrogen-resistant materials will need to be developed to allow for increased quantities of hydrogen production, use, transport, and storage. These activities address three Action Areas:
    - Action Area 1: Refractory materials for gasification systems and ceramic matrix composites for use in hydrogen turbines.
    - Action Area 2: Embedded sensors for harsh environments.
    - Action Area 5: Design of novel, environmentally responsible mineral processing technologies to be used with a variety of feedstocks.

4. **Office of Nuclear Energy (NE):** NE's goal is to maintain U.S. leadership in the development of materials and manufacturing technologies for nuclear energy applications. NE will enable nuclear reactor technology developers by developing materials and manufacturing technologies to produce components that improve safety and reliability and are more cost effective to produce. Within NE, the Advanced Materials and Manufacturing Technologies (AMMT) effort is working to accelerate the development, qualification, demonstration and deployment of advanced materials and manufacturing technologies to enable reliable and economical nuclear energy. These activities support two Action Areas:
    - Action Area 2: NE plans to partner and leverage joint capabilities to demonstrate technologies through the production of parts, components and subsystems that have the potential for widespread impact in manufacturing for the nuclear sector.
    - Action Area 3: NE is engaging stakeholders to develop an accelerated qualification framework for certifying advanced materials and manufacturing technologies. The framework will focus initially on 316 stainless steel materials, which are understood in traditional manufacturing processes but are new to advanced manufacturing processes.

5. **Office of Science (SC):** In FY 2024, SC will support efforts for fundamental science leading to transformational manufacturing aligned with all the *Crosscut Action Areas.* The opportunities for underpinning science for manufacturing crosses many SC activities, including biomanufacturing, innovations for accelerator technology, science to transform "traditional" chemical and materials manufacturing, materials for extreme environments, biotechnology, and isotope production and enrichment, to name a few. Central to the discovery and application of transformative science are computational tools and a system-based co-design approach to integration of experiments, predictive theory, and AI and machine learning (ML) that cross the interfaces among components in manufacturing systems. SC also provides critical isotopes necessary for clean energy technology manufacturing through the Isotope R&D and Production Program.

a. Basic Energy Sciences (BES): The BES workshop on Basic Research Needs for Transformative Manufacturing complements prior SC workshops and provides priority research directions that form the basis for this initiative. Investments in manufacturing science will be enabling for other science and technology initiative areas within DOE with a focus that includes the science to realize scale-up from laboratory prototypes to larger systems and clean manufacturing.
b. Biological and Environmental Research (BER): BER continues biomanufacturing research that focuses on new biotechnology activities and genome-enabled engineering for new approaches to design of bioproducts and biomaterials.
c. Fusion Energy Sciences (FES): The 2018 SC Fusion Energy Sciences Advisory Committee (FESAC) report on Transformative Enabling Capabilities for Efficient Advance Toward Fusion Energy highlighted the promise of novel synthesis, manufacturing, and materials design to enable fusion energy systems for the future. FES is pursuing these new manufacturing technologies to enable design and advancement of novel material systems capable of surviving the extreme conditions expected in fusion reactors as well as other applications of materials for extreme environments.
d. Isotope R&D and Production (DOE IP): The DOE IP is developing domestic production capabilities and supply chains for radioisotopes that are used as the main component in nuclear batteries. Radioisotopes are used as industrial thickness and density gauges, component qualification, and industrial radiography during manufacturing of clean energy components. Many of these isotopes are only available from Russia and the DOE IP is developing domestic supply chains to remove dependence on foreign supplies. Enriched stable isotopes are functional components of enabling materials for advanced fusion and fission energy systems and efforts to increase their availability is a priority for the Program. Research into the development of production of isotopes needed for molten salt and fusion reactors is also being pursued. Finally, the DOE IP supports the development of robotics, automation, and advanced targetry, such as 3-D printing of targets, that facilitate the development and operations of nuclear reactors.

SC will interact with technology offices to ensure close coordination of FY 2024 funding opportunities to ensure maximum impact of funded research on technology challenges. Research opportunities will include a focus on Established Program to Stimulate Competitive Research (EPSCoR) regions as well as broad outreach to minority serving institutions.

**Highlights and Major Changes from FY 2023 Enacted**

The Clean Energy Technology Manufacturing Crosscut is a subset of the FY 2023 Advanced Manufacturing Crosscut focused on product manufacturing. This change reflects the organizational changes and makes this work distinctive from the Industrial Decarbonization Crosscut focused on reducing emissions in energy intensive industries such as steel, cement, and chemicals.

- Energy Efficiency and Renewable Energy
  - Advanced Materials and Manufacturing Technologies: AMMTO is a successor office to AMO in this Crosscut and reflects the realignment into AMMTO and IEDO.
  - Bioenergy Technologies: BETO increases support to replace petrochemicals with renewable alternatives such as bioderived polymers.
  - Water Power Technologies: WTPO increases funding foundational and application-based research for advanced manufacturing opportunities for hydropower.
  - Wind Energy Technologies: WETO increases will address the issues and challenges associated with turbine scaling for both land-based and offshore wind technologies.
  - Hydrogen and Fuel Cells Technologies: HFTO reduced funding on liquid fueling components and liquid hydrogen storage tanks to focus resources more directly on the manufacturing processes for carbon fiber for on-board physical storage and hydrogen refueling components.
- Fossil Energy and Carbon Management
  - Carbon Management Technologies: Hydrogen with Carbon Management: Decrease reflects current priorities resulting in a lower level of effort in developing alloy compositions and manufacturing techniques to improve resistance to hydrogen embrittlement.

**Related Bipartisan Infrastructure Law (BIL) or Inflation Reduction Act (IRA) Programs:**

In addition to the annual appropriations request, BIL funding will support the planning and execution of technology development, demonstration, scale-up, and deployment of battery material processing, manufacturing, and recycling; clean hydrogen production; wind energy technology manufacturing; solar energy manufacturing; and advanced manufacturing techniques. These investments are essential in addressing the development of new technologies and advancing supply chain needs to support growth in clean energy. Expansion of tax credits in IRA offer additional incentives for manufacturing across a range of clean energy technologies.

**Critical Minerals and Materials**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2022 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency - Energy | 66,125 | TBD | TBD | N/A |
| ARPA-E Projects* | 66,125 | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 112,523 | 157,900 | 206,087 | +48,187 |
| Advanced Manufacturing Office (AMO) | 47,000 | 26,000 | - | -26,000 |
| Advanced Materials and Manufacturing Technologies Office (AMO successor office) | - | - | 50,000 | +50,000 |
| Geothermal Technologies | 50 | 3,000 | 2,787 | -213 |
| Hydrogen and Fuel Cell Technologies | 30,000 | 30,000 | 22,000 | -8,000 |
| Solar Energy Technologies | - | 16,000 | 8,000 | -8,000 |
| Vehicle Technologies | 34,000 | 73,700 | 96,500 | +22,800 |
| Wind Energy Technologies | 1,473 | 9,200 | 26,800 | +17,600 |
| Fossil Energy and Carbon Management | 23,000 | 44,000 | 41,000 | -3,000 |
| Mineral Sustainability | 23,000 | 44,000 | 41,000 | -3,000 |
| Nuclear Energy | 61,500 | 136,500 | 131,500 | -5,000 |
| Fuel Cycle Research and Development | 60,500 | 136,500 | 131,000 | -5,500 |
| Nuclear Energy Enabling Technologies | 1,000 | - | 500 | +500 |
| Office of Technology Transitions | 100 | - | - | - |
| Office of Technology Transitions | 100 | - | - | - |
| Science | 25,000 | 25,000 | 25,000 | - |
| Basic Energy Sciences | 25,000 | 25,000 | 25,000 | - |
| **Grand Total** | **288,248** | **363,400** | **403,587** | **+40,187** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview:**

Critical minerals and materials (CMM) are vital for U.S. energy security and the clean energy transition, for defense applications, and for a broad set of industrial and commercial applications which underpin the U.S. economy. Currently, the United States imports greater than 80% of its rare earth elements (REE) and overall is heavily reliant on foreign sources for 29 of the 35 designated critical minerals.[1]

Developing reliable and secure CMM sources and supply chains; identifying and advancing effective substitutes or alternatives using an assured supply of materials; and developing domestic, responsible, and efficient processing capacity for these minerals and materials can reduce the supply risks faced by the U.S. Foundational supply chain components include, but are not limited to, neodymium, praseodymium, and dysprosium for permanent magnets in electric vehicle (EV) motors and wind turbines; cobalt, lithium, manganese, class 1 nickel, and graphite for EV and grid batteries; platinum group metals in catalysts for catalytic convertors, chemical production, fuel cells, and clean hydrogen production; and gallium and germanium for semiconductors. There are additional minerals such as copper and uranium, which while not on the current U.S. critical minerals list, are recognized as vital for clean and low carbon energy, and for energy system resilience considering the dynamic and constantly changing global supply chains.

[1] USGS Mineral Commodities Summaries 2022, Mineral Commodity Summaries 2022 (usgs.gov)

The development of sustainable, safe, and robust domestic supply chains for CMM can also create high-paying jobs, support both existing and new manufacturing economies, and aid in a just transition for coal and fossil-based communities. CMM supply chains include mining and extraction, processing, manufacturing, and management at end-of-life (including remanufacture, refurbish, repair, reuse, recycle, and repurpose). At the same time, development of more diverse and robust mineral and material supply chains must incorporate engagement and consultation with diverse stakeholder and tribal communities, coupled with deep consideration of and mitigation of the environmental and life cycle impacts of accelerated growth of CMM supply chains. This means that CMM supply chains of the future will be significantly different from those of the past.

**Coordination Efforts:**
The Department of Energy's (DOE) primary role as part of a broader Federal Strategy[2] to build resilient CMM supply chains is to advance research, development, demonstration (RD&D), and commercialization spanning basic science to technology innovation. Section 7002(g)(1) of the Energy Act of 2020 directs DOE to establish a Critical Materials Research, Development, Demonstration, and Commercialization Application (RDD&CA) Program to:

- develop alternatives to critical materials that do not occur in significant abundance in the United States;
- promote the efficient production, use, and recycling of critical materials, with special consideration for domestic critical materials, throughout the supply chain;
- ensure the long-term, secure, and sustainable supply of critical materials; and
- prioritize work in areas that the private sector by itself is not likely to undertake due to financial or technical limitations.[3]

The CMM Crosscut coordinates and integrates the DOE Critical Materials RDD&CA.[4] The CMM Crosscut Team is comprised of representatives from across DOE to address research needs and related activities across all stages of research, the full supply chain and life cycle.

In addition to the funding offices identified below, key facilitating offices support key portions of this work. The Office of Technology Transitions (OTT), in coordination with DOE program offices, analyzes, identifies, and supports technology commercialization pathways and partnership opportunities. The International Affairs Office (IA) identifies and facilitates opportunities with key foreign and ally partners and serves as a key bridge to other U.S. Government efforts in global supply chains. The Office of Policy (OP) provides in-depth analysis and identifies policy tools which can accelerate technology use and adoption in support of the clean energy transition. The Office of Legacy Management (LM) manages DOE's Uranium Leasing Program. Additionally, Offices under the Under Secretary for Infrastructure, including the Office of Clean Energy Demonstrations (OCED), Office of Manufacturing and Energy Supply Chain (MESC), and the Loan Programs Office (LPO) support demonstration and deployment activities in the CMM space.

FY 2024 coordination activities include developing and executing RDD&CA strategic planning, budget development, and execution for the crosscut through workshops, reports, and strategy updates. Crosscutting priorities will be informed by ongoing analysis, including an update of DOE's critical materials assessment. Strategic planning efforts will build upon previous coordination activities directed by Congress, as well as coordination mandated through Executive Order (EO) 13953, *Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries and Supporting the Domestic Mining and Processing Industries*, EO 14017, *America's Supply Chains*, and Section 7002(g)(6) of the Energy Act of 2020.[5] This work includes ongoing DOE efforts within DOE's OP to develop and maintain domestic supply chains by increasing raw material availability, expanding domestic manufacturing capabilities, supporting formation of and investment in diverse, secure, and socially responsible foreign supply chains, and enhancing supply chain knowledge and decision making. The CMM crosscut will also coordinate with other priority technology efforts, the most notable and impactful being the Subsurface Energy Innovations crosscut, to ensure that key topics and opportunities are not overlooked.

[2] https://www.commerce.gov/data-and-reports/reports/2019/06/federal-strategy-ensure-secure-and-reliable-supplies-critical-minerals
[3] Consolidated Appropriations Act, 2021, Public Law 116-260 (Dec. 27, 2020), Div. Z, Title VII, section 7002(g)(1) [hereinafter Energy Act of 2020].
[4] Energy Act of 2020, section 7002(g)(6).
[5] Energy Act of 2020, section 7002(g)(6).

CMM development and access within the U.S. requires close coordination between DOE and other agencies which have key leadership, supporting, or facilitating roles. This includes regulatory (Environmental Protection Agency, Department of Interior (DOI)); international (Department of Commerce (DOC), Department of State, Export-Import Bank, Development Finance Corporation (DFC)); technical (DOI-United States Geological Survey, Department of Defense (DOD)); and commercial facing partners (DOC, DOD, Department of Labor). Interagency collaboration is key to advance and secure sustainable mineral extraction, and to address the issues and challenges posed by future possible resources.

**Objectives and Action Areas:**

- Objective 1: Enable Robust CMM Supply Chains. Create reliable, resilient, affordable, and secure supply chains for critical minerals and materials imperative to the clean energy and national security mission of the Department as part of a U.S. Government-wide strategy that leverages our allied global partners.
    - Action Area 1: Diversify & Expand Supply: Diversify and expand CMM supply from varying sources while minimizing waste and increasing techno-economic co-production of materials, where many materials are produced together, each bringing in similar revenues rather than one material accounting for an overwhelming majority of revenue.
    - Action Area 2: Develop Alternatives: Innovate alternate materials, manufactured components, and technologies that minimize or eliminate the use of CMMs.
    - Action Area 3: Increase Material & Manufacturing Efficiency: Efficient use and processing of materials across supply chain and life cycle.
    - Action Area 4: Enable a Circular Economy: Remanufacture, de-manufacture, refurbish, repair, reuse, upcycle, recycle, and repurpose.
- Objective 2: Increase U.S. Science & Technological Competitiveness. Ensure that DOE is an essential source of science, technology, and engineering solutions for re-establishing U.S. competitiveness in CMM supply chains and maintaining world class science and capabilities.
- Objective 3: Create a Responsible Energy Future. Create economic opportunities in partnership with communities while working to mitigate against adverse impacts on communities and the environment associated with the entire lifecycle of CMM supply chains.
- Objective 4: Expand the Innovation Ecosystem. Foster an inclusive, equitable, and accessible CMM innovation ecosystem that convenes a diverse set of stakeholders, not limited to DOE National Labs, academic – including community colleges and Minority Serving Institutions (MSIs), industry, and small businesses and broadens participation in science and technology.
    - Action Area: Increase Enabling and Crosscutting Work: Enhance collaboration and coordination for cross-cutting functions, such as criticality assessments, education and workforce development, stockpiling approaches, advanced theoretical, computational, and experimental tools, etc. Applies to multiple objectives.

**Program Organizations:**

1. **Advanced Research Projects Agency-Energy (ARPA-E):** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational technologies to enhance the economic and energy security of the United States. ARPA-E funds high-potential, high-impact projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. In FY 2022, ARPA-E selected and/or obligated over $66 million in CMM funding to projects aligned with the Crosscut through ARPA-E's Supporting Entrepreneurial Energy Discoveries (SEED) Exploratory Topic, Mining Innovations for Negative Emissions Resource Recovery (MINER), and Seeding Critical Advances for Leading Energy technologies with Untapped Potential 2021 (SCALEUP 2021) programs. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in CMM will be determined in FY 2023.

2. **Office of Energy Efficiency & Renewable Energy (EERE):**
    a. Advanced Materials and Manufacturing Technologies Office (AMMTO): Efforts will focus on comprehensive RD&D to reduce supply risk and improve supply resilience for materials and technologies necessary for the clean energy transition (including rare earths, lithium, cobalt, and gallium). These materials are needed for applications such as

magnets in EVs and wind turbines, batteries, efficient lighting, and semiconductors. Strategies include diversifying supply, developing substitutes, improving reuse/recycling, and more efficient use. Efforts will also focus on research and development (R&D) and pilot projects and testbeds that verify economics of scaled continuous operations in real world conditions. Areas of interest for these projects include highly selective separation, metal reduction, magnet manufacturing, materials recovery from secondary and unconventional sources, material reuse, more efficient use, and balanced coproduction.

b. Geothermal Technologies (GTO): Efforts will address technology and process gaps that still exist following the results of the Geothermal Lithium Extraction Prize to generate technical solutions to the Nation's CM supply through geothermal brine and produced water extraction and processing. This may include efforts to scale up technical solutions developed as part of the Geothermal Lithium Extraction Prize to successful demonstration in the Salton Sea area of California. In the Salton Sea alone, there is an estimated annual lithium resource potential of 600,000 tons, which currently exceeds the annual U.S. demand for lithium.
c. Hydrogen and Fuel Cell Technologies Office (HFTO): HFTO supports R&D to reduce Platinum Group Metals (PGM) catalysts for fuel cells and hydrogen production technologies, as well as additional supporting activities to reduce vulnerabilities and build supply chain resilience.
d. Solar Energy Technologies Office (SETO): SETO supports the analysis of potential photovoltaics (PV) deployment limitations related to materials scarcity and the RD&D of materials alternatives, techniques to use materials more efficiently and recycling methods to further utilize existing materials.
e. Vehicle Technologies Office (VTO): Accelerate fundamental research for developing substitutes for graphite, by enabling silicon anodes, and for developing near term lithium chemistries that require very low or no cobalt. Focus research on lithium battery technologies that eliminate the need for cobalt, significantly reduce or eliminate the need for nickel and graphite such as lithium metal and solid-state battery technologies. Battery recycling R&D will advance the scale-up of bench scale processes and validate processes to meet the goal of utilizing mostly recycled material that matches the performance of virgin material.
f. Wind Energy Technologies Office (WETO): Funding for analysis and technology innovation efforts to both understand the vulnerabilities of the wind energy supply chain to critical materials and to mitigate those vulnerabilities by reducing dependence on, and improving recovery of, critical materials within wind energy components.

3. **Office of Fossil Energy and Carbon Management (FECM):**
   a. Minerals Sustainability Division: FY 2024 Key Objectives (Planned): The FY 2024 Budget Request supports further advance production of high purity, commercial grade REE and other critical minerals (CM), which will form next stage development to broadly enable extraction of REEs and other CM from unconventional feedstocks (such as coal refuse, acid mine drainage, and produced water) towards commercial industry adoption.
   b. Funding will also be utilized for Front-End Engineering Design (FEED) studies for an extraction, separation and recovery facility/system that can produce 1-3 metric tons per day of an at least 75% rare earth oxide and/or salt mixed concentrate by weight and assess potential for individual separation and reduction to metal.
   c. Funding would be applied to further regional basin projects (the Carbon Ore, Rare Earth and Critical Minerals (CORE-CM) Initiative). It will continue to support regional characterization and field activities for unconventional/secondary sources, basin commercialization strategic planning/implementation, environmental remediation value streams, basinal technology development and stakeholder outreach and engagement.
   d. Funding would be applied to further Carbon Ore to Products projects to develop synthetic graphite, graphene, and other carbon materials that are critical resources for batteries, electronics, composites, and similar end-uses. This will include technoeconomic analysis (TEA) and life-cycle analysis (LCA), process systems, and market analyses of high value carbon products that will enable CM production from coal-based feedstocks.
   e. The development of a sustainable, safe, and robust domestic supply chain for CMM can also create jobs and aid in a just transition for coal and fossil-based communities. These communities have expertise that could be transferrable to technology development throughout the supply chain including:
      i. Upstream unconventional technology and technique development from resource characterization and prediction, through novel extraction from sources such as acid mine drainage, mine refuse, coal ash, and geothermal and produced water brines.
      ii. Midstream technology development for environmentally sustainable, efficient, and cost-effective extraction, processing, and refining of resources from unconventional and secondary sources.

iii. Downstream technology development for the transformation of carbon ore to synthetic graphite and graphene for battery anodes as well as graphene for quantum dots for use in solar cells.

4. **Office of Nuclear Energy (NE):** NE is taking steps to support a domestic nuclear fuel supply chain including uranium mining, conversion, enrichment, fuel fabrication, and the option of recycling. NE is also developing materials and manufacturing technologies to support advanced reactors and the current fleet of domestic reactors.
   a. In prior years, NE began to identify the CM for the alloys and other applications used by the U.S. nuclear industry for the current fleet and projected for advanced reactors. NE began supporting domestic uranium mining capabilities through R&D activities to reduce lifecycle costs of uranium production; demonstrating the production of high-assay low-enriched uranium (HALEU) using U.S. origin enrichment technology to encourage commercialization by the private sector; and developing advanced recycling technologies as options to improve uranium resource utilization.
   b. Fuel Cycle R&D: A HALEU Availability program has been initiated to support civilian domestic demonstration and commercial use. This program will work to make available small quantities of HALEU from limited DOE uranium inventories and HALEU production in the short term. In addition, the program will work with the private sector in its design and build out of commercial U.S. HALEU production capability in the long term. Additionally, activities for the development and demonstration of different recycling technologies to make available small quantities of HALEU materials will continue, by using the molten salt and hybrid ZIRCEX processes.
   c. Nuclear Energy Enabling Technologies: Perform research on the positive effects of advanced manufacturing techniques to improve use of CM for nuclear energy applications.

5. **Office of Science (SC):** For many years, SC has supported foundational theoretical and experimental science related to understanding unique chemistry and materials properties associated with REEs, substitution for platinum group element (PGE) catalysts, and novel battery materials and chemistries. SC operates major x-ray, neutron, nanoscience, and high-performance computing user facilities that provide advanced synthesis, fabrication, characterization, and computational capabilities to this community for basic, applied, and industrial research. Research in FY 2024 emphasizes the full breadth of the crosscut.
   a. Basic Energy Sciences (BES): Research continues to focus on understanding the role of REEs, PGEs, and other critical elements in the determination of the properties of materials and molecules at length scales ranging from electronic to atomic and microstructural scales, and on advancing geoscience and separation science to enhance the extraction and chemical processing of critical elements. Also included is understanding of the REE and PGE chemistry, including selective separations from solutions, and dynamics and reactivity at mineral-water interfaces during extraction and recovery. Emphasis will include integration of the related fields of synthesis, characterization, predictive theory/modeling, and data science to advance understanding of the role of REE, PGE and other critical elements in the determination of the properties of functional materials such as magnets and catalysts, and on the use of such knowledge to reduce, eliminate, or find substitutes for critical materials in energy-relevant technologies.
   b. Isotope R&D and Production (DOE IP): REEs and critical materials are often needed to produce isotopes that are required for batteries, semiconductors, and clean energy applications, leading to synergies with the DOE IP that produces isotopes. The DOE IP develops chemical separations that are of interest to the REE community. The DOE IP also coordinates investigation of co-recovery of critical isotope production feedstocks alongside REEs. For example, industrial waste streams containing significant concentrations of Radium-226 are produced through oil and natural gas extraction, geothermal energy production, coal combustion, phosphate fertilizer production, and heavy metal mining. These waste streams also have high concentrations of other valuable materials, such as lithium and REEs, which could be co-recovered alongside Radium-226, an important isotope for producing medical radioisotopes for the treatment of cancer and other diseases.

**Highlights and Major Changes from FY 2023 Enacted**

- Energy Efficiency and Renewable Energy
  - Advanced Materials and Manufacturing Technologies Office: As a successor office to AMO, AMMTO reflects an increased emphasis on CMM through R&D, pilot projects and testbeds that verify efficiency and economics of scaled continuous operations in real world conditions needed to diversify supply, develop substitutes, and improve reuse/recycling.

- Hydrogen and Fuel Cells Technologies Office: HFTO's support for work to reduce PGM catalysts for fuel cells and hydrogen production technologies remains substantial at decreased funding levels due to prioritization of other work.
- Solar Energy Technologies Office: SETO programs continue work on addressing materials availability at lower levels while the program awaits results of recent BIL investments.
- Vehicle Technologies Office: VTO's increased funding will support research for battery recycling and develop substitutes for graphite and nickel by enabling silicon anodes and for developing near term lithium chemistries that require very low or no cobalt.
- Wind Energy Technologies Office: WETO's increased support provides funding for analysis and technology innovation efforts to both understand the vulnerabilities of the wind energy supply chain to critical materials and to mitigate those vulnerabilities.

**Related Bipartisan Infrastructure Law (BIL) Programs**:
In addition to the annual appropriations request, BIL funding will support the planning and execution of technology development, demonstration, scale-up, and deployment activities, including battery and CMM recycling, battery material processing, and execution of an REE demonstration facility. These investments are essential in addressing CMM supply chains and technology needs to support growth in clean energy and will expand and accelerate DOE's CMM strategy.

**Energy Storage**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency – Energy* | 43,280 | TBD | TBD | N/A |
| ARPA-E Projects | 43,280 | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 336,835 | 352,301 | 388,100 | +35,799 |
| Advanced Manufacturing Office (AMO) | 30,000 | 25,500 | - | -25,500 |
| Advanced Materials and Manufacturing Technologies (AMO successor office) | - | - | 24,000 | +24,000 |
| Building Technologies | 6,375 | 15,000 | 15,000 | - |
| Geothermal Technologies | 250 | 7,900 | 5,000 | -2,900 |
| Hydrogen and Fuel Cell Technologies | 126,000 | 118,000 | 104,000 | -14,000 |
| Industrial Efficiency and Decarbonization Office (AMO successor office) | - | - | 5,000 | +5,000 |
| Renewable Energy Grid Integration | 10,000 | - | - | - |
| Solar Energy Technologies | 13,660 | 20,851 | 13,100 | -7,751 |
| Strategic Programs | 300 | 350 | 500 | +150 |
| Vehicle Technologies | 135,000 | 146,500 | 192,500 | +46,000 |
| Water Power Technologies | 13,850 | 17,140 | 19,000 | +1,860 |
| Wind Energy Technologies | 1,400 | 1,060 | 10,000 | +8,940 |
| Fossil Energy and Carbon Management | 5,000 | 6,000 | 6,000 | - |
| Energy Asset Transformation | 5,000 | 6,000 | 6,000 | - |
| Nuclear Energy | 53,000 | 23,000 | 13,500 | -9,500 |
| Crosscutting Technology Development | 10,000 | 12,000 | 9,500 | -2,500 |
| Demonstration 2 (Natrium) | 30,000 | - | - | - |
| Light Water Reactor Sustainability | 13,000 | 11,000 | 4,000 | -7,000 |
| Electricity | 117,684 | 88,965 | 78,600 | -10,365 |
| Energy Storage Research | 70,684 | 88,965 | 78,600 | -10,365 |
| 20-OE-100 Grid Storage Launchpad | 47,000 | - | - | - |
| Office of Technology Transitions | 100 | 100 | 100 | - |
| Office of Technology Transitions | 100 | 100 | 100 | - |
| Science | 83,934 | 130,100 | 133,382 | +3,282 |
| Basic Energy Sciences | 83,934 | 130,100 | 133,382 | +3,282 |
| **Grand Total** | **639,833** | **600,466** | **619,682** | **+19,216** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview:**

The Department of Energy (DOE) Energy Storage crosscut encompasses activities to accelerate the research, development, and demonstration (RD&D), as well as market adoption, of transformational energy storage technologies. Energy storage technologies are critical to decarbonizing the power, transportation, buildings, and industrial sectors. To achieve a net-zero emissions economy, DOE activities are focused on demonstrating and validating existing storage technologies for new uses and identifying, developing, and commercializing new storage technologies for market adoption by the end of the decade. Because energy storage services can be provided by a range of distinct technologies, the Energy Storage Grand

Challenge (ESGC) was established in 2020 across DOE offices to improve coordination and alignment of common goals for energy storage use cases. ESGC was formed to manage strategy across DOE on energy storage and coordinates the DOE-wide "Energy Storage System Research, Development, and Deployment Program" required by 42 U.S. Code § 17232(b).

The ESGC goals are guided, in part, by the Long Duration Storage Energy Earthshot™, which is a bold target to achieve 90% cost reductions for technologies that can provide 10 hours or longer duration of energy storage within the coming decade. As an Energy Earthshot™, Long Duration Storage Shot™ highlights a top Administration research, development, demonstration, and deployment (RDD&D) focus area where innovation breakthroughs will address the climate crisis and create high-paying clean energy jobs in the United States.

Since 2020, the ESGC has launched more than $550 million in funding for almost 250 projects in 45 States, including Hawaii and Alaska—and encompassing disadvantaged communities and Tribal areas. These projects—carried out by large and small businesses as well as research institutions and other innovative organizations, partnerships, and consortia—represent the Department's work to advance energy storage technologies across its basic and applied research and development (R&D) portfolios and in applications that range from developing membranes for electrochemical energy storage to processing critical materials and from manufacturing structural battery enclosures to creating durable and cost-effective fuel cell systems and components for vehicles.

**Coordination Efforts:**
The Energy Storage Grand Challenge is co-chaired by the Offices of Electricity (OE) and Energy Efficiency and Renewable Energy (EERE) and includes the Offices of Fossil Energy and Carbon Management (FECM), Nuclear Energy (NE), Science (SC), Technology Transitions (OTT), Clean Energy Demonstrations (OCED), Manufacturing & Energy Supply Chains (MESC), the Federal Energy Management Program (FEMP) and Advanced Research Projects Agency-Energy (ARPA-E), as well as the Loan Programs Office (LPO) as a key participant. The ESGC coordinates activities aligned with the ESGC Roadmap, which was published in 2020 and updated in 2022.

In addition to the core offices identified above, various crosscutting offices (including the Offices of Economic Impact & Diversity, Policy, and Artificial Intelligence and Technology) contribute staff time and coordinate with the RDD&D funding offices to enhance the impact of the Department's investments. Coordination throughout the Federal Government on batteries is facilitated through the Federal Consortium for Advanced Batteries (FCAB), which brings together Federal agencies that are interested in ensuring a domestic supply of lithium batteries and are committed to accelerating the development of a robust and secure domestic industrial base.

**Objectives and Action Areas:**
The ESGC is primarily guided by two crosscutting R&D targets:

- Objective 1: Achieve the Long Duration Storage Shot™ Target: $0.05/kilowatt-hour (kWh) levelized cost of storage for long duration (10 or more hours) stationary applications by 2030. Achieving this levelized cost target would support the Administration's 2035 and 2050 decarbonization goals and facilitate commercial viability for storage across a wide range of uses, including in:
    - Remote communities, which are frequently disconnected or may not have access to the grid, and
    - Grid-scale applications, where storage can meet load during periods of peak demand and ensure reliability of critical infrastructure, including communications and information technology.
- Objective 2: Achieve the Electric Vehicles (EV) Battery Target: Reduce EV battery cell cost by 50 percent to $60/kWh manufactured cost for a battery cell by 2030 for a 300-mile range electric vehicle to achieve cost parity with internal combustion engine vehicles. Advances in battery production for transportation applications are anticipated to continue benefitting production, performance, and safety of similar technologies used in batteries for stationary applications.

Throughout the core ESGC DOE offices, DOE has or currently supports over 30 distinct energy storage technologies, including specific methods of storage via electrochemical, electromechanical, thermal, flexible generation, and controllable loads, as well as power electronics. Many of these energy storage technologies have the potential to enable the long duration and EV targets shown above. Achieving these aggressive 2030 targets will require resolution of key barriers throughout value chain, from basic and applied research through analysis, demonstration, manufacturing, and full integration into the power and end-use sectors.

Action Areas: To address these barriers, the ESGC has identified the following priority collaboration action areas:

1. Investment & Finance: Emphasize modeling and development of economic and financial mechanisms necessary for the successful commercial deployment of a given energy storage technology.
2. Markets & Value: Analyze both current and potential future markets to understand how energy storage demand will evolve, what performance and cost characteristics will be needed for individual technologies to be competitive, and how those technologies will be valued and compensated.
3. Thermal Technologies: Continue RDD&D for multiple thermal technology pathways, including high-temperature sensible heat; phase change; low-temperature storage; thermo-photovoltaic; and thermochemical.
4. Power Electronic Systems: Advance power electronics and power conversion systems including magnetics, capacitors, semiconductor switches, optimized power converters for emerging lower voltage battery systems.
5. Electrochemical Batteries: Continue RDD&D or alternative and efficient use of materials, component design and manufacture as well as address end-of-life and material recovery.

Beyond the 2030 goals, the ESGC continues to identify future long-term targets that will enable additional transformative applications. After the diurnal applications for 10-hour storage have been met, weekly, monthly, and seasonal applications will require hundreds of hours of duration. After EVs achieve cost parity, use cases for aviation, shipboard, and other highly constrained applications will have much more demanding cost and density requirements. In FY 2024, the ESGC anticipates a revision to these near- and long-term objectives in an updated strategic plan.

**Program Organizations:**

1. **Advanced Research Projects Agency-Energy (ARPA-E):** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational technologies to enhance the economic and energy security of the United States. ARPA-E funds high-potential, high-impact projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. In FY 2022, ARPA-E selected and/or obligated over $43 million in funding to Energy Storage-related projects aligned with the Crosscut through ARPA-E's Supporting Entrepreneurial Energy Discoveries (SEED) Exploratory Topic and Electric Vehicles for American Low-Carbon Living (EVs4ALL) program. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in Energy Storage will be determined in FY 2023.

2. **Energy Efficiency and Renewable Energy (EERE):** EERE will continue to fund energy storage R&D for both stationery and mobility applications in support of both the Long Duration Storage Energy Earthshot™ and EV battery cell's goal.
    a. Advanced Materials and Manufacturing Office (AMMTO): AMMTO will continue to collaborate with multiple offices, including OE and sister offices in EERE, on projects to overcome manufacturing barriers and eliminate gaps in manufacturing capabilities of innovative integrated long duration energy storage systems and will pursue advances in materials to support thermal storage. AMMTO will support early applied stage projects for enabling passive components such as capacitors and inductors to expand the application space of power electronics and will support device prototype fabrication for wide (e.g., SiC, GaN)/ultra-wide (e.g., Ga2O3, AlN, diamond) bandgap semiconductor materials and devices.
    b. Building Technologies Office (BTO): BTO will continue its support for energy storage, focusing primarily on thermal energy storage research, more sophisticated controls for storage enabling grid-interactive buildings, deployment of heat pumps with thermal energy storage (TES), and cost reductions of heat pumps with TES.
    c. Geothermal Technologies Office (GTO): GTO will support the assessment of deep, low temperature resources in the U.S. for thermal energy storage as well as continue its Reservoir Thermal Energy Storage Initiative.
    d. Hydrogen Fuel Cell Technologies Office (HFTO): HFTO's work in energy storage includes RD&D related to hydrogen production, hydrogen storage, and reversible fuel cell technologies, as well as systems integration RD&D. For example, HFTO funds efforts focused on integrating renewables, nuclear, and other resources with hydrogen production, storage, and end uses across applications as well as infrastructure components. Work also includes support for the National Renewable Energy Lab's (NREL) Advanced Research on Integrated Energy Systems (ARIES).
    e. Industrial Efficiency and Decarbonization Office (IEDO): IEDO's work will focus on innovation related to incorporating energy storage into manufacturing processes and/or facilities to manage power and thermal energy and reduce industrial greenhouse gas (GHG) emissions.

f. Solar Energy Technologies Office (SETO): SETO's work in energy storage focuses on TES integrated with concentrating solar-thermal power (CSP) systems, both for electricity generation as well as industrial process heating applications. CSP funding will continue to support high-efficiency, reliable TES technologies to support the Energy Storage Grand Challenge and Long Duration Storage Energy Earthshot™, with a particular focus on technologies using solid particles as the heat transfer medium, leveraging the SETO funded megawatt-scale Generation 3 Concentrating Solar Power Systems (Gen3 CSP) test facility currently under construction.
g. Strategic Programs (SP): SP will continue to support the ESGC Policy & Valuation Track, which provides data, tools, and technical analysis that help policymakers and other energy system decision-makers maximize the value of energy storage.
h. Vehicle Technologies Office (VTO): VTO's Battery R&D activity supports early-stage R&D of high-energy and high-power battery materials, cells, and battery development that can enable industry to significantly reduce the cost, weight, volume, and charge time of plug-in EV batteries.
i. Water Power Technologies Office (WPTO): WPTO, through the HydroWIRES Initiative (hydropower's contributions to reliability, resilience, and integration), will provide funding for hydropower hybrid demonstrations, a comprehensive Hydropower Futures Study to quantify emission and cost reductions enabled by increased hydropower flexibility and new pumped storage hydropower (PSH) development, and expansion of the PSH Valuation Guidebook to include non-power value.
j. Wind Energy Technologies Office (WETO): WETO supports the energy storage crosscut through multi-office collaboration in hybrid system design, hardware, control, and demonstration to hybrid systems involving combinations of technologies such as wind, hydropower, solar, battery storage, or hydrogen.

3. **Fossil Energy and Carbon Management (FECM):** To achieve ESGC objectives, FECM's Energy Asset Transformation program focuses on the integration of long-duration energy storage technologies with a variety of fossil assets, including co-locating energy storage with some strategic fossil assets, which provides many benefits including improved asset flexibility and efficiency, improved grid reliability, and reduced GHG emissions.

   Additionally, energy storage enables many heavily decarbonized use cases, for example, the integration of hydrogen energy storage systems with hydrogen turbine power production. In FY 2022, FECM down-selected three promising projects from the original twenty-nine energy storage projects. The FY 2024 Budget Request supports:
   a. Fossil asset transformation efforts across the U.S., through both direct assistance (e.g., funding an ongoing project in a community hosting an asset undergoing transition, through mechanisms like prizes, competitive solicitations, and Partnership Intermediary Agreements (PIAs)) and paper case studies (e.g., through supporting work at headquarters, the National Labs, or contractor funding);
   b. Place-based interagency efforts related to energy transition and fossil asset transformation, including by contributing to DOE's funding of the Rapid Response Teams associated with the Interagency Working Group on Coal and Power Plant Communities;
   c. Concept development through prizes or a competitive solicitation to repurpose the existing fossil asset, with the intent of supporting transformation efforts in seeking additional support for FEED studies and other work;
   d. Research and case studies focused on safety and reliability challenges for assets reaching end of life in the near and medium term, particularly given dynamic operational constraints; and
   e. Advancing energy storage concepts that can leverage abandoned or under-utilized energy assets, including repurposing power plants with TES and repurposing oil and gas infrastructure for geologic Hydrogen ($H_2$) storage.

4. **Nuclear Energy (NE):** NE supports Objective 1, Achieve the Long Duration Storage Shot Target™, through R&D to enable flexible generation, electrochemical and TES, and controllable loads. These technologies allow nuclear plants to be used at full capacity, even during times of low demand, while helping to balance the grid. Nuclear plants can produce hydrogen to store energy electrochemically for conversion back to electricity or produce heat for thermal energy storage for later conversion to electricity. Hydrogen may be used for electrochemical energy storage and conversion back to electrical energy or for industrial applications. For industrial applications, the electrolyzers can serve as a controllable load, providing one-way energy storage for the grid (ramping the electrolyzers down when demand is high, and ramping electrolyzers up when demand is low). NE's thermal energy storage R&D includes thermal extraction and distribution systems for providing both industrial process heat and energy storage for the grid, where peak power turbines can be used to convert the stored thermal energy into electricity. NE is assessing thermal storage with various

types of reactors, including current light water reactors and advanced reactors with various operating temperatures ranging from 300 to 900 degrees Celsius.

In FY 2024, NE will support activities in:

a. Energy system modeling and simulation to develop a modeling framework for economic dispatch optimization of integrated energy systems;
b. Fail-safe control systems development for thermal distribution systems, with operator interface and operational procedures;
c. Thermal distribution components and systems R&D to characterize and verify the cost and performance of thermal energy distribution systems;
d. Energy storage R&D to evaluate performance, reliability, and cost for TES systems, including molten salt, sand, and concrete based systems; and
e. Energy conversion R&D to assess thermal storage capacity and efficiency of energy conversion with thermochemical heat pump cycles.

5. **Office of Electricity (OE):** The Office of Electricity supports activities that primarily contribute to the ESGC Long Duration Storage Shot™ objectives. In FY 2024, these activities, leveraging the new Grid Storage Launchpad facility, will include:
    a. Facilitating investment industry familiarity with energy storage through OE's annual workshop series on storage finance;
    b. Accelerating commercial financing and deployment of new storage technologies by expanding the Rapid Operational Validation Initiative (ROVI) to improve the performance projection methodologies of non-lithium technologies;
    c. Helping communities analyze and demonstrate new use cases showing storage and community benefit outcomes by launching an expanded cohort in the Energy Storage for Social Equity (ES4SE) program;
    d. Continuing technical assistance to utility commissions and other decisionmakers;
    e. Developing new materials and technologies for efficient power conversion and grid integration;
    f. Simplifying battery deployments through analysis to support strong safety standards; and
    g. Resolving key R&D objectives for the next generation of battery chemistries with secure supply chains.

6. **Office of Technology Transitions (OTT):** OTT leads the Technology Transition track for ESGC and leverages that role to conduct coordinated market and economic analyses to pursue energy storage commercialization opportunities. Prior efforts include publication of the Energy Storage Market Report and analysis of energy storage for remote and underserved communities. In FY 2024, OTT efforts will include market and economic analysis to identify and pursue technology commercialization opportunities and coordination of energy storage-related technology transfer activities across the DOE lab complex. This work will build on foundational analysis conducted through the Long-Duration Energy Storage Demonstration & Deployment Pathways report being developed through FY 2023.

7. **Science (SC):** Basic Energy Sciences (BES) continues support in FY 2024 for foundational, crosscutting, fundamental energy storage research that underpins the technology offices activities, including through the Batteries and Energy Storage Energy Innovation Hub program (recompeted in FY 2023) and Energy Frontier Research Centers (EFRCs). Core research activities include crosscutting science that is relevant to electrochemical energy storage, hydrogen, and fuel cells. Included in the hydrogen portion of the crosscut is the Fuels from Sunlight Energy Innovation Hub program and EFRCs related to hydrogen research. The research emphasizes fundamental understanding of phenomena and discoveries of new materials and chemistries that could lead to advances for these technologies. In FY 2024, the Request continues support for Energy Earthshot Research Centers (EERCs), which will work toward the stretch goals of the DOE Energy Earthshots™ and will provide a solid bridge between SC and the Energy Technology Offices. Through strong alignment with the technology offices, EERCs will address key basic research challenges, with relevance to applied R&D activities.

**Highlights and Major Changes from FY 2023 Enacted**

- Energy Efficiency and Renewable Energy
    - Geothermal Technologies: GTO will support the assessment of deep, low temperature resources in the U.S. for thermal energy storage as well as continue its Reservoir Thermal Energy Storage initiative at substantial but lower levels than FY 2023 enacted to emphasize other activities.

- Hydrogen and Fuel Cell Technologies: HFTO continues to support hydrogen production, hydrogen storage, advanced fuel cell technologies and systems integration RD&D at substantial levels though less than FY 2023 with shifts in subprogram priorities.
- Industrial Efficiency and Decarbonization: As a successor office to AMO, IEDO funds work on integrating storage into industrial processes.
- Solar Energy Technologies: SETO programs decrease reflects a focus on a smaller set of issues as the program awaits results from ongoing projects.
- Vehicle Technologies: Increased funding in VTO continues research for next generation lithium-ion batteries.
- Water Power Technologies increases funding on hydropower hybrid demonstrations and studies to quantify emission and cost reductions enabled by increased hydropower flexibility and new PSH development.
- Wind Energy Technologies funding reflects increased support for multi-office collaboration in hybrid system design, hardware, control, and demonstration to hybrid systems.

- Nuclear Energy
  - In FY 2024, NE will reduce work related to hydrogen-based energy storage but continue to focus its resources on technical and economic analysis of TES systems for the current fleet and advanced reactors.
- Electricity
  - In FY 2024, the OE Energy Storage program reduces overall support for planned storage activities, as FY 2023 congressionally directed activities will be completed with funding provided in FY 2023. This reduction is partially offset by increases to:
    - Expand safety and reliability outreach to key stakeholders (including fire safety, codes and standards, and other groups),
    - Expand ROVI to improve the performance projection methodologies of 2–3 new non-lithium electrochemistries, and
    - Launch the new ES4SE cohort with 5–10 communities in the initial technical assistance phase and 2–4 communities reaching the second, pilot phase.
- Science
  - In FY 2024, BES (SC) increases support for DOE's Energy Earthshots™, which include the Hydrogen and Long Duration Storage Shots associated with this crosscut. The new Batteries and Energy Storage Energy Innovation Hub projects started in FY 2023 will ramp up operations, providing foundational understanding to drive energy storage applications for both transportation and the grid.

**Related Bipartisan Infrastructure Law (BIL) or Inflation Reduction Act (IRA) Programs:**
In addition to the annual appropriations request, BIL funding will support the planning and execution of technology development, demonstration, scale-up, and deployment of battery and critical mineral (CM) recycling, battery material processing, and long duration energy storage. These investments are essential in addressing the supply chain and technology needs to support the storage needs for intermittent renewables and grid reliability. Expanded tax credits now available in IRA offer incentives for supply chain development.

**Energy-Water Crosscut**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency – Energy* | - | TBD | TBD | N/A |
| ARPA-E Projects | - | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 65,445 | 75,815 | 131,750 | +55,935 |
| Advanced Manufacturing Office (AMO) | 25,000 | 25,000 | - | -25,000 |
| Industrial Efficiency and Decarbonization Office (AMO successor office) | - | - | 35,000 | +35,000 |
| Bioenergy Technologies | 5,500 | 5,000 | 500 | -4,500 |
| Solar Energy Technologies | 810 | 750 | 750 | - |
| Water Power Technologies | 34,135 | 45,065 | 95,500 | +50,435 |
| Fossil Energy and Carbon Management | - | 10,000 | - | -10,000 |
| Resource Sustainability | - | 10,000 | - | -10,000 |
| Nuclear Energy | 3,000 | 300 | 500 | +200 |
| Fuel Cycle Research and Development | 2,000 | - | - | - |
| Light Water Reactor Sustainability | 1,000 | 300 | 500 | +200 |
| Science | 8,500 | 14,500 | 14,500 | - |
| Basic Energy Sciences | 8,500 | 9,500 | 9,500 | - |
| Biological and Environmental Research | - | 5,000 | 5,000 | - |
| **Grand Total** | **76,945** | **100,615** | **146,750** | **+46,135** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview**

Energy and water systems are inherently linked, often dependent on one another for normal, vital operations. As a strongly coupled system, they share efficiencies, resilience, and vulnerabilities, one affecting the other. Recognizing this interdependence is critical to successfully addressing the energy and environmental challenges that drive the Department of Energy's (DOE) mission. DOE has a major stake and fundamental role to play in advancing the integrated systems solutions that will address the Nation's combined water-energy challenges. Such solutions require a deeper understanding of the strongly connected nature of climate, water, energy, carbon, and broader biogeochemical cycles to inform the efficient and resilient systems of the future and, importantly, the research, development, and deployment of innovative, integrated water and energy science and technologies. The DOE Energy-Water crosscut is focused on advancing the science, transformational technologies, and innovations, and using an integrated systems perspective, to meet the need for sufficient, safe, secure, and affordable water and energy.

**Coordination Efforts**

Through enhanced coordination within DOE and by extension the necessary interagency partners, the Energy-Water Crosscut aims to create more resilient, equitable, efficient, and safe interdependent energy and water systems to ensure America's energy, environmental, and economic security. The Energy-Water crosscut employs an integrated systems approach to coupled energy-water initiatives and activities in the DOE, recognizing the importance of considering energy, carbon, and waters cycles, holistically. Through investments in research, development, demonstration, and deployment (RDD&D) that consider the interdependence of energy, water, carbon, and climate, the Department can address core problems in resource and environmental resiliency and sustainability for the future.

The Energy-Water crosscut provides RDD&D, technology, climate modeling and analysis, assessment tools, technical support to manufacturers and wastewater treatment facilities, informed policy, planning and financing tools, and workforce development to aid in new uses of water and replace America's outdated and deteriorating water infrastructure across

municipalities, industry, utilities, agriculture, and resource extraction (i.e., oil and gas, mining), integrated with the rebuilding of the energy infrastructure and implementation of green energy systems. The Energy-Water crosscut team will develop a strategy for Energy-Water and increase coordination for RDD&D across DOE.

In addition, the Energy Act of 2020 section 1010, authorizes the Nexus of Energy-Water for Sustainability (NEWS) research, development, and demonstration (RD&D) Interagency Coordination Committee and the mandate to develop common Federal goals and plans on energy-water activities as well as to issue a strategic plan, priorities, and objectives in conjunction with the Department of the Interior (DOI). The Energy-Water crosscut supports the activities of NEWS RD&D.

The Offices of Energy Efficiency and Renewable Energy (EERE), Fossil Energy and Carbon Management (FECM), Science (SC), Nuclear Energy (NE) and Advanced Research Projects Agency-Energy (ARPA-E) participate in the Energy-Water crosscut with support from additional Offices such as Arctic Energy (AE), Clean Energy Demonstrations (OCED), Grid Deployment Office (GDO), and the National Nuclear Security Administration (NNSA).

In addition to the funding offices identified here, various crosscutting offices (including the Office of Economic Impact & Diversity, Office of Policy, and the Office of Technology Transitions) may contribute staff time and coordinate with the RDD&D funding offices to enhance the impact of the Department's investments.

**Objectives and Action Areas**

- Objective 1: Enable a Diverse, Safe, and Secure Water Supply: Ensure RDD&D activities are built from an integrated view of water and energy systems and a circular water economy mindset that supports: 1) increases in viable resource recovery from aqueous waste streams, 2) fit for use water treatment processes, 3) cutting edge water based clean energy and decarbonization technologies, and 4) more resilient and integrated energy-water systems.

- Objective 2: Provide Technical Assistance for Energy-Water Efficiency: Partner with stakeholders across the country to make water and wastewater treatment more energy- and water-efficient by providing robust technical assistance and tools as well as facilitating the sharing of best practices. This effort also includes building out a workforce that is well trained, diverse, and inclusive to meet the needs of a more sustainable and secure 21$^{st}$ century energy-water infrastructure and beyond.

Action Areas:

1. Advance Understanding of the Integrated Water Cycle and Multi-sector Dynamics: Improve understanding of the forces and processes that shape local to global water cycles and the associated multi-sector dynamics, risks, and potential responses, including those of the energy sector. Advance predictive modeling of the most significant natural and human influences and stressors, their compounding effects, and regional specificity. Pursue systems-level insights into new and/or alternative response options for more resilient water and interacting water-dependent systems while revealing multi-scale behaviors, strong co-evolutionary processes, and systems-of-systems resilience. Continue working with other Federal partners to produce new and improved, open-source modeling frameworks, data sets, analysis capabilities (including artificial intelligence (AI)/machine learning (ML)-based), and visualization tools for researchers, operators, and planners.
2. Advance Science and Develop Technologies for Non-traditional Water Sources: Continue to support ongoing RD&D and analysis activities to be closely coordinated across DOE offices and other agencies such as the Environmental Protection Agency, DOI, and the U.S. Department of Agriculture, who were involved in roadmaps developed in 2021. This includes efficient treatment of non-traditional waters for fit for purpose use as well as energy and resource recovery from water sources. The science of separations and membranes funded in SC will feed into the technology-focused aims of applied programs.
3. Develop Efficient, Low-carbon Methods for Water Use: Many clean energy technologies utilize water as a key resource. Similarly, water is the backbone for many carbon capture technologies. Support RDD&D for efficient and effective water use for these applications.
4. Develop Resilient Energy-Water Systems: Continue to build and ramp up climate change and hydrologic modelling work as well as develop integrating models built for water and grid purposes. Leverage ongoing work related to quantification of resilience benefits from integration and development opportunities as they relate to hydropower infrastructure.

5. Provide Tools and Training for Water Efficiency: Enable an increase in technical assistance for water efficiency to provide tools and training for water efficiency improvements and sharing of best practices at existing production plants and facilities.
6. External Engagement and Partnerships: Stay abreast of the innovations and engage with local entities to maximize the impact of DOE and U.S. Government investments in the energy-water space. Support the U.S.'s ability to be a world leader in next generation energy-water systems.

**Program Organizations:**

1. **Advanced Research Projects Agency-Energy (ARPA-E):** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational technologies to enhance the economic and energy security of the United States. ARPA-E funds high-potential, high-impact projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in Energy-Water will be determined in FY 2023.

2. **Energy Efficiency and Renewable Energy (EERE):** EERE will continue to focus on energy-water nexus activities including:
   a. Bioenergy Technologies Office (BETO): DOE's Bioenergy Technologies Office (BETO) supports RD&D on strategies to manage wet wastes, including municipal wastewater, food waste, and manures. In FY 2024, BETO will provide community-based technical assistance to identify waste management solutions that can support local environmental and environmental justice objectives.
   b. Industrial Efficiency and Decarbonization Office (IEDO): IEDO activities in FY 2024 will include advancements in decarbonization water/wastewater treatment systems through research, development, and pilot scale demonstration of new technologies. IEDO also supports analysis to inform understanding of further decarbonization opportunities in the water sector. In addition, IEDO will support technical assistance for energy and water efficiency in industrial facilities, as well as water and wastewater facilities.
   c. Solar Energy Technologies Offices (SETO): SETO activities in FY 2024 will primarily consist of market and technology analysis to help support the development and identification of promising solar thermal desalination systems and markets. This supports the two ongoing rounds of the Solar Desalination Prize, funded in FY 2019-FY 2021, which are working on developing pilot tests of innovative technologies.
   d. Water Power Technologies Office (WPTO): WPTO will continue in FY 2024 to build on prior work in Irrigation Modernization to launch a larger demonstration and deployment program by developing digital tools to assist local irrigation district in developing future modernization projects, initiate work on advanced sensors for improved dam safety, and partner with local communities with energy and or water needs to identify sites for deployment of advanced hydrologic sensors. WPTO also funds scoping, planning grants, and ultimately selection of one or more Regional Energy-Water Demonstration Facilities focused on validating and testing technologies and solutions to scale water and energy management solutions that address needs in specific watershed regions.

3. **Fossil Energy and Carbon Management (FECM):** In FY 2024, FECM is not requesting additional funds and will execute programs in FY 2023.

4. **Nuclear Energy (NE):** NE supports early stage, cost-shared R&D to increase the efficiency of commercial nuclear power plants and enables technological advances in uranium mining, conversion, and transportation capabilities in the U.S. as well as conducting evaluations and assessments related to these areas including:
   a. Fuel Cycle Research and Development / Mining, Conversion, and Transportation: R&D that reduces water usage and/or improves the extraction efficiency associated with uranium production. Mining sites are often located in underserved communities and locations with limited water resources; improvements to mining technology spurred by R&D may enable local economic opportunities while reducing the amount of water used during uranium production.
   b. Light Water Reactor Sustainability: The increasing impacts of climate change and the competition for water resources currently impact the operation of nuclear power plants regionally and could become a limiting factor in some plants continued operation. In the U.S. and worldwide, a number of plants regionally curtail power output in response to seasonal variation in water sources, and signs point to this trend continuing and growing. Research in FY 2024 will identify issues underlying water usage for nuclear power plants and develop near term and longer-term risk mitigation approaches. This research will form the basis for a strategy to address water issues that may impact the long-term operation of nuclear energy systems.

5. **Science (SC):** SC provides foundational knowledge and state-of-the-art capabilities in support of crosscut objectives and has supported theoretical and experimental science related to understanding chemical and biological processes, separations, materials, geochemistry, and Earth systems modeling, related to energy-water research for many years.
    a. Basic Energy Sciences (BES): For BES, the research focus in this area is identified in the Basic Research Needs (BRN) workshop for Energy and Water. Priority research directions identified in the workshop report include the prediction and control of molecular-to-macroscopic properties and behavior of complex, multicomponent fluids; mechanistic understanding and control of interfaces and transport in complex and extreme environments; the codesign of dynamic interactions between materials and reactive fluids for unprecedented tunability of purification, transformation, and transport processes in energy-water systems; and revolutionary advances in approaches to quantify, sense, predict, and manipulate coupled physical, chemical, and biological processes in subsurface environments. In FY 2022, three Energy Frontier Research Centers (EFRC) successfully recompeted for support and each received four-year renewal awards. Support for the Energy-Water Nexus crosscut will continue through the EFRCs in FY 2024.
    b. Biological and Environmental Research (BER): In FY 2024, BER research continues to contribute to reducing the greatest uncertainties in climate and Earth system model predictions, e.g., involving clouds and aerosols, the cryosphere, biosphere, and water cycle. In the last decade, DOE research has made considerable advances in increasing the reliability and predictive capabilities of these models using applied mathematics, access to DOE's fastest computers, and systematic comparisons with observational data to improve confidence in model predictions and the ability to use the model predictions to design and deploy climate resilient infrastructure, including the Nation's energy infrastructure.
        i. Specifically, the current research will begin to incorporate AI/ML capabilities and enable more sophisticated research based on higher model resolution, and the new version will add advanced capabilities for exploring changing water cycles on watershed and both urban and coastal hydrological systems down to spatial scales of 3 km. Additional core research to underpin emerging and future Earthshots will also be initiated.
        ii. Overall, BER's research focuses on quantifying and reducing the uncertainties in these system models (including the Earth's water cycle), based on more advanced process representations, sophisticated software, robust couplers, diagnostics, performance metrics, and advanced data analytics. Priority model components include the ocean, sea-ice, land-ice, atmosphere, terrestrial ecosystems, the cryosphere, and human activities.

**Highlights and Major Changes from FY 2023 Enacted**

- **Energy Efficiency and Renewable Energy:**
    - Bioenergy Technologies Office: BETO provides technical assistance to communities on wet waste management strategies to address local challenges and no funds requested for feasibility studies in FY 2024.
    - Industrial Efficiency and Decarbonization Office: As a successor office to AMO, IEDO increases support for advancements in decarbonization of water and wastewater treatment systems through R&D and pilot scale demonstration.
    - Water Power Technologies Office: The increase in WPTO supports the Energy-Water crosscut through the regional testing facilities and developing digital tools to assist local irrigation districts on modernization projects and advanced sensors.
- **Fossil Energy and Carbon Management:**
    - FECM is not requesting funds in the Energy-Water Crosscut. The Environmentally Prudent Stewardship effort within FECM's Advanced Remediation Technologies program supports work on produced water remediation as part of the overall effort to reduce environmental impacts of continued oil and gas production.

**Related Bipartisan Infrastructure Law (BIL) Programs:**

In addition to the annual appropriations request, BIL funding will support enhanced generation, efficiency, resiliency, safety and environmental impacts of hydroelectric facilities specifically through incentives managed by the Grid Deployment Office (GDO).

**Grid Modernization Crosscut**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency - Energy | 8,190 | 88,000 | TBD | N/A |
| ARPA-E Projects* | 8,190 | 88,000 | TBD | N/A |
| Cybersecurity, Energy Security & Emergency Response | 129,804 | 125,000 | 135,000 | +10,000 |
| Risk Management Tools and Technology | 129,804 | 125,000 | 135,000 | +10,000 |
| Energy Efficiency and Renewable Energy | 161,488 | 162,440 | 251,413 | +88,973 |
| Advanced Materials and Manufacturing Technologies | - | - | 15,000 | +15,000 |
| Building Technologies | - | 300 | 300 | - |
| Hydrogen and Fuel Cell Technologies | 30,000 | 16,000 | 8,075 | -7,925 |
| Renewable Energy Grid Integration | 40,000 | 45,000 | 59,066 | +14,066 |
| Solar Energy Technologies | 50,000 | 55,000 | 79,000 | +24,000 |
| Vehicle Technologies | 18,000 | 18,000 | 20,000 | +2,000 |
| Water Power Technologies | 13,850 | 17,140 | 19,000 | +1,860 |
| Wind Energy Technologies | 9,638 | 11,000 | 50,972 | +39,972 |
| Fossil Energy and Carbon Management | 2,726 | 3,700 | 3,700 | - |
| Crosscutting Research | 1,518 | - | - | - |
| Hydrogen with Carbon Management | 1,107 | 1,000 | 1,000 | - |
| Point-Source Carbon Capture | 101 | 1,200 | 1,200 | - |
| Carbon Dioxide Removal | - | 750 | 750 | - |
| Carbon Transport and Storage | - | 750 | 750 | - |
| Grid Deployment Office | 8,000 | 59,500 | 93,500 | +34,000 |
| Transmission Planning & Permitting | 8,000 | - | 56,500 | +56,500 |
| Distribution & Markets | - | - | 36,750 | +36,750 |
| Hydropower Incentives | - | - | 250 | +250 |
| Grid Planning & Development | - | 16,000 | - | -16,000 |
| Grid Technical Assistance | - | 25,000 | - | -25,000 |
| Interregional & Offshore Transmission Planning | - | 2,000 | - | -2,000 |
| Wholesale Market Technical Assistance & Grants | - | 16,500 | - | -16,500 |
| Nuclear Energy | 233,000 | 188,000 | 23,500 | -164,500 |
| Advanced Reactor Demonstrations | 60,000 | - | - | - |
| Advanced SMR RD&D | 150,000 | 165,000 | 10,000 | -155,000 |
| Crosscutting Technology Development | 10,000 | 12,000 | 9,500 | -2,500 |
| Light Water Reactor Sustainability | 13,000 | 11,000 | 4,000 | -7,000 |
| Office of Clean Energy Demonstrations | - | 50,000 | - | -50,000 |
| Demonstration of Renewable and Distributed Energy Systems | - | 50,000 | - | -50,000 |
| Electricity | 249,000 | 267,500 | 278,800 | +11,300 |
| Transmission Reliability & Resilience | 24,941 | 31,587 | 42,500 | +10,913 |
| Energy Delivery Grid Operations Technology | 12,791 | 30,614 | 30,000 | -614 |
| Resilient Distribution Systems | 53,500 | 53,548 | 47,300 | -6,248 |
| Cyber Resilient & Secure Utility Communications | 20,372 | 14,591 | 15,000 | +409 |

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Energy Storage Research | 70,684 | 88,965 | 78,600 | -10,365 |
| 20-OE-100 Grid Storage Launchpad | 47,000 | - | - | - |
| Transformer Resilience & Advanced Components | 10,636 | 26,615 | 21,700 | -4,915 |
| Applied Grid Transformation Solutions | - | 9,873 | 29,700 | +19,827 |
| Electricity Innovation & Transition | 6,226 | 11,707 | 14,000 | +2,293 |
| Congressionally Directed Spending | 2,850 | - | - | - |
| **Grand Total** | **792,208** | **944,140** | **785,913** | **-70,227** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2024 is not available currently.

**Overview:**
The Department of Energy's (DOE) Grid Modernization crosscut encompasses activities focused on research, development, demonstration, and deployment (RDD&D) to ensure an affordable, resilient, flexible, secure, sustainable, equitable, and reliable grid. The portfolio of work helps integrate all sources of electricity, improve the security of our Nation's grid, solve challenges of energy storage and distributed generation, and provide a critical platform for U.S. competitiveness and innovation in a global energy economy. These efforts directly enable this Administration's goals to achieve a 50-52 percent reduction in greenhouse gas (GHG) emissions by 2030, zero emissions grid by 2035, and a net-zero GHG emissions economy by 2050.

The Grid Modernization Initiative (GMI) is a core partnership of DOE Offices to drive the crosscut and to co-fund foundational research through competitive opportunities, as well as work with the National Laboratories, especially through the Grid Modernization Laboratory Consortium (GMLC).

**Coordination Efforts:**
Through the Grid Modernization crosscut, DOE coordinates activities across the Offices of Electricity (OE), Energy Efficiency and Renewable Energy (EERE), Fossil Energy and Carbon Management (FECM), Grid Deployment Office (GDO), Nuclear Energy (NE), Science (SC), Cybersecurity, Energy Security, and Emergency Response (CESER), Technology Transitions (OTT), Economic Impact & Diversity (ED), Clean Energy Demonstrations (OCED), and Advanced Research Projects Agency-Energy (ARPA-E).

In addition to the offices identified above, others such as the Office of Policy and Loan Programs Office, may contribute staff time and coordinate with the RDD&D funding offices to enhance the impact of the Department's investments.

**Objectives and Action Areas:**
The Grid Modernization crosscut works to address barriers to achieving key objectives concerning the complex U.S. grid system.

- Clean Energy Integration: Connection of clean energy loads and resources to the electricity transmission and distribution system, either in front of or behind the meter.
- Grid Infrastructure Expansion: There is broad agreement, supported by the work of DOE and many others, on the need for massive amounts of new transmission capacity. A variety of studies have shown that tens of gigawatts (GW) (equivalent to millions of solar panels or billions of light-emitting diode (LED) bulbs) of long-distance transmission capability will be needed facilitate the export of zero-carbon wind and solar from resource-rich regions to load centers. Increased transmission interconnection between regions will provide additional benefits, including improved system reliability, resilience to extreme weather and physical disasters, and operating economy.
- Managing Electrification: Massive electrification of transportation, industrial, and building loads will add considerable complexity and present a challenge for the power system. However, it also presents a huge opportunity to help meet grid modernization objectives. Newly electrified sectors can provide demand shifting and leveling, supply firming, and essential reliability services.

- Reliability, Resilience, and Security: Operational reliability of the design and engineering of energy delivery is essential in grid expansion along with the functional preservation of electric grid operations in the face of natural and man-made threats and hazards. Cybersecurity, enhanced grid operations, energy storage and other solutions are needed to ensure our energy infrastructure.
- Affordability: A household's energy burden—the percentage of household income spent on energy bills—provides an indication of energy affordability. Researchers define households with a 6 percent energy burden or higher to experience a high burden.[1] According to DOE's Low-Income Energy Affordability Data (LEAD) Tool, the national average energy burden for low-income households is 8.6 percent, three times higher than for non-low-income households which is estimated at 3 percent. In some areas, depending on location and income, energy burden can be as high as 30 percent. Of all U.S. households, 44 percent, or about 50 million, are defined as low-income.

The Grid Modernization crosscut organizes around six pillars or action areas to address the barriers to achieving the power system objectives identified above:

- Action Area 1 - Devices and Integrated Systems: The electrical grid is fundamentally comprised of devices physically connected together and linked by control systems and markets, and form integrated systems that provide specific functions that in aggregate enable the electrical power to operate effectively as a whole.
- Action Area 2 - Operations: Procedures and technologies are needed to run the grid reliably during normal or steady-state situations, as well as extreme situations. Work in this area is focused on solutions to achieve these needs.
- Action Area 3 - Planning: The grid community uses planning and development tools for policy analysis, expansion planning, and day-ahead planning and to support policy development, economic assessments, engineering design, and risk and vulnerability analysis impacting billions of dollars of capital investments and operational costs.
- Action Area 4 - Markets, Policies, and Regulations: This area is focused on research on the current market, policy, and regulatory environment aimed at developing strategies for a grid which is efficient and capable of ensuring a reliable energy supply, while achieving the Administration's deep decarbonization targets in an equitable and just way.
- Action Area 5 - Resilient and Secure Systems: Work in this area will improve the resilience of the electric sector by developing physical and cybersecurity solutions; analyzing criticality and assessing impacts to minimize risk; providing solutions for supply chain risks (specifically for transformers); and providing situational awareness/incident support during energy-related emergencies.
- Action Area 6 - Flexible Generation and Load: Work in this area will develop technologies that allow energy generation or loads to respond to the variability and uncertainty of conditions at one or more timescales, in a range of energy future grid scenarios.

**Program Organizations:**

1. **Advanced Research Projects Agency-Energy:** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational energy technologies to enhance the economic and energy security of the United States ARPA-E funds high-potential, high-impact energy projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. In FY 2022, ARPA-E selected and/or obligated $8 million in grid modernization funding to projects aligned with the GMI through ARPA-E's Supporting Entrepreneurial Energy Discoveries (SEED) Exploratory Topic and Grid Optimization (GO) Competition. In FY 2023, ARPA-E selected and/or obligated $88 million in grid modernization funding to projects aligned with the grid modernization crosscut through ARPA-E's Grid Overhaul with Proactive, High-speed Undergrounding for Reliability, Resilience, and Security (GOPHURRS) and Unlocking Lasting Transformative Resiliency Advances by Faster Actuation of Power Semiconductor Technologies (ULTRAFAST) programs. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in grid modernization will be determined in FY 2023.

2. **Cybersecurity, Energy Security and Emergency Response:** CESER integrates cybersecurity activities across the Department and coordinates with other DOE offices to ensure cybersecurity is built in across different research and development (R&D) programs. CESER leverages DOE's National Laboratories to advance the goal of securely modernizing the Nation's electric grid. All of CESER's cybersecurity risk management tools and technology funding are

[1] American Council for Energy Efficient Economy energy-affordability.pdf (aceee.org)

included in the GMI. For FY 2024, this includes developing cyber situational awareness and analytics; cradle to grave supply chain cybersecurity, including programs like Energy Cyber Sense, digital subcomponent enumeration and mitigation efforts; developing tools, guidance, and practices that help energy organizations' understanding and management of cybersecurity risk; cyber resilience through cyber engineering by way of programs such as the Consequence-driven Cyber-informed Engineering (CCE); and collaborations with universities to support workforce development and to stimulate innovation by students to address cyber risks to energy infrastructure.

3. **Energy Efficiency and Renewable Energy:**
   a. Advanced Materials and Manufacturing Technology Office (AMMTO): Building off the success of the Conductivity-enhanced materials for Affordable, Breakthrough Leapfrog Electric and thermal applications (CABLE) Conductor Manufacturing Prize, AMMTO will continue to invest in the development and demonstration of highly conductive materials that can provide significant efficiency improvements to the grid and grid-connected applications.
   b. Building Technologies Office (BTO): BTO's RDD&D on advanced and grid-interactive technologies, such as controls, interoperability, and energy storage, will partner with industry stakeholders to develop and deploy grid-interactive efficient buildings related systems, capable of connecting with the power grid in new and increasingly adaptive manners to help with overall energy system efficiency, reliability, resilience, environmental performance, and energy affordability. These capabilities are an integral and necessary part of a decarbonized power system that maximizes use of renewable resources and can significantly reduce energy use at times when this provides a valuable option for utilities and their customers.
   c. Hydrogen and Fuel Cell Technologies Office (HFTO): HFTO funds RD&D in energy storage and grid integration (including the National Renewable Energy Laboratory's (NREL) Advanced Research on Integrated Energy Systems (ARIES)). In addition, HFTO's portfolio includes systems development and integration, including hybrid energy systems such as wind/offshore-wind to hydrogen, microgrids for underserved communities, along with their supporting analysis. These activities support three Objectives: Clean Energy Integration; Reliability, Resilience, and Security and Affordability and three Crosscut Action Areas: 2, 5 and 6.
   d. Vehicle Technologies Office (VTO): VTO will continue laboratory and industry-led projects to develop secure vehicle-grid connection and communication technologies, as well as high power grid-tied charging systems.
   e. Wind Energy Technology Office (WETO): WETO will prioritize RD&D in offshore transmission analysis and technology advancement, grid reliability and resilience, wind control and cybersecurity research, and crosscutting demonstrations in grid-enhancing technologies and hybrid energy systems. This body of work will align with the Renewable Energy Grid Integration Action Plan, developed to align grid activities across EERE and OE to enable an equitable transition to a grid that supports a decarbonized power system by 2035 and a zero-emission economy by 2050, all while maintaining the reliability, affordability, security, and resilience of the energy system.
   f. Solar Energy Technologies Office (SETO): SETO will support analysis and RDD&D of grid integration technologies at the bulk power and distribution system levels to allow reliable, resilient, and secure grid planning and operation with increasing amounts of solar, energy storage, hybrid systems, and other inverter-based assets.
   g. Renewable Energy Grid Integration (REGI): REGI will expand power system planning and operations support to communities looking to deploy larger amounts of renewable energy, provide analysis-based technical assistance to power system operators and regulators, provide technical assistance for siting and permitting of renewable energy projects, and support investments in power electronics and clean energy modeling.
   h. Water Power Technologies Office (WPTO): WPTO, through the HydroWIRES Initiative, will provide funding for hydropower hybrid demonstrations through a comprehensive Hydropower Futures Study to quantify emission and cost reductions enabled by increased hydropower flexibility and new pumped storage hydropower (PSH) development, and expansion of the PSH Valuation Guidebook to include non-power values.

4. **Fossil Energy and Carbon Management:** FECM ensures that the perspective for fossil generation and fuel security is reflected in the Department's grid modernization efforts. In FY 2024, FECM will seek to directly fund FECM projects involving several GMI topic areas: 1) Climate Change Impacts; 2) Post-Quantum Cyber-Security; 3) Energy Justice; and 4) Deep Decarbonization Grid Planning Analyses. FECM has an extensive portfolio of research, development, and demonstration (RD&D) activities, that also contribute to the Department's Grid Modernization crosscut efforts. Execution of these projects will be done through GMI's GMLC or joint funding opportunity announcements (FOA) funding mechanisms in coordination with other program offices.

5. **Grid Deployment Office:** GDO catalyzes development of new and upgraded high-capacity electric transmission lines nationwide and deployment of transmission and distribution technologies to improve the resilience of our Nation's

electric infrastructure. Massive deployment of renewable energy and build out of transmission infrastructure is necessary to power a clean energy economy. GDO works in partnership with energy sector stakeholders on a variety of initiatives to achieve a clean, reliable, resilient, and equitable grid.

All GDO activities fall under the Grid Modernization crosscut and all GDO program funding except GDO Program Direction is included in the crosscut. In FY 2024, GDO will accelerate the planning and development of transmission through the National Transmission Planning Study and interregional transmission plans; provide grid technical assistance to enable policy and investment decisions; assist regions and states in improving or establishing wholesale electricity markets; conduct siting and permitting activities, such as improving Federal coordination and providing support to states and local communities; and help develop offshore wind transmission infrastructure.

6. **Nuclear Energy:** In FY 2024, NE will continue to support targeted research across all six Crosscut Action Areas with industry, universities, and National Laboratories through competitive FOAs and directed research to enhance nuclear energy's contribution to a clean, reliable, resilient, and equitable electrical grid.
   a. Integrated Energy Systems (IES): The IES Program conducts RD&D activities to expand the role of nuclear energy beyond direct electricity grid support, to include industrial and transportation applications. In FY 2024, the IES program is performing a study to understand how variation in electricity market structure, policy, and competition affects how nuclear plants operate and engage with the grid.
   b. Light Water Reactor Sustainability (LWRS): The LWRS Program conducts R&D to develop the technical basis and economic justification for commercial light water reactors (LWR) to operate more flexibly, including the use of nuclear power to produce products other than electricity and optimize participation in electricity markets. In FY 2024, the program will continue to advance the technical, economic, and regulatory evaluations for utilizing commercial LWR to produce hydrogen. The resulting hydrogen can be used as storage to support the grid during periods of high demand or for seasonal storage.
   c. Advanced Small Modular Reactor (SMR) RD&D: The Advanced SMR RD&D program works with industry through private-public partnerships (PPP) to conduct RD&D on advanced SMR designs that have the potential to provide safe, clean, and affordable energy generation options. In FY 2024, the program will continue to support industry efforts needed to successfully demonstrate SMR technology.

7. **Office of Clean Energy Demonstrations:** No new funding in FY 2024 is requested related to the Grid Modernization crosscut. In FY 2023, OCED will support commercial-scale demonstrations related to the integration of renewable and distributed energy systems. The goal of this new investment area is to support demonstrations that de-risk controlling flexible loads from renewable energy, energy storage, electric vehicle (EV) charging, and other facilities into the U.S. transmission and distribution grids.

8. **Office of Electricity:** Grid modernization is a critical aspect of all OE programs and all OE program funding except OE Program Direction is included in the Grid Modernization crosscut. In FY 2024, OE plans to continue pursuing research for technologies to improve grid reliability, resilience, efficiency, flexibility, and functionality that are built from inception to automatically detect, reject, and withstand cyber incidents, regardless of the threat to the electricity delivery system. OE will also continue to develop core analytic, assessment, and engineering capabilities that can evolve as technology and policy needs mature to support decision making involving complex interdependencies among energy infrastructure systems, such as between electricity and natural gas systems. OE plans to continue support for private sector innovation investment in data platforms and advanced communications/control designs as well as regional and national deployment through cooperative agreements.

**Highlights and Major Changes from FY 2023 Request**

- Energy Efficiency and Renewable Energy
  - The AMMTO is a successor to the Advanced Manufacturing Office (AMO) in this crosscut and increases RD&D investment in manufacturing advances for high performance materials, emerging battery technologies, and power electronics crucial to Grid Modernization.
  - HFTO's reduced funding reflects a focus on research of hybrid wind to hydrogen and includes funding for NREL's ARIES program.
  - The REGI increase supports power system planning and operations work, analysis, and technical assistance to enable the overall GMI goals.

- The increased funding for SETO supports demonstration of technologies to operate and control a power system with increasing levels of solar energy.
- The VTO investment supports increased funding for demonstration and deployment projects to accelerate the nationwide adoption and deployment of EVs and charging infrastructure, especially to benefit underserved communities.
- The FY 2024 Budget Request for WPTO provides for increased funding in hydropower hybrid demonstrations to quantify emission and cost reductions enabled by increased hydropower flexibility and new PSH development.
- The WETO funding increase prioritizes RD&D in offshore transmission analysis and technology advancement.

- Nuclear Energy - In FY 2024, NE's Budget Request for the GMI is lower due to the successful completion of Federal support for the development of the NuScale technology, a U.S. SMR, for development in domestic and international markets and a prioritization of programmatic efforts on pursuing a commercial demonstration of that technology via the Carbon Free Power Project (CFPP), one of three advanced reactor demonstration projects.
- Office of Electricity
  - Transmission Reliability and Resilience: The Request supports modernizing transmission system tools through human factor and cognitive science research for system operations, increasing net power flowing through transmission lines, developing analytical methods to manage uncertainties of bulk power system grid reliability impacts associated with increased deployment of renewables, developing new models and tools to help the electric industry understand and maintain reliability as supply and load change to meet the decarbonization and electrification targets, and increasing the level of understanding and industry awareness related to energy justice.
  - Resilient Distribution Systems: The Request expands microgrid building block development to advance virtual prototype design performance and sector coupling analysis to look at structural and architectural aspects and control and coordination approaches addressing vehicle-grid integration issues. Offsetting reductions are due to congressionally directed activities that were fully funded in FY 2023.
  - Energy Storage: The Request launches a new cohort for the Energy Storage for Social Equity (ES4SE) Technical Assistance and Pilot Program supporting an additional 5–10 communities in the technical assistance phase with 2–4 of those communities continuing to the pilot demonstration phase and expands the Rapid Operational Validation Initiative (ROVI) to improve the performance projections methodologies of 2–3 new non-lithium electrochemistries. Given the growing number of energy storage installations, the Request also expands outreach to key deployment stakeholders, including fire safety, codes and standards, and other groups. Offsetting reductions are due to congressionally directed activities that were fully funded in FY 2023.
  - Transformer Resilience & Advanced Components: The Request accelerates addressing high-voltage direct current (HVDC) hardware technical challenges to perform a field validation of the Smart Universal Power Electronics Regulators (SUPER) device and expands the development of modular and scalable transformers. Offsetting reductions are due to congressionally directed activities that were fully funded in FY 2023.
  - Applied Grid Transformation Solutions: The Request supports at least 2 new pilots to validate technological maturity and show how new technologies achieve desired environmental, societal, policy, and market outcomes and will be targeted to provide regional diversity.

**Related Bipartisan Infrastructure Law (BIL) or Inflation Reduction Act (IRA) Programs:**

In addition to annual appropriations, BIL funding will support planning and execution of technology development, demonstration, scale-up, and deployment of cybersecurity and cyber resilience for the energy sector and rural and municipal utilities; advanced nuclear reactor demonstration; energy storage and system reliability work; smart grid investments and programs to assess risks, prevent outages, improve grid resilience, and facilitate transmission. IRA funding will deepen the Department's investments in transmission expanding interregional and offshore wind transmission planning efforts, offering additional financing to accelerate transmission deployment, and developing a new grant program to address transmission siting and permitting challenges. These investments are essential in addressing the supply chain and technology needs to support growth in clean energy and the grid.

**Hydrogen**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency – Energy* | 1,995 | TBD | TBD | N/A |
| ARPA-E Projects | 1,995 | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 163,400 | 216,160 | 206,575 | -9,585 |
| Advanced Manufacturing Office (AMO) | - | 25,000 | - | -25,000 |
| Hydrogen and Fuel Cell Technologies | 157,500 | 170,000 | 163,075 | -6,925 |
| Industrial Efficiency and Decarbonization Office (AMO successor office) | - | - | 30,000 | +30,000 |
| Solar Energy Technologies | 5,100 | 7,500 | 3,500 | -4,000 |
| Vehicle Technologies | - | 10,000 | - | +10,000 |
| Water Power Technologies | 800 | 2,600 | - | -2,600 |
| Wind Energy Technologies | - | 1,060 | 10,000 | +8,940 |
| Fossil Energy and Carbon Management | 113,000 | 128,000 | 112,000 | -16,000 |
| Carbon Management Technologies | 88,000 | 101,000 | 91,000 | -10,000 |
| Resource Sustainability | 20,000 | 26,000 | 20,000 | -6,000 |
| Energy Asset Transformation | 5,000 | 1,000 | 1,000 | - |
| Nuclear Energy | 23,000 | 23,000 | 13,500 | -9,500 |
| Crosscutting Technology Development | 10,000 | 12,000 | 9,500 | -2,500 |
| Light Water Reactor Sustainability | 13,000 | 11,000 | 4,000 | -7,000 |
| Office of Technology Transitions | - | - | 100 | +100 |
| Office of Technology Transitions | - | - | 100 | +100 |
| Science | 17,386 | 50,299 | 49,506 | -793 |
| Basic Energy Sciences | 17,386 | 50,299 | 49,506 | -793 |
| **Grand Total** | **318,781** | **417,459** | **381,681** | **-35,778** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview:**

The Department of Energy (DOE) Hydrogen crosscut encompasses activities across multiple offices in DOE that sponsor research, development, demonstration, and deployment (RDD&D) to foster innovations and develop widely available, net-zero emission, cost-competitive technologies for the production, storage, and delivery of clean hydrogen ($H_2$), and for its end use as a chemical feedstock or fuel. Hydrogen is a versatile energy carrier that can be produced with net-zero greenhouse gas (GHG) emissions by using diverse domestic resources including renewables, nuclear, and fossil fuels with carbon capture and storage. Accordingly, clean hydrogen is an enabling piece of DOE's portfolio of solutions to achieve an abundant, reliable, and affordable supply of clean energy to meet our climate goals and maintain our prosperity throughout the 21st century and beyond.

Crosscut activities will focus on enabling clean hydrogen for hard-to-decarbonize applications in industry and heavy-duty transport, as well as in power generation and energy storage. Hydrogen can be used in a wide range of end-use sectors and several DOE offices are involved in developing different hydrogen production and delivery methods as well as application spaces. By integrating those efforts, each office benefits from joint analyses and assessments and therefore more effectively targets their funding to the highest priority areas and avoids duplication of efforts.

**Coordination Efforts:**
A crosscutting team of DOE program offices including Science (SC), Energy Efficiency and Renewable Energy (EERE), Fossil Energy and Carbon Management (FECM), Nuclear Energy (NE), Technology Transitions (OTT), and the Advanced Research Projects Agency-Energy (ARPA-E) coordinates activities aligned with the DOE Hydrogen Program Plan. The Program Plan outlines key activities and a matrix of roles and responsibilities across the pipeline of hydrogen production, delivery, storage, conversion, and end use RDD&D efforts.

In FY 2022, the DOE established a Hydrogen joint strategy team (JST), co-led by EERE's Hydrogen and Fuel Cell Technologies Office (HFTO) and the Office of Clean Energy Demonstrations (OCED), to facilitate coordination of RDD&D activities within the Hydrogen Program supported by appropriations, as well as coordination with demonstration and deployment activities supported by BIL funding. Working groups under the JST covering clean hydrogen production, storage and delivery, conversion and end-use applications meet regularly to coordinate. The working groups share status, progress, identify gaps and develop plans to execute on the DOE Hydrogen Program strategy as well as meet monthly with other agencies involved in hydrogen activities. Coordinated activities also include a joint Annual Merit Review and Peer Evaluation Meeting, joint regional analysis, lifecycle emissions and supply chain assessments, joint summits, workshops, and requests for information, coordinated funding opportunities, and joint proposal peer reviews for solicitations.

In addition to the funding offices identified here, technical coordination with the Office of Electricity (OE), which leads DOE's grid modernization and long duration energy storage research, development, and deployment (RD&D) efforts including utilization of clean hydrogen as an option for clean heat, power, and energy storage applications, is important. Various crosscutting offices such as the Offices of Economic Impact & Diversity (ED) and Policy also may contribute staff time and coordinate with the RDD&D funding offices to enhance the impact of the Department's investments. As mentioned, coordination with OCED will be essential to maximize BIL related hydrogen provisions going forward.

**Objectives and Action Areas:**
Following are objectives and anticipated FY 2024 action areas within the DOE-wide, Hydrogen crosscut. A key aim is to strengthen Science-Applied Office Collaboration (e.g., joint or coordinated funding opportunity announcements (FOA) in RD&D through the DOE H2@Scale initiative to accelerate progress towards clean hydrogen goals and to accelerate pre-commercial demonstrations and development to ensure success of Clean-Hydrogen Hub deployments in future years.

- Clean Hydrogen Production: The first Energy Earthshot™, launched June 7, 2021—Hydrogen Shot™—seeks to reduce the cost of clean hydrogen by 80% to $1 per 1 kilogram in 1 decade ("1 1 1"). Achieving the Hydrogen Shot's 80% cost reduction goal can unlock new markets for hydrogen, including steel manufacturing, clean ammonia, energy storage, and heavy-duty trucks. This would create more clean energy jobs, reduce GHG emissions, and position America to compete in the clean energy market on a global scale. These efforts would ensure that environmental protection and benefits for local communities are a priority. As an interim goal, the DOE Hydrogen Program is targeting $2 per kilogram of clean hydrogen by 2026.
    - Complete designs and initiate pre-commercial demonstration of integrated energy systems coupling optimized wind-turbine and electrolyzer technologies and assess technoeconomic potential to meet cost targets (with HFTO, Wind Energy Technologies Office (WETO), Industrial Efficiency and Decarbonization Office (IEDO)).
    - Action Area: Advance technical feasibility, economic potential, and licensing considerations to validate the viability and business case for producing low-cost clean hydrogen with nuclear power (with HFTO, NE).
    - Action Area: Complete plans for pre-commercial demonstration of integrated energy systems for direct solar water-splitting, leveraging prior-year foundational materials development, computational studies, analysis, and laboratory demonstrations (with EERE's HFTO and Solar Energy Technologies Office (SETO), SC).
- Hydrogen for Industrial Applications: Collaboration supporting H2@Scale coordinated by HFTO and IEDO with anticipated participation by other DOE Offices such as EERE's SETO, Wind Energy Technologies Office (WETO) and Water Power Technologies Office (WPTO), FECM, and NE, with a short-term goal of developing cost-effective technology solutions leveraging clean hydrogen for high-impact industrial-sector decarbonization; and a long-term goal of deep decarbonization through widespread adoption of these solutions.
    - Action Area: Initiate pre-commercial demonstration projects of clean hydrogen use in high-impact sectors such as ammonia and steel production, as well as heavy-duty transportation (e.g., marine, rail, off-road).
    - Action Area: Demonstrate industrial/fuel/chemical hydrogen applications using hydrogen produced with heat and electricity from existing nuclear reactors to include both pressurized and boiling water reactors.

- Stationary Fuel Cell/Hybrid Systems: Collaboration between HFTO and FECM focused on advancing fuel-cell-based technologies for stationary power, heat, and/or hydrogen generation, with a short-term objective of developing cost-effective solutions for decarbonization in heat, power, and energy storage applications; and a long-term goal of deep decarbonization through widespread adoption of these solutions.
  - Action Area: Complete pre-front end engineering and design (FEED) studies for combined cycle systems and initiate pre-commercial demonstration projects of most promising advanced fuel cell systems (including reversible fuel cells) and/or hybrid systems (including polygeneration systems) based on analysis and laboratory validation work.
  - Action Area: Integration and demonstration of next generation fuel cells with potential to meet cost and durability, including reversible fuel cells.
- Low Nitric Oxide (NOx) Hydrogen-fired Turbines: Collaboration coordinated by FECM with participation from the Office of Electricity (OE), SC, and EERE's IEDO, with a near-term goal of demonstrating viability of clean hydrogen combustion for power generation and/or heavy-duty transportation; with a long-term goal for industrial adoption impacting decarbonization in these sectors.
  - Action Area: Implementation of a pre-commercial low-NOx pilot demonstration at a scale >25 megawatts (MW), leveraging prior-year analysis, design, laboratory tests, and pilot-scale combustor demonstration advances.
- Climate Science of Hydrogen Release: Cross-Office/Agency collaboration coordinated by HFTO and SC at DOE with the National Oceanic and Atmospheric Administration (NOAA) with a near-term goal of quantifying any global-warming impacts of hydrogen releases into the atmosphere; and a long-term goal of developing and implementing mitigation strategies to minimize the impacts.
  - Action Area: Complete initial impact study and the development of a mitigation roadmap including implementation of advanced sensors and leak monitoring.
- Workforce Development and Energy and Environmental Justice (EEJ) Priorities: Collaboration across all DOE Hydrogen Program Offices, with a near-term goal of enabling greater ED engagement in clean hydrogen technologies and policies; and a long-term goal of widespread adoption of clean hydrogen for environmental and economic benefits to society, including traditionally underserved communities.
  - Action Area: Implementation of workforce development and EEJ plans developed in FY 2022 and FY 2023 based on extensive stakeholder engagements, including with Tribal leaders and representatives from other underserved communities.

**Program Organizations:**

1. **Advanced Research Projects Agency - Energy (ARPA-E):** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational technologies to enhance the economic and energy security of the United States. ARPA-E funds high-potential, high-impact projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. In FY 2022, ARPA-E selected and/or obligated over $1.9 million in hydrogen-related funding to projects aligned with the Crosscut through ARPA-E's Supporting Entrepreneurial Energy Discoveries (SEED) Exploratory Topic. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in Hydrogen will be determined in FY 2023.

2. **Energy Efficiency and Renewable Energy (EERE):** Work in EERE includes a broad portfolio of programs focused on the production, storage, delivery, conversion, and end use of clean hydrogen from renewable resources.

   - Hydrogen and Fuel Cells Technologies Office: EERE's entire HFTO activity portfolio is included in this crosscutting investment. Efforts supported include clean hydrogen production, storage and delivery/infrastructure, fuel cells, and end uses, including systems development and integration, as well as analysis, safety, codes, standards, and workforce development. HFTO serves as the primary coordinator of DOE Hydrogen Program activities.
   - Industrial Efficiency and Decarbonization Office: IEDO invests in process innovations to advance the economic use of low-carbon hydrogen for industrial processes. These innovations include RD&D for hydrogen-compatible equipment to enable high-impact end uses (e.g., combustion, ammonia, steel, etc.).
   - Solar Energy Technologies Office: SETO supports the RD&D of concentrating solar thermal power systems that can be used for hydrogen production or in conjunction with hydrogen as a chemical feedstock for decarbonized industrial processes and of hybrid energy systems combining solar power with H2-based energy storage/transport.

- Wind Energy Technologies Office: WETO supports the hydrogen crosscut through multi-office collaboration in hybrid system design, hardware, control, and demonstration to hybrid systems involving combinations of generation technologies such as onshore and offshore wind, solar, geothermal, and hydropower, with energy storage through batteries and/or hydrogen.

3. **Fossil Energy and Carbon Management (FECM):** FECM focuses primarily on hydrogen production from carbon-based or fossil resources coupled to carbon capture and storage (CCS) to achieve carbon-neutral hydrogen, as well as large scale hydrogen storage and delivery infrastructure options and hydrogen conversion. The Office of Carbon Management Technologies includes RD&D on gasification of diverse carbon-based feedstocks (including fossil, biomass, waste, and plastics) with CCS, on pre-combustion CCS for natural gas reforming, as well as conversion based on solid-oxide fuel cells or combustion/turbines. The Office of Resource Sustainability includes RD&D on large-scale geological $H_2$ storage, pipeline transport of $H_2$/blends, as well as conversion of natural gas to hydrogen plus value-add products that incorporate the carbon.

4. **Nuclear Energy (NE):** NE supports the Hydrogen Production Target, Hydrogen for Industrial Applications, High-temperature Nuclear/Hydrogen Integrated Systems, and Workforce Development and EEJ Priorities by focusing on enabling hydrogen production from nuclear power. This support includes a portfolio of hydrogen-related RD&D such as thermal integration of efficient high-temperature hydrogen production technologies with nuclear power systems and pre-commercial demonstrations of integrated energy systems leveraging nuclear power generation for production of value-add hydrogen or other hydrogen-based co-products (such as ammonia or synthetic fuel).

   In FY 2024, NE will:
   - Develop site integration, safety basis, and licensing considerations for collocating nuclear reactors with hydrogen applications for use of both clean heat and clean electrical power from nuclear energy;
   - Perform R&D on the physics, performance, and cost of thermal distribution system components that couple nuclear reactors to high-temperature steam electrolysis at increasing scale;
   - Develop fail-safe control systems for nuclear thermal distribution systems, with operator interface and operational procedures;
   - Demonstrate industrial/fuel/chemical hydrogen applications using hydrogen produced with heat and electricity from existing nuclear reactors to include both pressurized and boiling water reactors (in collaboration with EERE);
   - Develop capability to test microreactors with emulated dynamic electrical and thermal electrolysis loads; and
   - Coordinate with other offices to enable addressing workforce development and EJ.

5. **Office of Technology Transitions (OTT):** OTT will continue to collaborate with DOE offices to:
   - Conduct market and economic analysis to identify commercialization opportunities, risks, and challenges across the RDD&D continuum; and
   - Expand analysis and industry engagement activities to identify and accelerate commercialization pathways for a broad spectrum of clean hydrogen and fuel cell technologies.

6. **Science (SC):** Basic Energy Sciences (BES) provides foundational knowledge and state-of-the-art capabilities in support of the Hydrogen Crosscut objectives and continues to support theoretical and experimental science related to understanding hydrogen technologies and materials that will continue through FY 2024. The Request continues support for a new research modality, the Energy Earthshot Research Centers (EERCs), which focus on the stretch goals of the DOE Energy Earthshots™ and provide a solid bridge between SC and the Energy Technology Offices. Through strong alignment with the technology offices, EERCs will address key basic research challenges, with relevance to applied research and development activities.

   Scientific opportunities were further defined by a BES roundtable on Foundational Science for Carbon-Neutral Hydrogen Technologies, organized with input from the DOE technology offices. Key activities include supporting scientific discoveries and major scientific tools to transform our understanding of clean hydrogen-related technologies including hydrogen storage, production, utilization, and conversion. SC operates major x-ray, neutron, nanoscience, and high-performance computing user facilities that provide advanced synthesis, fabrication, characterization, and computational capabilities to this community for basic, applied, and industrial research.

BES research enables breakthrough advances for clean hydrogen production beyond conventional approaches such as electrolysis; related work is conducted by the Fuels from Sunlight Hub program and the Energy Frontier Research Centers, which complement the technology-specific RD&D supported by DOE's applied energy offices and provide foundational knowledge that can bring advances to many areas of technology development.

**Highlights and Major Changes from FY 2023 Request**

- Energy Efficiency and Renewable Energy:
  - Industrial Efficiency and Decarbonization Office: As a successor office to AMO, IEDO increases support for investment in process innovations to advance the economic use of low-carbon hydrogen for industrial processes and will allow funding to develop combustion equipment and related technologies to advance industrial capabilities to utilize low carbon fuels and feedstocks like hydrogen.
  - Solar Energy technologies: Increases funding to support RD&D of concentrating solar thermal power systems that can be used for hydrogen production or in conjunction with hydrogen as a chemical feedstock.
  - Water Power Technologies: Reduced investment in the Hydrogen crosscut to focus on other priorities.
  - Wind Energy Technologies: WETO increase reflects support for multi-office collaboration in hybrid system design, hardware, control, and demonstration to hybrid systems involving combinations of technologies.
- Fossil Energy and Carbon Management:
  - Resource Sustainability: Natural Gas Decarbonization and Hydrogen Technologies: Maintain progress at a reduced level of funding for research on utilizing natural gas storage for hydrogen and pilot-scale technology demonstration.
  - Carbon Management Technologies: Hydrogen with Carbon Management: Maintain progress at a reduced level of funding to develop alloy compositions and manufacturing techniques to improve resistance to hydrogen embrittlement, as well as a reduced effort in basic RDD&D to mature Reversible Solid Oxide Fuel Cell (R-SOFC) technologies, including operating as Solid Oxide Electrolysis Cells (SOEC).
- Nuclear Energy:
  - In FY 2024, NE will begin decreasing its investment in hydrogen production through the existing fleet of nuclear reactors and focus its overall investment on developing hydrogen production through advanced nuclear reactors by developing high-temperature thermal integration with high-temperature advanced reactors, fail-safe control systems and developing the capabilities necessary to test microreactors with emulated loads.

**Related Bipartisan Infrastructure Law (BIL) or Inflation Reduction Act (IRA) Programs**

In addition to the annual appropriations request, BIL funding will support the initial stages of planning and execution of technology development, demonstration, scale-up, and deployment for clean hydrogen hubs, clean hydrogen electrolysis and clean hydrogen manufacturing and recycling. These investments are essential in addressing the supply chain and technology needs to support growth in clean energy. Tax credits in IRA will additionally incentivize the hydrogen supply chain.

**Industrial Decarbonization**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency - Energy* | 996 | TBD | TBD | N/A |
| ARPA-E Projects | 996 | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 422,950 | 612,788 | 716,845 | 104,057 |
| Advanced Manufacturing Office (AMO) | 176,000 | 309,500 | - | -309,500 |
| Industrial Efficiency and Decarbonization Office (AMO successor office) | - | - | 394,245 | +394,245 |
| Advanced Materials and Manufacturing Technologies (AMO successor office) | - | - | 75,000 | +75,000 |
| Bioenergy Technologies | 108,000 | 147,982 | 132,000 | -15,982 |
| Geothermal Technologies | - | 7,900 | 5,000 | -2,900 |
| Hydrogen and Fuel Cell Technologies | 122,500 | 124,000 | 90,000 | -34,000 |
| Solar Energy Technologies | 16,450 | 19,056 | 17,600 | -1,456 |
| Strategic Programs | - | 4,350 | 3,000 | -1,350 |
| Fossil Energy and Carbon Management | 188,500 | 258,000 | 270,000 | +12,000 |
| Carbon Management Technologies | 188,500 | 258,000 | 270,000 | +12,000 |
| Nuclear Energy | 58,700 | 66,000 | 40,300 | -25,700 |
| Light Water Reactor Sustainability | 13,000 | 11,000 | 4,000 | -7,000 |
| Advanced Reactor Technologies | 13,000 | 17,000 | 15,800 | -1,200 |
| Crosscutting Technology Development | 10,000 | 12,000 | 9,500 | -2,500 |
| National Reactor Innovation Center | 22,700 | 26,000- | 11,000 | -15,000 |
| Office of Clean Energy Demonstrations | - | - | 160,000 | +160,000 |
| Clean Energy Demonstrations | - | - | 160,000 | +160,000 |
| Science | 65,700 | 69,678 | 70,762 | +1,084 |
| Basic Energy Sciences | 65,700 | 69,678 | 70,762 | +1,084 |
| **Grand Total** | **736,846** | **1,006,466** | **1,257,907** | **+251,441** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview:**

The Industrial Decarbonization crosscut engages multiple offices across the Department of Energy (DOE) to foster innovations and enable scale-up of cost-competitive, low-emissions technologies to achieve the United States' goal of decarbonizing energy intensive and high greenhouse gas (GHG)-emitting industries to achieve net-zero GHG emissions, economy-wide, no later than 2050. The crosscut leverages research, development, demonstration, and deployment (RDD&D) across the pillars of industrial decarbonization identified in DOE's Industrial Decarbonization Roadmap[1]: energy efficiency; electrification; low carbon input sources; and carbon capture and storage (CCS), as well as development of alternative strategies – including manufacturing technology innovation and negative emissions technologies – that reach beyond the four pillars.

[1] DOE, Industrial Decarbonization Roadmap, September 7, 2022, https://www.energy.gov/eere/doe-industrial-decarbonization-roadmap

The U.S. industrial sector is considered a hard-to-decarbonize sector of the energy economy, due to the diverse energy inputs needed for a wide array of heterogeneous industrial processes and operations. In 2020, the industrial sector accounted for 33 percent of the nation's primary energy use and 30 percent of energy-related carbon dioxide ($CO_2$) emissions[2] with refining, chemicals, iron and steel, cement, aviation and food products representing the top energy-consuming sectors.

Given the technologies and systems interdependencies across the decarbonization pillars, crosscut activities are a key piece of DOE's portfolio of solutions to achieve a net zero carbon economy by 2050, with the potential to contribute to a reduction of 400 million metric tons (MMT) of $CO_2$ of industrial emissions in the most energy and emissions intensive industrial subsectors by 2050. Additionally, industrial decarbonization investments can improve manufacturing productivity, develop innovative products, and meet expanding societal needs while enabling jobs and maintaining the Nation's prosperity throughout the 21st Century and beyond.

**Coordination Efforts:**
In FY 2023, DOE established the Industrial Technologies joint strategy team (JST), led by the Manufacturing and Energy Supply Chain (MESC) Office and the Office of Energy Efficiency and Renewable Energy's (EERE) Industrial Efficiency and Decarbonization Office (IEDO), which is charged with developing an integrated DOE-wide strategy and align RDD&D activities supported by annual appropriations with the BIL and IRA funding for demonstration, scale-up, and deployment activities.

Technology development priorities and objectives are identified and coordinated across the basic and applied research technology offices through a crosscutting Industrial Emissions Reductions Technology Development Program, as directed by Congress. Cross-office activities include developing and executing RDD&D coordination, budget development, and strategic planning for the crosscut, informed by the DOE Industrial Decarbonization Roadmap. As a priority activity, the Offices at DOE prioritize work in support of the Industrial Heat Shot™ goal of achieving cost competitive technologies with greater than 85 percent lower GHG emissions.

DOE Program Offices from EERE, Fossil Energy and Carbon Management (FECM), Science (SC), Nuclear Energy (NE), Clean Energy Demonstrations (OCED), Technology Transitions (OTT), and Advanced Research Projects Agency-Energy (ARPA-E) participate in these crosscutting efforts. Other technology offices, such as the Office of Electricity, Office of Cybersecurity, Energy Security and Emergency Response and other crosscutting offices such as Office of Economic Impact & Diversity, Office of Policy, and Loan Programs Office may contribute staff time, provide expertise, and coordinate with the RDD&D funding offices to enhance the impact of the Department's investments.

**Objectives and Action Areas:**
- Objective 1**:** Create and implement an integrated RDD&D strategy across the Department to drive the development and deployment of energy efficiency and decarbonization technologies that reduce emissions and increase competitiveness of the U.S. industrial sector in a net zero economy.
- Objective 2**:** DOE announced the launch of the Industrial Heat Shot™ in September 2022, a new effort aimed at dramatically reducing the cost, energy use, and carbon emissions associated with the heat used to make everything from food to cement and steel. The 6th in the DOE Energy Earthshots™ Initiative, the Industrial Heat Shot™ seeks to develop cost-competitive solutions for industrial heat with at least 85 percent lower GHG emissions by 2035.

The reliance on carbon and variation of energy sources, uses, and product mixes, it will be critical to proactively pursue multiple decarbonization approaches in parallel, which include the following:

**Action Areas:**
1. Energy Efficiency: RDD&D focuses on enabling energy efficiency in hard-to-decarbonize sectors ranging from energy intensive unit operations (e.g., process heating) to facilities/systems operations. This includes waste heat recovery and flexible combined heat & power (CHP) approaches that could significantly reduce energy consumption and

[2] EIA (Energy Information Administration), Annual Energy Outlook 2021 with Projections to 2050. https://www.eia.gov/outlooks/aeo/pdf/AEO_Narrative_2021.pdf.

associated GHG emissions in the near term enabling a transition to fully clean (zero carbon-emitting) energy sources in the mid- to long-term (i.e., ensure that unintended fossil fuel lock-in does not occur). This also includes research, development, and demonstration (RD&D) efforts for process intensification approaches for large scale systems, modular chemical processes for distributed manufacturing, and advanced chemistry and reactor designs for feedstock degradation.

2. Carbon Capture, Utilization and Sequestration (CCUS): Fossil fuel energy use in operations as well as some processes inherent to manufacturing (e.g., cement production, fermentation of biofuels) generate $CO_2$. In addition to utilizing zero carbon generation electricity, carbon capture and sequestration (CCS) can reduce emissions at the source. RDD&D focuses on technologies that can improve capture performance; generate lower carbon intensive products (i.e., ethanol, hydrogen ($H_2$), cement); convert $CO_2$ into valuable products – in some cases augmenting products produced in the industrial sector such as cement and curing to concrete; and safely store $CO_2$ in geologic formations. Viable CCS and $CO_2$ conversion pathways need both a value proposition as well as assessment of the availability of primary energy, water, and other inputs to ensure holistic, sustainable, low-life cycle emissions pathways, ensuring stewardship of our communities and the environment.
3. Transition Energy Sources – Low Carbon Fuels, Feedstocks and Energy Sources: RDD&D focuses on hydrogen, low carbon fuels and feedstocks, solar thermal, and other sources to be cost-effectively used to reduce energy and emission intensity. Low-carbon and sustainably sourced biomass feedstocks offer an effective alternative to replace current petroleum-based feedstocks for a variety of high-volume chemical products leading to significant GHG emissions reductions. This also includes enhanced thermal conversion systems, integrated energy systems for CHP from a range of clean energy sources.
4. Industrial Electrification: Electrification, particularly from thermal processes, provides an opportunity to leverage decarbonized and inexpensive electricity sources - including an electric grid that will undergo a clean energy transformation over the next decade - and reduce industrial emissions from onsite combustion of fossil fuels. Significant RDD&D opportunities exist to develop indirect and direct electrification systems for heat generation, innovation in electrochemical or electromechanical systems, and overcoming economic and technical barriers to implementation of existing electrified technologies.
5. Manufacturing Technology Innovation and Alternate Pathways: The current predominantly linear production system of materials extraction to manufacturing to product use to disposal is not optimized around energy or GHG emissions. Circular economy approaches and reverse supply chain processes provide entirely new opportunities for energy and emissions improvements in concert with new economic opportunities for transformative material and resource utilization. Opportunities exist to foster fundamental science and applied research and development (R&D) efforts to align with other crosscuts and DOE priorities. These can include advanced manufacturing including biomanufacturing; circularity for critical materials, plastics, and water; as well as entirely new pathways for carbon dioxide removal (CDR) approaches via reaction of $CO_2$ with alkaline by-products or waste (e.g., mine tailings) to produce synthetic aggregates, which can serve as replacements for sand and gravel.
6. Crosscutting Activities: Work that crosses these technical focus areas includes robust systems analysis including life-cycle analysis (LCA), resource, regional and techno-economic analysis (TEA); coordination on workforce development and best practices to diversify the industrial workforce and ensuring Energy and Environmental Justice (EJ) principles are embedded throughout the development and implementation of industrial decarbonization solutions.

**Program Organizations:**

1. **Advanced Research Projects Agency-Energy:** As defined by its authorization under the America COMPETES Act, ARPA- E catalyzes transformational technologies to enhance the economic and energy security of the United States. ARPA-E funds high-potential, high-impact projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. In FY 2022, ARPA-E selected and/or obligated almost $1 million in Industrial Decarbonization funding to projects aligned with the Crosscut through ARPA-E's Supporting Entrepreneurial Energy Discoveries (SEED) Exploratory Topic. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in Industrial Decarbonization will be determined in FY 2023.

2. **Energy Efficiency & Renewable Energy:** EERE supports the following Program activities:
    a. Industrial Efficiency and Decarbonization Office: IEDO supports industry-specific decarbonization investments with initiatives focusing on the chemicals, forest products, iron and steel, cement, and other high carbon-emitting industries such as food processing, including a new FY 2024 effort focused on utilization of $CO_2$ as a feedstock for chemicals such as ethylene. Ramped up investments in priority cross-sector technologies for decarbonization based on the DOE Industrial Decarbonization Roadmap, including thermal-process electrification will be a focus in FY 2024. Expanded programs include DOE's Better Climate Challenge, a national public-private partnership (PPP) that calls on organizations across the country to set bold, portfolio-wide GHG reduction targets and share their innovative solutions and best practices.
    b. Bioenergy Technologies Office (BETO): BTO supports industrial decarbonization through the development of alternative feedstocks, and energy efficient conversion processes to produce fuels, chemicals, and materials. BETO's alternative feedstocks R&D focuses on technologies to produce sustainable, cost-effective, conversion-ready feedstocks, including biomass and wastes, such as $CO_2$. BETO also supports RD&D conversion technologies that can use these alternative feedstocks to replace traditional manufacturing processes and fossil-derived chemicals with leap-frog technologies that use significantly less energy inputs and reduce GHG emissions.
    c. Geothermal Technologies Office (GTO): GTO supports the development and demonstration of geothermal heat pump systems at different industrial scales as well as demonstrations of thermal energy storage (TES) for manufacturing applications. These efforts will be supported by assessments of deep, low temperature resources in the U.S. for TES and industrial direct use systems as well as the development of local and regional partnerships to enhance deployment of geothermal heat pumps.
    d. Hydrogen and Fuel Cell Technologies Office (HFTO): HFTO funds RD&D to enable affordable carbon-free hydrogen to address hard-to-decarbonize applications across sectors. Within the hard-to-decarbonize industrial and chemical applications, HFTO supports RD&D focused on demonstrating clean hydrogen as a feedstock or fuel (ammonia production) or as a direct reducing agent (i.e., steel production). Efforts may also include demonstrating clean hydrogen as a heat source for processes like steel and cement production. These efforts support the following FY 2024 Action Areas: Energy Efficiency; Carbon Capture, Sequestration and Utilization, and Transition Energy Sources.
    e. Solar Energy Technologies Office (SETO): SETO supports RD&D of both low-temperature systems – in the range of 100 to 400 °C – integrated with existing technologies, as well as the development of components and high-temperature system designs that are difficult to decarbonize through electrification. Low-temperature applications include the development of thermal processes, including thermal desalination, which can efficiently couple with a solar thermal energy input. High temperature systems work includes the development of solar thermal pathways for the carbon-emission-free production of energy-intensive chemicals, commodities, and fuels, like ammonia, steel, cement, and hydrogen.
    f. Strategic Programs (SP): SP will significantly expand the development of data and analysis tools for difficult to decarbonize sectors of the economy, such as industry, and identify key opportunities for economic growth and job creation in the decarbonized U.S. economy.
    g. Advanced Materials and Manufacturing Technologies Office (AMMTO): AMMTO advances economy-wide decarbonization, including industrial decarbonization, through a variety of programs. In FY 2024, these programs include RD&D in the following areas: circular economy of manufactured materials that reduce emissions through material efficiency and reducing the embodied energy of feedstocks; advanced materials for applications in industry that include harsh service environments and/or that can leverage high conductivity for improved efficiency; semiconductor manufacturing for use in industrial applications; and smart manufacturing, including high performance computing (HPC), to leverage plant data to make process and product design improvements.

3. **Fossil Energy and Carbon Management:** FECM will conduct RDD&D on:
    a. CCUS including technical feasibility, economic potential, and siting/systems considerations to co-locate large industrial facilities with CCUS availability;
    b. The production of hydrogen with CCUS from fossil resources/wastes (such as plastics and co-production using biomass, where available);
    c. Turbines that can utilize hydrogen, ammonia, and other low carbon fuels for power generation to be used in industrial applications, as well as hybrid and integrated systems to maximize efficiency;

d. Reversible solid oxide fuel cells/solid oxide electrolyzer cells, focused on natural gas and co-producing hydrogen, in coordination with EERE's HFTO; and
e. Large scale transport and geological energy storage, including hydrogen or hydrogen carriers such as ammonia at scale to support bulk power generation and conduct related analysis.
f. FECM will collaborate with international partners to share lessons learned and leverage capabilities to facilitate carbon management development and deployment for the industrial sector.

4. **Nuclear Energy:** NE supports R&D to enable the use of existing light water reactors and new, advanced reactors to provide clean and reliable electricity and heat to a wide range of industrial customers. In FY 2024, NE will support industrial decarbonization in several ways:
   a. Develop the methods and models for thermal extraction, storage, and distribution as well as operations and control systems for direct use of heat generated from nuclear reactors;
   b. Develop preliminary front-end engineering and design studies to detail the opportunities to scale up clean thermal and energy extraction and distribution systems for industrial applications;
   c. Develop site integration and safety basis information for co-locating reactors with distributed industrial applications;
   d. Develop reactor technologies that produce high grade heat (500 °C to 900 °C) suitable for use in most chemical and industrial processes and performing R&D on thermal upgrading technologies to upgrade lower temperature (300 °C) heat sources with heat pumps or thermo-chemical systems;
   e. Perform cost analysis of advanced reactor technologies to identify pathways for cost reduction and determining the economic viability for integration of advanced reactors with industrial applications;
   f. Perform energy system modeling and simulation to develop a modeling framework for economic dispatch optimization of integrated energy systems;
   g. Perform R&D on thermal distribution components and systems to characterize and verify the cost and performance of thermal energy distribution systems;
   h. Complete installation and fueling of the Microreactor Applications Research, Validation, and Evaluation (MARVEL) microreactor which will serve as a unique nuclear test platform for demonstrating microreactor operations and end-use applications; and
   i. Continue construction of the Demonstration and Operation of Microreactor Experiments (DOME) test bed at the Idaho National Laboratory (INL) which will be capable of siting experiments to support testing and development of microreactor technologies as well an advanced reactor integrated energy system demonstration platform.

5. **Office of Clean Energy Demonstrations:** OCED's potential areas of interest include projects that demonstrate smart manufacturing principles, energy efficiency, carbon management, alternative low-carbon feedstocks or fuels, circular economies through reuse of waste streams in other industries, and electrification of industrial processes.

6. **Science:** Basic Energy Sciences (BES) provides foundational knowledge and state-of-the-art capabilities in support of crosscut objectives, including theoretical and experimental science related to understanding opportunities for decarbonizing industry. The research to support this crosscut is also discussed in the CDR, Critical Materials and Minerals, Hydrogen, and the Clean Energy Technology Manufacturing, formerly Advanced Manufacturing, crosscuts. SC operates major x-ray, neutron, nanoscience, and HPC user facilities that provide advanced synthesis, fabrication, characterization, and computational capabilities to this community for basic, applied, and industrial research. In FY 2024, BES supports the Industrial Decarbonization crosscut:
   a. Scientific discoveries and major scientific tools to transform our understanding of materials and conversion processes related to chemicals, low carbon fuels (including hydrogen and biofuels), and manufacturing processes.
   b. Advances in synthesis, catalysis, modeling, artificial intelligence (AI)/machine learning (ML), analytical instrumentation at user facilities, HPC, and bio-inspired approaches. Key basic research focus areas include: Novel materials for low carbon fuels/feedstocks (e.g., hydrogen in coordination with the Hydrogen crosscut), membranes for separations, design of catalysts at the nanoscale, co-design for manufacturing (combining disciplines and computation for a "whole systems" approach), manufacturing processes that reduce/eliminate need for process heat, and synthesis science for scale-up from initial discoveries to bridge the gap to applied research and commercial application.

**Highlights and Major Changes from FY 2023 Enacted**

- Energy Efficiency and Renewable Energy:
  - Industrial Efficiency and Decarbonization: As a successor office to AMO, IEDO increases investment in industry-specific decarbonization RD&D with initiatives focusing on energy and emission-intensive industries as well as in priority cross-sector technologies for decarbonization based on DOE's Industrial Decarbonization Roadmap and continued technical assistance to increase the adoption of decarbonization technologies.
  - Bioenergy Technologies: BETO increases support for sustainable aviation fuels (SAF) RDD&D, including funds to construct and operate integrated industry biorefineries at demonstration scale that are capable of producing SAFs reducing industry carbon sources through identified alternative pathways and feedstocks.
  - Geothermal Technologies Office: In FY 2024, GTO supports TES and demonstrations for manufacturing applications.
  - Hydrogen and Fuel Cells Technologies: HFTO continues to support RD&D to enable affordable carbon-free hydrogen to address hard-to-decarbonize industrial and chemical applications such as ammonia and steel production.
- Fossil Energy and Carbon Management: Increase reflects expanded efforts on industrial decarbonization, covering a broader range of industrial sources, additional research, and pilot-scale testing.
- Nuclear Energy: In FY 2024, NE increased its overall investment for industrial decarbonization to support completing construction of the Microreactor Applications Research, Validation, and Evaluation (MARVEL) microreactor test platform and continuing construction of the Demonstration and Operation of Microreactor Experiments (DOME) test bed at INL, both of which will enable demonstration of microreactor technologies and their integrated operations with non-electric end-use applications.
- Office of Clean Energy Demonstrations: In FY 2024, OCED plans to sponsor a new competition focused on demonstrating solutions for carbon and other pollutant emission reductions at industrial facilities. OCED will fund up to five demonstration projects to reduce carbon and other pollutant emissions for the industrial sector while maximizing benefits to underserved and overburdened host communities. To achieve the greatest emissions reduction possible, OCED may fund projects that integrate multiple technology pathways.

**Related Bipartisan Infrastructure Law (BIL) or Inflation Reduction Act (IRA) Programs:**

In addition to the annual appropriations request, BIL and IRA funding will support the planning and execution of demonstration, scale-up, and deployment for advanced industrial technologies. These investments are essential in addressing the technology needs to support growth in decarbonizing industry and increasing U.S. competitiveness in a net zero economy.

**Subsurface Energy Innovations**
**Funding by Appropriation and Program Control**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 ($ Change) |
|---|---|---|---|---|
| Advanced Research Projects Agency – Energy | 40,376 | TBD | TBD | N/A |
| ARPA-E Projects* | 40,376 | TBD | TBD | N/A |
| Energy Efficiency and Renewable Energy | 109,500 | 118,000 | 163,787 | +45,787 |
| Geothermal Technologies | 109,500 | 118,000 | 163,787 | +45,787 |
| Fossil Energy and Carbon Management | 12,250 | 38,000 | 38,000 | - |
| Carbon Management | 10,000 | 35,000 | 35,000 | - |
| Resource Sustainability | 2,250 | 3,000 | 3,000 | - |
| Science | 16,017 | 36,191 | 45,487 | +9,296 |
| Advanced Scientific Computing Resources | 6,017 | 6,017 | 9,578 | +3,561 |
| Basic Energy Sciences | 10,000 | 30,174 | 35,909 | +5,735 |
| **Grand Total** | **178,143** | **192,191** | **247,274** | **+55,083** |

*ARPA-E funding is determined annually based on programs developed through office and stakeholder priorities. Therefore, funding for FY 2023 and FY 2024 is not available currently.

**Overview:**

Subsurface clean energy applications hold massive untapped potential for solving the climate crisis. However, our ability to assess, access, and monitor the subsurface quickly and economically is insufficient to mitigate financial and environmental risk for rapid deployment of key subsurface technologies. Common risk drivers include a) uncertainty in subsurface resource properties; b) inability to monitor reservoir dynamics that can trigger seismicity and/or leakage; and c) prohibitive costs and timelines to access subsurface resources. The Subsurface Energy Innovation (SEI) Crosscut funds research, development, demonstration, and deployment (RDD&D) to improve the accuracy, precision, and speed with which subsurface resources can be assessed, accessed, and monitored. Such advancements will allow the technologies listed below to become market-competitive, scalable, and permanent clean energy solutions, and create tens of thousands of good-paying jobs:

- Geothermal energy, which requires dramatic cost reductions in Enhanced Geothermal System (EGS) capability to increase its footprint beyond 0.5 percent of U.S. electricity generation;
- Geologic carbon storage, currently happening at 0.1 percent of the rate necessary to meet climate goals;
- Geologic hydrogen storage, currently only feasible in unique and rare geologic features;
- Sustainable critical mineral (CM) extraction, necessary to reduce high American import reliance; and
- Geologic hydrogen sourcing, a new and potentially cost-effective, zero-emission source of hydrogen.

In recognition of the potential of EGS to provide plentiful clean, dispatchable electricity, the Department of Energy (DOE) launched its fourth Energy Earthshot™, the Enhanced Geothermal Shot™, in September 2022. The Enhanced Geothermal Shot™ aims to reduce the cost of EGS by 90 percent, to $45 per megawatt hour (MWh), by 2035. This effort is being deployed to realize the potential of EGS to power more than 40 million American homes and businesses, increase opportunities for geothermal heating and cooling solutions nationwide, and provide career opportunities, leveraging tools and best practices from the oil and gas industry to advance clean energy. Investments in EGS could unlock up to 90 gigawatts of affordable clean electricity and exponentially increase opportunities for geothermal heating and cooling solutions nationwide.

SEI Crosscut activities reduce the uncertainty and cost burden facing these technologies through the production and application of tools, data products, and workstreams that improves observational, decision-making, and operational capabilities. Such activities require advancements across fundamental science, and applied RDD&D. The SEI Crosscut will leverage the integration of state-of-the-art High-Performance Computing (HPC) resources, Artificial Intelligence (AI), Machine Learning (ML), and simulation capabilities with applied technology workstreams necessary to build subsurface simulation and interpretation visualization, prediction, and decision-making tools.

**Coordination Efforts:**
The Department houses an entire range of technological expertise across the RDD&D chain required for innovation in the subsurface for clean energy advancement including: Office of Science's (SC) Basic Energy Sciences (BES) and Advanced Scientific Computing Research (ASCR) Offices, Energy Efficiency and Renewable Energy's (EERE) Geothermal Technologies Office (GTO), Advanced Research Projects Agency-Energy (ARPA-E), Fossil Energy and Carbon Management Office (FECM), and Office of Clean Energy Demonstrations (OCED), with the National Nuclear Security Administration's (NNSA) Office of Defense Nuclear Nonproliferation (DNN), Artificial Intelligence and Technology Office (AITO) providing technical support and staff time. In addition, the Office of Policy's Office of Energy Jobs will support engagement with workers and labor unions to develop a safe and skilled geothermal workforce.

In addition to developing and implementing a cross-agency subsurface RDD&D Strategy, priorities include joint efforts on information sharing and engagement with external stakeholders and technology experts. Additionally, the SEI Crosscut will prioritize the establishment of new partnerships and maintenance of existing partnerships with other Federal agencies, such as the Department of Interior and the United States Geological Survey (USGS), the National Science Foundation, and the National Aeronautics and Space Administration.

**Objectives and Action Areas:**

- Objective 1 – Improve Characterization: Significantly improves understanding of the nation's deep subsurface resources.
  - Action Area: Modernize subsurface data analytics. Develop tools to gather, standardize, rescue, and reinterpret legacy data, as well as incentive structures to allow for data sharing between the public and private sectors.
- Objective 2 - Enhance Monitoring: Observe and modify operations below ground in real time to ensure safe, economic operation.
  - Action Area: Assessing the "value" of different types of information. Engage in research and development (R&D) to assess the value of different information being collected over time and space to identify what parameters are imperative for different subsurface projects in different places, enabling real-time decision making.
- Objective 3 - Faster and Safer Drilling: Access the deep subsurface quickly, economically, and safely.
  - Action Area: Leverage drilling activities funded through the BIL. Engage in iterative drilling research, development, and demonstration (RD&D) on wells funded through BIL to drive process improvements in drilling speeds, and support tech transfer of drilling workflows across different subsurface technology areas to ensure drilling best practices are adopted across these provisions.
- Objective 4 - Subsurface Engineering: Safely modify subsurface environments to meet our specific clean energy demands.
  - Action Area: Managing uncertainty in frontier subsurface engineering environments. Coordinate RDD&D to build confidence in developing the subsurface and reduce uncertainty in new geological settings and with new technologies. Leverage EGS demonstration activities funded through BIL.

**Program Organizations:**

1. **Advanced Research Projects Agency-Energy (ARPA-E):** As defined by its authorization under the America COMPETES Act, ARPA-E catalyzes transformational technologies to enhance the economic and energy security of the United States. ARPA-E funds high-potential, high-impact projects that are too risky to attract private sector investment but could significantly advance the ways to generate, store, distribute and use energy. In FY 2022, ARPA-E selected and/or obligated $40 million in Subsurface Energy funding to projects aligned with the Crosscut through ARPA-E's Supporting Entrepreneurial Energy Discoveries (SEED) Exploratory Topic and Mining Innovations for Negative Emissions Resource Recovery (MINER) programs. ARPA-E is developing programs for transformational research across a wide range of energy technologies and applications. The assessment process for new programs is now underway and any potential future investments in Subsurface Energy will be determined in FY 2023.

2. **Energy Efficiency & Renewable Energy (EERE):** The primary office in EERE driving innovation in subsurface technologies is the Geothermal Technologies Office (GTO). GTO supports SEI Crosscut objectives through RD&D that focuses on exploration, characterization, reservoir monitoring, and drilling-based verification of advanced exploration technologies

and methods. Exploration and characterization activities will focus on improving targeting the breadth of geothermal resources across temperature ranges and applications through improvements in multi-physics inversion methods and incorporation of ML models. Additionally, broad data collection efforts will enable a significant increase in the discovery of hidden geothermal systems. All subsurface related GTO activities will also play a role in advancing the Enhanced Geothermal Shot™, which sets a target to dramatically reduce the cost of EGS to $45/MWh by 2035.

Subsurface accessibility efforts within GTO focus on RD&D directed at lowering the time to drill geothermal wells and decrease the costs of required materials and equipment. Activities will include efforts to adopt data driven workflows to increase the efficiency of geothermal drilling, adapting applicable technologies proven in the oil and gas well construction industry, directly addressing primary causes of "non-productive time", and the implementation of RD&D programs to reduce the materials costs associated with geothermal well development. These efforts also include development and deployment of surface and subsurface reservoir monitoring technologies focusing on microseismic, electrical, and optical methods. Crosscutting activities such as ML, advanced manufacturing, and a focus on technology commercialization will support the program in its focus on the energy transition.

3. **Fossil Energy and Carbon Management:** FECM supports the FY 2024 SEI Crosscut objectives through extensive expertise and capability related to the characterization, management, and extraction of subsurface resources, such as critical mineral (CM) extraction, as well as geologic storage of hydrogen and $CO_2$. FECM launched the Carbon Ore, Rare Earth, and Critical Minerals (CORE-CM) initiative designed to address the upstream and midstream CM supply chain and downstream manufacturing of high-value, nonfuel, carbon-based products (CBP), to accelerate the realization of full potential for carbon ores and CM within the U.S basins. FY 2024 activities in this area include novel monitoring technologies, including geochemical and biological approaches, which will help characterize mineral resources.

   FECM activities in FY 2024 will capitalize on and integrate recent advances in geochemical, wellbore integrity, and fluid-structure interaction modeling derived from decades of field experience with underground gas storage in the oil and gas industry to drive greater uptake and acceptance of underground hydrogen storage (UHS). Such activities will allow for UHS operators to both dynamically track and adaptively manage UHS reservoirs to ensure existing barriers, such as induced seismicity and sulfate-reducing bacteria, are mitigated. Extensive outreach to and cooperation with the public and regulatory bodies are central to FECM UHS activities and are key to widespread application of the technology.

   FECM is currently developing and validating new and innovative approaches in carbon storage technologies in the lab and in the field, including advanced data management. In FY 2024, FECM can advance SEI Crosscut objectives 1 and 2 by including focus within on-going initiatives to develop ML-driven tools that gather, standardize, rescue, analyze, and value-assess new and existing subsurface data with cross-cutting applicability.

4. **Science (SC):** SC provides foundational knowledge and state-of-the-art capabilities in support of crosscut objectives, such as novel computational algorithms in material properties and fluid flow data analysis and management, high performance computation, and subsurface material characterization.
   a. Advanced Scientific Computational Resources: ASCR provides state-of-the-art HPC facilities as well as R&D that develops physics-informed deep learning techniques to address long-standing subsurface challenges. The Subsurface project, funded through ASCR's Exascale Computing Project (ECP), is developing a high-resolution reservoir simulator, integrating the complex multiphysics processes occurring from kilometer to micron scales to study and prevent well bore failure for $CO_2$ sequestration in saline reservoirs. In addition, ECP's Earthquake Simulation (EQSIM) project is creating an end-to-end capability to simulate earthquakes from the initiation of a fault rupture to surface ground motions and ultimately to infrastructure response. ASCR also supports a Mathematical Multifaceted Integrated Capability Center (MMICC) focused on Sparse data structures to support subsurface modeling. Simulations of subsurface challenges are running on ASCR production and leadership computing systems.
   b. Basic Energy Sciences: BES supports computational/theoretical and experimental science to understand geomechanical, geochemical, hydrological, and interfacial chemical and materials behavior to provide foundational knowledge to advance subsurface energy technologies, including support for the Enhanced Geothermal Shot™. Specific areas include (Objective 1):

i. Mineral dissolution, nucleation, and phase equilibria in confined and interfacial environments, including characterization at the molecular level.
ii. Understanding how geophysical signals–such as lab measurements of active and passive emissions and field measurements of seismic signals–arise from geophysical processes, with a goal to develop improved predictions and ultimately control these.
iii. Leverage of the unique capabilities at SC scientific user facilities, such as x-ray light sources (high-resolution imaging of the time-dependence of geochemical/mechanical interactions in rock samples) and leadership class computing (for predictive modeling of processes across scales and ML simulations of massive data sets to connect data to the underlying processes).

**Highlights and Major Changes from FY 2023 Enacted**

- Energy Efficiency & Renewable Energy (EERE): Geothermal Technologies Office increase will support the Enhanced Geothermal Shot™ effort in various technical areas with a focus on learning-by-doing and well construction cost reductions, as well as a new portfolio focused on advanced materials and high temperature components to enable downhole development in EGS environments and includes exploration and characterization R&D and analysis.
- Science (SC): The increased investment in the Office of Science focuses on enabling new insights and breakthroughs by leveraging foundational research and the unique capabilities of the scientific user facilities.
    - The increased investment in ASCR facilities focuses on foundational research enabling new capabilities accessible only through large-scale computing resources.

**Related Bipartisan Infrastructure Law (BIL) or Inflation Reduction Act (IRA) Programs**

In addition to the annual appropriations request, BIL funding will support the planning and execution of demonstration, scale-up, and deployment of carbon storage and geothermal systems. In addition, expansion of tax credits in IRA have increased incentives in several subsurface technologies.

**Energy Sector Cybersecurity**
**($K)**

| Appropriation and Program Control | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 24 vs. FY 23 ($ Change) |
|---|---|---|---|---|
| **Cybersecurity, Energy Security, and Emergency Response** | **112,404** | **120,357** | **159,000** | **+38,643** |
| Risk Management Technology & Tools | 92,804 | 95,000 | 115,000 | +20,000 |
| Preparedness, Policy and Risk Analysis | 12,000 | 13,357 | 17,000 | +3,643 |
| Response and Restoration | 7,600 | 12,000 | 27,000 | +15,000 |
| **Electricity** | **20,372** | **14,591** | **15,000** | **+409** |
| Cyber Resilient and Secure Utility Communication Networks (SecureNet) | 20,372 | 14,591 | 15,000 | +409 |
| **Energy Efficiency and Renewable Energy** | **13,100** | **9,750** | **11,300** | **+1,550** |
| Building Technologies (BTO) | 6,000 | 300 | 300 | 0 |
| Hydrogen and Fuel Cell Technologies (HFTO) | 0 | 200 | 0 | -200 |
| Solar Energy Technologies (SETO) | 3,500 | 5,000 | 5,000 | 0 |
| Vehicle Technologies (VTO) | 2,000 | 2,000 | 2,000 | 0 |
| Water Power Technologies Office (WPTO) | 350 | 0 | 0 | 0 |
| Wind Energy Technologies Office (WETO) | 1,250 | 2,250 | 4,000 | +1,750 |
| **Nuclear Energy** | **4,500** | **4,500** | **4,500** | **0** |
| **Fossil Energy and Carbon Management** | **1,800** | **1,200** | **333** | **-867** |
| **Chief Information Officer** | **1,303** | **1,553** | **1,553** | **0** |
| **Total, Energy Sector Cybersecurity** | **153,479** | **151,951** | **191,686** | **39,735** |

**Overview**

The Department of Energy's (DOE's) FY 2024 budget request is aligned with the National Cyber Strategy and demonstrates the Administration's commitment to strengthening the Nation's cybersecurity capabilities and addressing the most pressing cyber threats. The FY 2024 budget supports DOE's responsibilities as Sector Risk Management Agency (SRMA) for cybersecurity for the energy sector, as established under the Fixing America's Surface Transportation (FAST) Act of 2015. As SRMA, DOE works closely with the critical infrastructure lead, the Department of Homeland Security (DHS), and our other federal partners including law enforcement and the intelligence community, as well as stakeholders across industry, and state and local governments, to secure the Nation's critical energy infrastructure from cyber threats and attacks.

**Departmental Collaboration**

As adversaries increase the frequency and sophistication of their malicious cyber activities, the Department has increased investment in cybersecurity to identify solutions to reduce risk for the energy sector, as well as the enterprise systems supporting the Department's internal operations. The FY 2024 request builds upon the strategy outlined in the Multiyear Plan (MYP) for Energy Sector Cybersecurity and the Office of Cybersecurity, Energy Security and Emergency Response (CESER) leading the efforts to strengthen the security and resilience of the U.S. energy infrastructure.

**Highlights and Major Changes**

Office of Cybersecurity, Energy Security, and Emergency Response

CESER is lead for energy sector cybersecurity initiatives across the Department.

In FY 2024, CESER will make investments in the following programmatic areas of Risk Management Tools & Technologies:

- RD&D of Cybersecurity Tools and Technologies
  Research, develop, demonstrate and transition to practice next generation cybersecurity tools and technologies that provide energy companies protection, monitoring, detection, response, containment, forensics, and recovery

capabilities. These tools will leverage operational data and the physics of energy delivery to inform owners and operators of anomalous cyber activities on their industrial controls systems and networks. These efforts will primarily be executed through competitive funding opportunities and research calls for energy companies, academia, national laboratories, and/or manufacturers. This work focus on tools that enable individual utilities to manage cyber risks to next generation energy systems, such as microgrids, automated OT infrastructure, virtual power plants, and cloud-connected systems, positioning the industry to stay ahead of the threat.

- Energy Cyber Sense and Cyber Testing for Resilient Industrial Control Systems (CyTRICS)
  The Energy Cyber Sense program is CESER's overarching supply chain cybersecurity risk management effort. The program comprises a range of activities including the CyTRICS testing. In FY 2024, CESER RMT will expand the reach of the CyTRICS testing activities; with a focus on risk-based prioritized systems and components. RMT will develop partnerships with the operational technology manufacturers and integrate the testing pipeline with the broader Energy Cyber Sense program. RMT will work with interagency partners and industry on a pilot effort to research, design and develop cybersecurity label for an industrial IoT technology in the energy sector. The labeling pilot will not include enforcement or certification but will include work on promotion through standards and guidance. The CyTRICS program will also work to analyze no less than 15% of critical components in energy sector systems; and expand manufacturers participating in the program to cover no less than 30% of the market share of critical components.

- CYBER RISK ASSESSMENTS, FRAMEWORKS, AND R&D COORDINATION
  RMT has a number of programs and tools in this area, to include the National Cyber-Informed Engineering (CIE) Strategy, the Consequence-Driven Cyber Informed Engineering (CCE) program, the Cybersecurity for Operational Technology Environment (CyOTE), and the Cybersecurity Capability Maturity Model (C2M2) tool. The CIE strategy will expand implementation of security by design to major U.S. research universities and work with asset owners and operators to enable CIE principles within engineering design and infrastructure improvement efforts. RMT's CCE effort focuses on critical function assurance of energy sector and national defense high-risk/strategically critical infrastructure and in FY 2024 will complete the R&D phase, with potential transfer to commercial partners and another CESER division. Additionally, in FY 2024, RMT will further the underlying CyOTE research and innovation, transition the CyOTE tool to practice with new features and functionality, and refine training for OT and non-OT stakeholders. Specifically, advancing from methodology research, the program will focus on smart data mining, reporting insights to industry, and expanding understanding of additional technical domains that matters to industry. Finally, the C2M2 tool will continue development and maintenance of features and resources including user community forum, facilitated evaluations, and updates needed to align with Cybersecurity Framework (CSF) V2.0. RMT will also continue research of usage and impacts of NIST CSF, C2M2, and C2M2 derivatives.

  CESER is a voting member of the Grid Modernization Laboratory Consortium (GMLC) committing to drive cybersecurity across DOE GMLC efforts. As such, CESER has committed to at least $3 million annually for GMLC Lab calls and plans to participate in a 3-year lab call. Finally, as directed by Congress in FY 2023, CESER will ensure cybersecurity research, development, and demonstration projects being performed across the Department are coordinated. CESER will establish a formal coordination structure to cybersecurity RD&D efforts across the department to ensure the Department is taking a strategic and coordinated approach going forward. CESER will work with relevant DOE program offices and develop a Multi-Year Cybersecurity RD&D Roadmap for Energy Sector Cybersecurity to guide DOE's overall efforts.

In FY 2024, CESER will make investments in the following programmatic areas of Preparedness, Policy, and Risk Analysis:

- MANAGE ENERGY SECTOR RISK AND ENABLE RISK MANAGMENT, CYBERSECURITY EXERCISES, TRAINING AND WORKFORCE DEVELOPMENT
  PPRA will continue to lead the department's activities on sector-wide energy security policy and represent DOE at the National Security Council and across the interagency for cross-sector energy security policy and risk management. This includes leading interagency risk management activities for the energy critical infrastructure including policy development. Additionally, the energy sector is experiencing a significant increase in vacant cybersecurity jobs. In the attempt to mitigate the workforce gap, CESER is developing a cybersecurity workforce framework that will identify options to support the expansion of the qualified talent pipeline, broadening opportunities for non-traditional and

underrepresented groups, hosting cyber defense competitions, and emphasizing the concepts of apprenticeships and upskilling.

In FY 2024, CESER will make investments in the following programmatic areas of Response & Restoration:

- CYBER INCIDENT RESPONSE AND CYBER SITUATIONAL AWARENESS
  CESER is the lead for the cybersecurity of the energy sector as the SRMA, pursuant to the FAST Act, Executive Order 13636, and Presidential Policy Directive-41 (PPD-41). CESER also supports federal response efforts, when there is a significant cyber incidents impacting the energy sector, pursuant to the National Cyber Incident Response Plan. To fulfill DOE's responsibilities, CESER will continue to develop and expand cyber situational awareness and response capabilities for the current threat landscape and to provide cyber response technical assistance and expertise unique to the energy sector while expanding regional steady state and response presence in accordance with the 2021 Regional Response Operations Strategic Plan (2021-2026). CESER will continue the development of collaboration tools and products to provide enhanced energy sector situational awareness to interagency and industry partners, and the CESER Response Team and further develop operational concepts for a CESER Watch Office and conduct feasibility studies for a physical facility.

Electricity (OE)

The Cyber Resilient and Secure Utility Communications Networks (SecureNet) program develops solutions to strengthen both the security and resilience of the electricity delivery system against cyber-related threats through a security-by-design approach for operational data, communications networks, and control systems.

The program pursues this goal in three ways:

- Supporting next-generation grid communications research and development (R&D) for systems built from inception to mitigate communication failures and detect, reject, and withstand cyber incidents and other disruptions
- Applying a cybersecurity lens to relevant OE R&D activities, ensuring that they have an embedded security-by-design philosophy throughout development and address cybersecurity concerns through design modifications or operational change.
- Engaging with the Department's cyber-related operational activities, including those in CESER and the Office of Intelligence and Counterintelligence, to ensure OE's R&D activities are responsive to operational needs, develop a broad base of scientific and technical expertise in grid communications and controls cybersecurity to support of the Department's national security mission, and strengthen public-private sector outreach, information sharing, and training in this area.

The Request supports continued research on secure utility communications, including the development of an architectural framework and technology roadmap for communications infrastructure that meets utility systems' functional and performance requirements.

The Request also includes R&D activities in support of other programs in the OE portfolio to ensure cybersecurity and cyber-resilience are built into new technologies for grid coordination, operation, and control. Activities may include modeling cyber aspects of future grid scenarios, researching cyber-hardening new grid technologies, and providing cyber design inputs, testing capabilities, and cyber vulnerability assessments to other OE R&D programs.

Office of Energy Efficiency and Renewable Energy

In FY 2024, EERE requests $11.3 million for high priority RD&D with a clear path to deployment, technical assistance, and Development best practices to identify and mitigate cyber risks. Work supported by EERE complements the DOE Multiyear Plan for Energy Sector Cybersecurity and includes the following:

- Cybersecurity work though the Building Technologies the Grid-interactive Efficient Buildings (GEB) Initiative. In addition to improving the energy efficiency of the overall building, this research focuses on making equipment more intelligent through next-generation sensors, controls, connectivity, and communication.

- Integration of cybersecurity into relevant distributed energy resource controls, bulk power system protections, and other Grid Modernization Lab Consortium activities supported by Solar Energy Technologies.
- Sustained support for cyber physical security of the charging of Plug-in Electric Vehicles (PEV) and the interface between PEV charging and the electric grid through Vehicles Technologies.
- Support for efforts focused on setting up wind plant communication, control, and power system co-simulation environment and conducting wind plant cybersecurity assessment and risk mitigation through Wind Energy Technologies.
-

Office of Nuclear Energy

In FY 2024, NE requests $4.5 million for the Nuclear Energy Enabling Technologies (NEET) Crosscutting Technology Development (CTD) subprogram to conduct research and development on methods to incorporate cybersecurity by design into advanced reactor concepts, advanced control architectures including autonomous and remote operations, standards for reducing supply chain risks, and the cost-effective integration of nuclear safety risk management with cybersecurity risk management.

Office of Fossil Energy and Carbon Management (FECM)

In FY 2024, the Office of Fossil Energy and Carbon Management (FECM) (Headquarters) requests $0.333 million to support a proposed GMI lab call for Post-Quantum Cyber Security.

Office of the Chief Information Officer

In FY 2024, CIO requests $1.553M for the DOE Spectrum Management Program for technical, logistical, and administrative support, as well as ongoing oversight and advocacy at an inter-agency level in the National Capital Region. The DOE Spectrum Program is mandated under Title 47, U.S. Code of Federal Regulations, 901, et. seq., and manages DOE radio frequency spectrum-dependent resources for NNSA, Power Marketing Administrations (PMAs), Office of Secure Transportation, and National Laboratory spectrum-dependent assets. DOE is the 9th largest holder of radio frequencies with more than 7,300 individual radio assignments across 34 sites receiving services from OSM including Headquarters, the National Labs, the PMAs, and NNSA sites. Critical DOE missions and essential functions utilizing Spectrum services include the National Power Grid, Interstate Electricity Transmission, Satellite Missions, Nuclear Emergency Search, Radiological Assistance, Secure Transportation and Safeguards, and Protective Force Communications.

## Infrastructure

Infrastructure funding is managed within several programs and includes direct and indirect funding for capital equipment, maintenance and repair, minor construction, line-item construction, and excess facilities. The DOE program offices and 17 National Laboratories are working to ensure that the community has the facilities to conduct cutting edge scientific research and meet DOE goals and objective. Infrastructure funding improves the reliability, efficiency, and capability of core infrastructure to meet mission requirements. The Department's Infrastructure activities are tied to its programmatic missions, goals, and objectives that will met be in a safe, secure, and cost-effective manner. DOE will also use its expansive loan authority to invest in American products, and its regulatory authority to innovate in advanced building technologies and energy efficient appliances.

DOE prioritizes infrastructure investments to reduce safety risk by addressing numerous obsolete support and safety systems, to reduce mission risk by revitalizing facilities that are beyond the end of their design life, and to maximize return on investment while considering mission risk, improving sustainability, and working toward meeting the Department's climate action goals by addressing climate adaptability and resilience. This crosscut summarizes the infrastructure funding that is distributed through the budget volumes.

Descriptions of each program's Infrastructure components can be found in the budget justifications for:
- Defense and Non-defense Environmental Cleanup
- Defense Nuclear Nonproliferation
- Electricity
- Energy Efficiency and Renewable Energy
- Enterprise Assessments
- Fossil Energy Research and Development
- Legacy Management
- Naval Reactors
- Nuclear Energy
- Science
- Strategic Petroleum Reserve
- Weapons Activities

Table 1 provides a department-wide summary of infrastructure funding by Program, while Table 2 provides the breakout by category of expenditures.

**Table 1. Overall DOE Infrastructure Funding by Program (FY 2022 – FY 2024)**

| Infrastructure by Program[2] | FY 2022 Enacted | FY 2023 Enacted | FY2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| Defense Environmental Cleanup | 1,748,741 | 2,071,243 | 2,063,199 | (8,044) | -0.4% |
| Defense Nuclear Nonproliferation | 287,007 | 306,910 | 293,317 | (13,593) | -4.4% |
| Electricity | 47,000 | 0 | - | - | |
| Energy Efficiency and Renewable Energy | 65,092 | 103,893 | 162,626 | 58,733 | 56.5% |
| Enterprise Assessments | 1,720 | 1,771 | 1,824 | 53 | 3.0% |
| Fossil Energy & Carbon Management | 51,820 | 19,820 | 19,820 | - | 0.0% |
| Legacy Management | 1,912 | 4,964 | 4,872 | (92) | -1.9% |
| Naval Reactors | 522,210 | 695,991 | 411,407 | (284,584) | -40.9% |
| Nuclear Energy | 261,572 | 63,868 | 87,337 | 23,469 | 36.7% |
| Science | 1,801,647 | 2,074,262 | 2,288,584 | 214,322 | 10.3% |
| Strategic Petroleum Reserve | 36,322 | 530,899 | 137,744 | (393,155) | -74.1% |
| UED&D Fund | 74,135 | 56,040 | 74,552 | 18,512 | 33.0% |
| Weapons Activities | 4,667,354 | 5,688,965 | 6,220,641 | 531,676 | 9.3% |
| **Total, Infrastructure** | **9,566,532** | **11,618,626** | **11,765,923** | **147,297** | **1.54%** |

**Table 2. Overall DOE Infrastructure Funding by Category (FY 2022 – FY 2024)**

| Infrastructure Category | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| **Capital Equipment** | | | | | |
| Defense Environmental Cleanup | 0 | 0 | 16,500 | 16,500 | 0.00% |
| Defense Nuclear Nonproliferation | 114,659 | 186,435 | 169,050 | (17,385) | -9.32% |
| Energy Efficiency and Renewable Energy | 12,360 | 7,220 | 19,612 | 12,392 | 171.63% |
| Naval Reactors | 7,000 | 41,805 | 12,900 | (28,905) | -69.14% |
| Nuclear Energy | 4,580 | 2,115 | 2,867 | 752 | 35.56% |
| Science | 258,389 | 253,699 | 222,001 | (31,698) | -12.49% |
| Strategic Petroleum Reserve | 4,209 | 0 | 49,337 | 49,337 | 0.00% |
| Weapons Activities | 1,124,252 | 1,271,020 | 1,431,293 | 160,273 | 12.61% |
| **Subtotal, Capital Equipment** | **1,525,449** | **1,762,294** | **1,923,560** | **161,266** | **9.15%** |
| **Excess Facilities** | | | | | |
| Defense Environmental Cleanup | 52,000 | 75,519 | 33,843 | (41,676) | -55.19% |
| Fossil Energy & Carbon Management | 40 | 40 | 40 | - | 0.00% |
| Naval Reactors | 14,364 | 44,979 | 33,531 | (11,448) | -25.45% |
| Science | 1,291 | 4,722 | 5,377 | 655 | 13.87% |
| Weapons Activities | 52,976 | 39,000 | 50,106 | 11,106 | 28.48% |
| **Subtotal, Excess Facilities** | **120,671** | **164,260** | **122,897** | **(41,363)** | **-25.18%** |

| Infrastructure Category | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| **Line Item Construction[3]** | | | | | |
| Defense Environmental Cleanup | 1,009,501 | 1,169,874 | 1,079,543 | (90,331) | -7.72% |
| Defense Nuclear Nonproliferation | 156,000 | 71,764 | 77,211 | 5,447 | 7.59% |
| Electricity | 47,000 | 0 | 0 | - | 0.00% |
| Energy Efficiency and Renewable Energy | 8,000 | 45,000 | 57,000 | 12,000 | 26.67% |
| Fossil Energy & Carbon Management | 20,000 | 0 | 0 | - | 0.00% |
| Naval Reactors | 446,720 | 534,218 | 299,284 | (234,934) | -43.98% |
| Nuclear Energy | 41,850 | 27,300 | 32,000 | 4,700 | 17.22% |
| Science | 1,096,500 | 1,147,550 | 1,247,007 | 99,457 | 8.67% |
| Strategic Petroleum Reserve | 0 | 500,000 | 0 | (500,000) | -100.00% |
| UED&D Fund | 74,135 | 56,040 | 74,552 | 18,512 | 33.03% |
| Weapons Activities | 2,039,352 | 3,026,662 | 3,336,939 | 310,277 | 10.25% |
| **Subtotal, Line Item Construction** | **4,939,058** | **6,578,408** | **6,203,536** | **(374,872)** | **-5.70%** |
| **Maintenance and Repair[4]** | | | | | |
| Defense Environmental Cleanup | 583,188 | 732,392 | 752,833 | 20,441 | 2.79% |
| Energy Efficiency and Renewable Energy | 19,622 | 22,129 | 23,014 | 885 | 4.00% |
| Enterprise Assessments | 1,720 | 1,771 | 1,824 | 53 | 2.99% |
| Fossil Energy & Carbon Management | 19,780 | 19,780 | 19,780 | - | 0.00% |
| Legacy Management | 1,912 | 4,964 | 4,872 | (92) | -1.85% |
| Naval Reactors | 17,526 | 20,424 | 23,112 | 2,688 | 13.16% |
| Nuclear Energy | 59,820 | 33,503 | 34,450 | 947 | 2.83% |
| Science | 303,867 | 361,428 | 365,544 | 4,116 | 1.14% |
| Strategic Petroleum Reserve | 32,113 | 30,899 | 88,407 | 57,508 | 186.12% |
| Weapons Activities | 860,819 | 821,682 | 833,029 | 11,347 | 1.38% |
| **Subtotal, Maintenance and Repair** | **1,900,367** | **2,048,972** | **2,146,865** | **97,893** | **5.15%** |
| **Minor Construction[1]** | | | | | |
| Defense Environmental Cleanup | 104,052 | 93,458 | 180,480 | 87,022 | 93.11% |
| Defense Nuclear Nonproliferation | 16,348 | 48,711 | 47,056 | (1,655) | -3.40% |
| Energy Efficiency and Renewable Energy | 25,110 | 29,544 | 63,000 | 33,456 | 113.24% |
| Fossil Energy & Carbon Management | 12,000 | 0 | 0 | - | #DIV/0! |
| Naval Reactors | 36,600 | 54,565 | 42,580 | (11,985) | -21.96% |
| Nuclear Energy | 155,322 | 950 | 18,020 | 17,070 | 1796.84% |
| Science | 141,600 | 306,863 | 448,655 | 141,792 | 46.21% |
| Weapons Activities | 589,955 | 530,601 | 569,274 | 38,673 | 7.29% |
| **Subtotal, Minor Construction** | **1,080,987** | **1,064,692** | **1,369,065** | **304,373** | **28.16%** |
| **Total, Infrastructure** | **9,566,532** | **11,618,626** | **11,765,923** | **147,297** | **1.54%** |

**Capital Equipment**

Capital equipment funding includes the cost of equipment either acquired by purchase or fabricated by a site/facility management contractor that exceeds the capitalization threshold of $500,000. Included in the capital equipment funding are major items of equipment (MIEs). MIEs are listed individually in each program's budget justification.

**Minor Construction**

Minor Construction funding includes all minor construction projects. A Minor Construction Project is any construction project not specifically authorized by law for which the approved total estimated cost does not exceed the minor construction threshold[1]. Minor Construction Projects, including Accelerator Improvement Projects (AIPs), that exceed $5 million are listed individually in each program's budget justification.

**Line-Item Construction**

Line-Item Construction funding includes all construction projects specifically authorized by law for which the approved total estimated cost exceeds the minor construction threshold [50 US Code 2741]. The funding captured in this crosscut includes the annual total project costs – both total estimated costs and other project costs. The individual line-item construction projects can be found in both the programs' construction projects summary and the individual project data sheets.

**Maintenance and Repair**

The Facilities Maintenance and Repair activities funded by this budget are intended to improve asset condition and maintain operability. This excludes maintenance of excess facilities (including high-risk excess facilities) necessary to minimize the risk posed by those facilities prior to disposition.

**Excess Facilities**

Excess Facilities are facilities no longer required to support the Department's needs, present or future missions or functions, or the discharge of its responsibilities. The funding to deactivate and dispose (D&D) of excess infrastructure, including stabilization and risk reduction activities at high-risk excess facilities, resulting in surveillance and maintenance cost avoidance and reduced risk to workers, the public, the environment, and programs is included. Also included is the maintenance of excess facilities (including high-risk excess facilities) necessary to minimize the risk posed by those facilities prior to disposition.

[1] 50 USC 2743 only allows authorized programs to conduct minor construction projects under annual National Defense Authorization Acts; 50 USC 2741 sets the minor construction threshold

[2] Does not include annual lease costs

[3] Reflects Total Project Costs (TPC) for each Line-Item Construction Project

[4] Includes both direct- and indirect-funded dollars.

**Contractor Pensions and Other Postretirement Benefits**

This section of the budget provides projected costs of contractor defined benefit (DB) pension plan contributions and other postretirement benefit reimbursements. The DB pension plan contributions are provided in Section I below for FY 2022 through FY 2024 by plan. The section also shows the allocations of those contributions to the following Department of Energy (DOE) Departmental Elements:[a]

- National Nuclear Security Administration (NNSA)
- Office of Environmental Management (EM)
- Office of Science (SC)
- Office of Energy Efficiency and Renewable Energy (EERE)
- Office of Nuclear Energy (NE)

Information regarding projected reimbursements for other postretirement benefits (primarily medical) is provided in Section II below.

Contractors that manage and operate DOE's laboratories, weapons plants, and execute environmental cleanup projects at various government-owned sites and facilities are contractually required by DOE to assume sponsorship of the existing contractor DB pension plans and other postretirement benefit plans for incumbent employees. DOE reimburses the costs of the contractors' contributions to DB pension plans and the benefits paid from other postretirement benefit plans. These costs are typically allocated as indirect costs, though DOE does directly pay the costs of some legacy plans.[b]

Due to the timing of the required annual valuation for the contractor DB pension plans, the actual amount of the contractors' annual contributions to these DB pension plans that DOE will reimburse each fiscal year will not generally be known until after budget development. Budgetary line items that include DOE reimbursement of contractor contributions to DB pension plans assume an indirect rate anticipated to be sufficient to meet reimbursement requirements. In the case of plans covering contractor employees whose costs are reimbursed by various programs, the allocation of contributions among NNSA, the Program Offices, and Reimbursable Work is done based on each site's best estimate of the allocation of work based on current and anticipated work for the various parties that the site serves.[c]

[a] Tables include projected contributions from "Reimbursable Work" and "Other" entities (e.g., DOE departmental administration, classified programs, etc.). Reimbursable Work also includes the costs associated with the Naval Reactors contractor's plans covered by its contract with the Department of the Navy.

[b] The NNSA legacy University of California (UC) plans and the Oak Ridge Reservation Cleanup Contract Pension Plan for Grandfathered Employees (formerly called the East Tennessee Technology Park Pension Plan for Grandfathered Employees) rely on direct funding. For fiscal years starting in FY 2022, NNSA and EM plan to directly fund the reimbursement of the unfunded liability of the Savannah River Nuclear Solutions, LLC Multiple Employer Pension Plan.

[c] These allocations were provided by the contractors to the DOE in July 2022 and represent contractors' expectation of work for these years.

## Section I - Contractor DB Pension Plan Contributions[d]

DOE reimburses contractors for pension contributions at levels that are at least equal to the minimum required contribution (MRC) by the Employee Retirement Income Security Act (ERISA), as amended. The MRC is determined on a plan year basis. Only two of the contractor plans have a plan year that coincides with the federal fiscal year and, therefore, the majority of fiscal year pension allocations are spread across two plan years. At a minimum, plan sponsors of single or multiple employer plans [e] in which the plan assets were less than liabilities in the prior year must make quarterly contributions during the plan year with the first contribution due 3½ months after the beginning of the plan year and any outstanding amount due 8½ months after the plan year ends.

Contractors develop long-term projections of future asset investment returns that affect estimates of future MRCs for each plan. Asset returns that are higher or lower than the projected long-term investment returns affect future MRCs, though the provisions of ERISA ensure that these effects are somewhat smoothed by allowing recognition over a two (single/multiple) or a five-year period (multiemployer/state). In calendar year 2022, market returns were negative compared to contractors' expected asset return for 2022. The actual investment returns in calendar year 2022 will predominantly affect MRCs beginning in Fiscal Year 2025 though there could be some impact earlier depending on the funded status of the plan. DOE evaluated the impact of the year-to-date actual calendar year 2022 investment returns on the individual DB plans as part of its annual 2022 budget review process conducted in July 2022. The contribution amounts reflect the lower-than-expected asset return through June 2022. DOE will have insight to final 2022 market impacts during the FY2023 Pension Management Plan process.

Reimbursement of contractor costs in excess of the MRC requires specific approval. Reimbursements requested in excess of the MRC are reviewed by the cognizant program office, the Office of the Chief Financial Officer, the Office of Management, and the Office of the General Counsel through an annual pension management plan process. Table 1 provides information related to plans where funding in excess of the MRC was requested during FY 2022, and it includes the MRC, the contribution approved, and the actual amount contributed during FY 2022. In FY 2022, contractors requested reimbursement of contributions in excess of the MRC for 21 plans and were approved. Contributions in excess of the MRC were approved primarily to minimize volatility for future payments and mitigate increases in future contribution requirements.

**Table 1: FY 2022 Contributions in Excess of the MRC ($K)**

| Plan | Program Office | FY 2022 Congressional Budget Justification | FY 2022 Estimated Minimum Required Contribution | Preliminary Additional Amount Requested in Year of Execution | Amount Reported in September 2022 | Final FY 2022 Amount Approved and Contributed |
|---|---|---|---|---|---|---|
| Oak Ridge Reservation Cleanup Contract Pension Plan for Grandfathered Employees | EM | 26,951 | 4,600 | 12,750 | 17,350 | 17,350 |
| Pension Plan for Eligible Bettis Employees and Retirees | NNSA | 38,411 | - | 25,900 | 25,900 | 25,900 |
| Pension Plan of the Pacific Northwest Laboratories, Battelle Memorial Institute | Science | 55,000 | - | 45,000 | 45,000 | 45,000 |
| Retirement Program for Employees of Consolidated Nuclear Security, LLC at the U. S. Department of Energy Facilities at Oak Ridge, Tennessee | NNSA | 52,200 | - | 58,400 | 58,400 | 58,400 |
| Idaho National Laboratory Employee Retirement Plan | NE | 50,000 | - | 50,000 | 50,000 | 50,000 |
| Salaried Employee Pension Plan for KAPL Employees and Retirees | NNSA | 22,000 | - | 26,900 | 26,900 | 26,900 |

[d] DOE has reimbursed contributions for 32 funded DB pension plans and 12 non-qualified DB pension plans in FY 2022. Non-qualified plans have no assets and are funded on a pay-as-you-go basis.

[e] A single employer plan is a plan sponsored by only one employer; a multiple employer plan is a plan sponsored by 2 or more unrelated employers and not maintained pursuant to a collective bargaining agreement; a multiemployer plan is a plan maintained pursuant to a collective bargaining agreement between an employee organization and more than one employer.

| Plan | Program Office | FY 2022 Congressional Budget Justification | FY 2022 Estimated Minimum Required Contribution | Preliminary Additional Amount Requested in Year of Execution | Amount Reported in September 2022 | Final FY 2022 Amount Approved and Contributed |
|---|---|---|---|---|---|---|
| Pension Plan for KAPL Employees in Participating Bargaining Units | NNSA | 2,200 | - | 2,700 | 2,700 | 2,700 |
| Triad Defined Benefit Pension Plan (TCP1) | NNSA | 137,300 | - | 132,600 | 132,600 | 132,600 |
| LLNS Defined Benefit Pension Plan | NNSA | 100,000 | - | 95,700 | 95,700 | 95,700 |
| National Renewable Energy Laboratory Retirement Plan | EERE | 31,000 | - | 23,000 | 23,000 | 23,000 |
| Mission Support and Test Services, LLC (MSTS) Employee Retirement Plan | NNSA | 17,590 | 630 | 16,670 | 17,300 | 17,300 |
| Consolidated Nuclear Security, LLC Retirement Plan for Bargaining Unit Members of the Pantex Guards Union | NNSA | 2,500 | - | 2,800 | 2,800 | 2,800 |
| Retirement Plan for Bargaining Unit Employees of the Metal Trades Council of Consolidated Nuclear Security, LLC | NNSA | 8,800 | - | 8,200 | 8,200 | 8,200 |
| Consolidated Nuclear Security Retirement Plan for Non-Bargaining Pantex Location Employees | NNSA | 14,600 | - | 15,200 | 15,200 | 15,200 |
| NTESS Retirement Income Plan | NNSA | 115,485 | - | 103,121 | 103,121 | 103,121 |
| Savannah River Nuclear Solutions, LLC Multiple Employer Pension Plan | EM | 296,000 | 112,000 | 184,000 | 296,000 | 296,000 |
| Pension Plan for Employees at ORNL | Science | 150,000 | - | 150,000 | 150,000 | 150,000 |
| Waste Isolation Pilot Plant Pension Plan | EM | 13,888 | - | 25,000 | 25,000 | 25,000 |
| NNSS Staff Pension Plan | NNSA | 927 | - | 187 | 187 | 187 |
| NNSS IGAN Pension Trust Fund | NNSA | 2,071 | - | 1,046 | 1,046 | 1,046 |
| West Valley Pension Plan | EM | 4,691 | - | 13,700 | 13,700 | 13,700 |
| **Total** | | **1,141,614** | **117,230** | **992,875** | **1,110,105** | **1,110,105** |

Projections of future DB pension plan contributions are highly sensitive to underlying data, methods, and assumptions. Changes in the population data that are different from the expected data impact the future costs of these plans; participants retiring earlier and/or living longer than expected may increase costs; compensation increases that are higher than expected will increase the costs. The most significant assumptions affecting the contribution amounts are those assumptions with respect to future market conditions. In particular, the difference between actual experience of the markets and the assumption of the expected return on investments earned by the plans each future year, as well as future corporate bond yields, have the largest impact on the ultimate contributions that will be reimbursed by the DOE. For example, the actual contributions for fiscal year 2024 will not be known until January 2024 at the earliest because these contributions will be determined based on the asset value as of December 31, 2023, and the discount rate in effect at that time. Estimated contributions above the MRC submitted during this budget process do not receive final approval until the year of execution.

**Therefore, it is important to emphasize that the actual amounts reimbursed for the applicable fiscal years shown will almost certainly vary from the projections provided in this section**. The information provided for the funded plans (excluding the non-qualified plans) is based on plan contributions projected by the DOE's contractors in July 2022. The non-qualified plan amounts equal the expected benefit payments which were provided by the contractors for the prior year's financial statements. This information has been reviewed by NNSA, relevant DOE Program Offices, and by the Office of the Chief Financial Officer.

- Table 2 provides aggregate FY 2022 actual and FY 2023 through FY 2024 estimated pension plan contributions eligible for reimbursement for all plans.
- Table 3 provides plan-by-plan FY 2022 actual contributions and FY 2023 and FY 2024 estimated pension contributions eligible for reimbursement by NNSA, the DOE, and reimbursable work customers.

**Table 2: NNSA and DOE Program Office Actual Contributions for FY 2022 and Projected Contributions for FY 2023 through FY 2028 ($K)**

Based on July 2022 data and allocated by Program Office [f]

| Program Office | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| NNSA | 548,138 | 372,244 | 521,257 |
| EM | 364,715 | 326,044 | 252,212 |
| SC | 145,865 | 79,281 | 92,506 |
| EERE | 49,340 | 32,073 | 38,501 |
| NE | 17,552 | 2,998 | 4,693 |
| Reimbursable Work | 138,856 | 70,817 | 112,337 |
| Other | 33,606 | 18,077 | 25,303 |
| **Total** | **1,298,072** | **901,533** | **1,046,810** |

There may be small variances in totals due to rounding. Numbers may not add.

Tables 3 and 4 provide the following information for each plan:

**Plan name and Plan type**: Single employer, multiemployer, multiple employer, state, or non-qualified.

**Status**: *Open* means that the plans are open to new employees who earn benefits under a traditional defined benefit formula. *Closed* means that the qualified plans are closed to new employees, but active employees who were employed prior to the plan being closed continue to earn benefits; this includes plans where new entrants only or new entrants and legacy employees receive benefits under reduced hybrid formulas which are much less volatile (indicated by the word hybrid after closed). For non-qualified plans, "closed" means that the universe of possible participants is limited to individuals who are currently accruing benefits in the closed qualified plan at the respective site and who may at some point qualify for the non-qualified plan under the terms of the non-qualified plan). *Partially Closed* means that the plan is closed to some subset of the employee population, but that certain represented employees covered by collective bargaining agreements are still becoming members of the plan at the time of hire. *Frozen* means that plan liabilities are frozen (*i.e.,* that there are no longer any employees accruing credit for current service under the plan).

**Reimbursements & Allocations:** Expected contributions are allocated by program office for fiscal years 2022-2024 with 2022 representing actual contributions and contributions for later years based on submissions as outlined in footnote f.

[f] Final information for FY 2022 contributions was reported in October 2022 while projected contributions for FY 2023 and on were reported in July 2022 for all departmental elements.

**Table 3: Projected FY 2022 through FY 2024 Contributions by Plan, NNSA, and Program Office** ($K)
Based on July 2022 data and allocated by Program Office [g]

| Plan Name | Plan status | Fiscal Year | Total | NNSA | EM | SC | EERE | NE | Reimbursable Work | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Oak Ridge Reservation Cleanup Contract (formerly East Tennessee Technology Park) Pension Plan for Grandfathered Employees | EM-Partially Closed | 2022 | 17,350 | - | 17,350 | - | - | - | - | - |
| | Multiemployer | 2023 | 27,739 | - | 27,739 | - | - | - | - | - |
| | | 2024 | 15,151 | - | 15,151 | - | - | - | - | - |
| University of California Retirement Plan - Lawrence Berkeley National Laboratory | SC-Open | 2022 | 55,327 | 586 | 105 | 38,657 | 7,110 | 255 | 7,834 | 780 |
| | State | 2023 | 46,840 | 497 | 89 | 32,727 | 6,019 | 215 | 6,633 | 660 |
| | | 2024 | 48,168 | 511 | 92 | 33,655 | 6,190 | 222 | 6,821 | 679 |
| Pension Plan for Eligible Bettis Employees and Retirees | NA-Closed | 2022 | 25,900 | 14,245 | - | - | - | - | 11,655 | - |
| | Single | 2023 | 23,100 | 12,705 | - | - | - | - | 10,395 | - |
| | | 2024 | 28,700 | 15,785 | - | - | - | - | 12,915 | - |
| Pension Plan of the Pacific Northwest Laboratories, Battelle Memorial Institute | SC-Open | 2022 | 45,000 | 9,945 | 900 | 7,875 | 5,805 | 1,125 | 13,905 | 5,445 |
| | Single | 2023 | - | - | - | - | - | - | - | - |
| | | 2024 | 30,000 | 6,630 | 600 | 5,250 | 3,870 | 750 | 9,270 | 3,630 |
| Retirement Program for Employees of Consolidated Nuclear Security, LLC at the U. S. Department of Energy Facilities at Oak Ridge, Tennessee | NA-Closed | 2022 | 58,400 | 56,064 | - | - | - | - | 2,336 | - |
| | Single | 2023 | 21,870 | 20,995 | - | - | - | - | 875 | - |
| | | 2024 | 48,500 | 46,560 | - | - | - | - | 1,940 | - |
| HPMC Occupational Health Services Retirement Plan | EM-Closed | 2022 | - | - | - | - | - | - | - | - |
| | Single | 2023 | - | - | - | - | - | - | - | - |
| | | 2024 | 91 | - | 91 | - | - | - | - | - |
| Hanford Multi-Employer Pension Plan | EM-Closed | 2022 | 99,859 | - | 99,859 | - | - | - | - | - |
| | Multiemployer | 2023 | 98,371 | - | 98,371 | - | - | - | - | - |
| | | 2024 | 108,045 | - | 108,045 | - | - | - | - | - |

[g] May be small variances in totals due to rounding. For the Naval Reactors contractor's plans, Reimbursable Work includes the portion of contributions covered by the contract with the Department of the Navy.

**Table 3: Projected FY 2022 through FY 2024 Contributions by Plan, NNSA, and Program Office** ($K)

Based on July 2022 data and allocated by Program Office [g]

| Plan Name | Plan status | Fiscal Year | Total | NNSA | EM | SC | EERE | NE | Reimbursable Work | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Idaho National Laboratory Employee Retirement Plan | NE-Closed | 2022 | 50,000 | 2,795 | 26,500 | 140 | 860 | 10,320 | 8,775 | 610 |
| | Multiple | 2023 | - | - | - | - | - | - | - | - |
| | | 2024 | - | - | - | - | - | - | - | - |
| Salaried Employee Pension Plan for KAPL Employees and Retirees | NA-Closed | 2022 | 26,900 | 14,795 | - | - | - | - | 12,105 | - |
| | Single | 2023 | 25,000 | 13,750 | - | - | - | - | 11,250 | - |
| | | 2024 | 20,000 | 11,000 | - | - | - | - | 9,000 | - |
| Pension Plan for KAPL Employees in Participating Bargaining Units | NA-Closed | 2022 | 2,700 | 1,485 | - | - | - | - | 1,215 | - |
| | Single | 2023 | 2,400 | 1,320 | - | - | - | - | 1,080 | - |
| | | 2024 | 1,000 | 550 | - | - | - | - | 450 | - |
| Kansas City Division Hourly Employees' Pension Plan | NA-Closed | 2022 | - | - | - | - | - | - | - | - |
| | Single | 2023 | - | - | - | - | - | - | - | - |
| | | 2024 | - | - | - | - | - | - | - | - |
| Honeywell Retirement Earnings Plan for Aerospace Employees at the Kansas City Division | NA-Closed | 2022 | - | - | - | - | - | - | - | - |
| | Single | 2023 | - | - | - | - | - | - | - | - |
| | | 2024 | - | - | - | - | - | - | - | - |
| Triad Defined Benefit Pension Plan (TCP1) | NA-Closed | 2022 | 132,600 | 113,771 | 1,591 | 3,580 | 530 | 530 | 10,608 | 1,989 |
| | Multiple | 2023 | 69,165 | 59,344 | 830 | 1,867 | 277 | 277 | 5,533 | 1,037 |
| | | 2024 | 159,066 | 136,479 | 1,909 | 4,295 | 636 | 636 | 12,725 | 2,386 |
| University of California Retirement Plan - Lawrence Livermore National Laboratory Retained Segment | NA-Frozen | 2022 | 1,109 | 1,109 | - | - | - | - | - | - |
| | State | 2023 | 24,192 | 24,192 | - | - | - | - | - | - |
| | | 2024 | 20,151 | 20,151 | - | - | - | - | - | - |

[g] May be small variances in totals due to rounding. For the Naval Reactors contractor's plans, Reimbursable Work includes the portion of contributions covered by the contract with the Department of the Navy.

**Table 3: Projected FY 2022 through FY 2024 Contributions by Plan, NNSA, and Program Office** ($K)

Based on July 2022 data and allocated by Program Office [g]

| Plan Name | Plan status | Fiscal Year | Total | NNSA | EM | SC | EERE | NE | Reimbursable Work | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| LLNS Defined Benefit Pension Plan | NA-Closed | 2022 | 95,700 | 73,689 | - | 2,871 | 957 | - | 14,355 | 3,828 |
| | Single | 2023 | 47,025 | 36,680 | - | 941 | 470 | - | 7,054 | 1,881 |
| | | 2024 | 100,000 | 77,000 | - | 3,000 | 1,000 | - | 15,000 | 4,000 |
| Fluor-BWXT Portsmouth, LLC USW Career Pension Plan for Appendix A USW-Represented Employees | EM-Closed | 2022 | 2,067 | - | 2,067 | - | - | - | - | - |
| | Single | 2023 | 858 | - | 858 | - | - | - | - | - |
| | | 2024 | 928 | - | 928 | - | - | - | - | - |
| University of California Retirement Plan - Los Alamos National Laboratory Retained Segment | NA-Frozen | 2022 | 18,472 | 18,472 | - | - | - | - | - | - |
| | State | 2023 | 32,036 | 32,036 | - | - | - | - | - | - |
| | | 2024 | 28,658 | 28,658 | - | - | - | - | - | - |
| National Renewable Energy Laboratory Retirement Plan | EE-Closed - Hybrid | 2022 | 23,000 | - | - | 1,380 | 17,480 | - | 2,990 | 1,150 |
| | Single | 2023 | 23,000 | - | - | 1,380 | 17,480 | - | 2,990 | 1,150 |
| | | 2024 | 23,000 | - | - | 1,380 | 17,480 | - | 2,990 | 1,150 |
| Golden SVCS, LLC Pension Plan | SC-Closed | 2022 | 1,422 | - | 1,052 | 370 | - | - | - | - |
| | Multiple | 2023 | 430 | - | 275 | 155 | - | - | - | - |
| | | 2024 | 430 | - | 258 | 172 | - | - | - | - |
| Mission Support and Test Services, LLC (MSTS) Employee Retirement Plan | NA-Closed-Hybrid | 2022 | 17,300 | 15,016 | 865 | - | - | - | 986 | 433 |
| | Single | 2023 | 8,190 | 7,109 | 410 | - | - | - | 467 | 205 |
| | | 2024 | 21,100 | 18,315 | 1,055 | - | - | - | 1,203 | 528 |
| Consolidated Nuclear Security, LLC Retirement Plan for Bargaining Unit Members of the Pantex Guards Union | NA-Closed | 2022 | 2,800 | 2,800 | - | - | - | - | - | - |
| | Single | 2023 | 1,260 | 1,260 | - | - | - | - | - | - |
| | | 2024 | 2,500 | 2,500 | - | - | - | - | - | - |

[g] May be small variances in totals due to rounding. For the Naval Reactors contractor's plans, Reimbursable Work includes the portion of contributions covered by the contract with the Department of the Navy.

**Table 3: Projected FY 2022 through FY 2024 Contributions by Plan, NNSA, and Program Office** ($K)

Based on July 2022 data and allocated by Program Office [g]

| Plan Name | Plan status | Fiscal Year | Total | NNSA | EM | SC | EERE | NE | Reimbursable Work | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Retirement Plan for Bargaining Unit Employees of the Metal Trades Council of Consolidated Nuclear Security, LLC | NA-Closed | 2022 | 8,200 | 8,200 | - | - | - | - | - | - |
| | Single | 2023 | 3,555 | 3,555 | - | - | - | - | - | - |
| | | 2024 | 7,800 | 7,800 | - | - | - | - | - | - |
| Consolidated Nuclear Security Retirement Plan for Non-Bargaining Pantex Location Employees | NA-Closed | 2022 | 15,200 | 14,896 | - | - | - | - | 304 | - |
| | Single | 2023 | 6,255 | 6,130 | - | - | - | - | 125 | - |
| | | 2024 | 12,700 | 12,446 | - | - | - | - | 254 | - |
| NTESS Retirement Income Plan | NA-Closed | 2022 | 103,121 | 65,791 | 619 | 1,959 | 2,062 | 928 | 29,905 | 1,856 |
| | Single | 2023 | 45,275 | 28,659 | 272 | 860 | 1,041 | 453 | 13,175 | 815 |
| | | 2024 | 97,260 | 61,079 | 681 | 2,140 | 2,334 | 973 | 28,205 | 1,848 |
| Savannah River Nuclear Solutions, LLC Multiple Employer Pension Plan | EM-Closed | 2022 | 296,000 | 112,717 | 172,982 | - | - | - | - | 10,301 |
| | Multiple | 2023 | 296,000 | 110,023 | 177,067 | - | - | - | - | 8,910 |
| | | 2024 | 170,000 | 61,149 | 101,303 | - | - | - | - | 7,548 |
| DUF6 Pension Plan for Grandfathered Employees | EM-Partially Closed | 2022 | - | - | - | - | - | - | - | - |
| | Single | 2023 | - | - | - | - | - | - | - | - |
| | | 2024 | 1,709 | - | 1,709 | - | - | - | - | - |
| USW Career Pension Plan for Appendix A USW-Represented Employees (Paducah) | EM-Closed | 2022 | 1,619 | - | 1,619 | - | - | - | - | - |
| | Single | 2023 | 631 | - | 631 | - | - | - | - | - |
| | | 2024 | 900 | - | 900 | - | - | - | - | - |

[g] May be small variances in totals due to rounding. For the Naval Reactors contractor's plans, Reimbursable Work includes the portion of contributions covered by the contract with the Department of the Navy.

**Table 3: Projected FY 2022 through FY 2024 Contributions by Plan, NNSA, and Program Office** ($K)
Based on July 2022 data and allocated by Program Office [g]

| Plan Name | Plan status | Fiscal Year | Total | NNSA | EM | SC | EERE | NE | Reimbursable Work | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Pension Plan for Employees at ORNL | SC-Open | 2022 | 150,000 | 15,750 | 150 | 88,500 | 14,400 | 4,350 | 19,800 | 7,050 |
| | Single | 2023 | 69,000 | 7,245 | 69 | 40,710 | 6,624 | 2,001 | 9,108 | 3,243 |
| | | 2024 | 71,000 | 7,455 | 71 | 41,890 | 6,816 | 2,059 | 9,372 | 3,337 |
| Waste Isolation Pilot Plant Pension Plan | EM-Open | 2022 | 25,000 | - | 25,000 | - | - | - | - | - |
| | Single | 2023 | 19,100 | - | 19,100 | - | - | - | - | - |
| | | 2024 | 19,100 | - | 19,100 | - | - | - | - | - |
| West Valley Pension Plan | EM-Closed | 2022 | 13,700 | - | 13,700 | - | - | - | - | - |
| | Single | 2023 | - | - | - | - | - | - | - | - |
| | | 2024 | - | - | - | - | - | - | - | - |
| NNSS Staff Pension Plan | NA-Closed | 2022 | 187 | 187 | - | - | - | - | - | - |
| | Single | 2023 | 327 | 327 | - | - | - | - | - | - |
| | | 2024 | 481 | 481 | - | - | - | - | - | - |
| NNSS IGAN Pension Trust Fund | NA-Closed | 2022 | 1,046 | 1,046 | - | - | - | - | - | - |
| | Single | 2023 | 1,528 | 1,528 | - | - | - | - | - | - |
| | | 2024 | 1,626 | 1,626 | - | - | - | - | - | - |
| Battelle Memorial Institute Excess Benefit and Supplemental Executive Pension Plans | NA-Closed | 2022 | 10 | 2 | 0 | 2 | 1 | 0 | 3 | 1 |
| | Non-Qualified | 2023 | 8 | 2 | 0 | 1 | 1 | 0 | 2 | 1 |
| | | 2024 | 7 | 2 | 0 | 1 | 1 | 0 | 2 | 1 |
| Executive and Supplemental Pension Plans for Designated Bettis Employees | NA-Closed | 2022 | 1,909 | 1,050 | - | - | - | - | 859 | - |
| | Non-Qualified | 2023 | 1,962 | 1,079 | - | - | - | - | 883 | - |
| | | 2024 | 2,005 | 1,103 | - | - | - | - | 902 | - |

[g] May be small variances in totals due to rounding. For the Naval Reactors contractor's plans, Reimbursable Work includes the portion of contributions covered by the contract with the Department of the Navy.

**Table 3: Projected FY 2022 through FY 2024 Contributions by Plan, NNSA, and Program Office** ($K)

Based on July 2022 data and allocated by Program Office [g]

| Plan Name | Plan status | Fiscal Year | Total | NNSA | EM | SC | EERE | NE | Reimbursable Work | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Excess and Supplemental Pension Plan for Designated KAPL Employees | NA-Closed | 2022 | 353 | 194 | - | - | - | - | 159 | - |
| | Non-Qualified | 2023 | 340 | 187 | - | - | - | - | 153 | - |
| | | 2024 | 336 | 185 | - | - | - | - | 151 | - |
| Triad 401(a)(17) Restoration Plan | NA-Closed | 2022 | 267 | 229 | 3 | 7 | 1 | 1 | 21 | 4 |
| | Non-Qualified | 2023 | 267 | 229 | 3 | 7 | 1 | 1 | 21 | 4 |
| | | 2024 | 271 | 233 | 3 | 7 | 1 | 1 | 22 | 4 |
| Triad Restoration Plan | NA-Closed | 2022 | 152 | 131 | 2 | 4 | 1 | 1 | 12 | 2 |
| | Non-Qualified | 2023 | 187 | 160 | 2 | 5 | 1 | 1 | 15 | 3 |
| | | 2024 | 207 | 177 | 2 | 6 | 1 | 1 | 17 | 3 |
| LLNS 401(a)(17) Restoration Plan | NA-Closed | 2022 | 1,326 | 1,021 | - | 40 | 13 | - | 199 | 53 |
| | Non-Qualified | 2023 | 1,340 | 1,045 | - | 27 | 13 | - | 201 | 54 |
| | | 2024 | 1,519 | 1,170 | - | 46 | 15 | - | 228 | 61 |
| LLNS Restoration Plan | NA-Closed | 2022 | 296 | 228 | - | 9 | 3 | - | 44 | 12 |
| | Non-Qualified | 2023 | 441 | 344 | - | 9 | 4 | - | 66 | 18 |
| | | 2024 | 538 | 414 | - | 16 | 5 | - | 81 | 22 |
| NTESS Nonqualified Pension Plan | NA-Closed | 2022 | 2,350 | 1,499 | 14 | 45 | 47 | 21 | 681 | 42 |
| | Non-Qualified | 2023 | 2,274 | 1,439 | 14 | 43 | 52 | 23 | 662 | 41 |
| | | 2024 | 2,240 | 1,407 | 16 | 49 | 54 | 22 | 650 | 43 |
| Savannah River Nuclear Solutions, LLC Nonqualified Pension Plan | EM-Frozen | 2022 | 446 | 170 | 261 | - | - | - | - | 16 |
| | Non-Qualified | 2023 | 411 | 153 | 246 | - | - | - | - | 12 |
| | | 2024 | 386 | 139 | 230 | - | - | - | - | 17 |

[g] May be small variances in totals due to rounding. For the Naval Reactors contractor's plans, Reimbursable Work includes the portion of contributions covered by the contract with the Department of the Navy.

**Table 3: Projected FY 2022 through FY 2024 Contributions by Plan, NNSA, and Program Office** ($K)

Based on July 2022 data and allocated by Program Office [g]

| Plan Name | Plan status | Fiscal Year | Total | NNSA | EM | SC | EERE | NE | Reimbursable Work | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Washington Government Services Executive Pension Plan (TRU Solutions Participants Only) | EM-Frozen | 2022 | 75 | - | 75 | - | - | - | - | - |
| | Non-Qualified | 2023 | 68 | - | 68 | - | - | - | - | - |
| | | 2024 | 67 | - | 67 | - | - | - | - | - |
| Washington Government Services Executive Pension Plan (West Valley Participants Only)[g] | EM-Frozen | 2022 | - | - | - | - | - | - | - | - |
| | Non-Qualified | 2023 | - | - | - | - | - | - | - | - |
| | | 2024 | - | - | - | - | - | - | - | - |
| Consolidated Nuclear Security, LLC Equalization Retirement Income Plan and Supplemental Retirement Income Plan | NA-Closed | 2022 | 185 | 177 | - | - | - | - | 7 | - |
| | Non-Qualified | 2023 | 161 | 154 | - | - | - | - | 6 | - |
| | | 2024 | 154 | 148 | - | - | - | - | 6 | - |
| UT-Battelle Equalization Retirement Income Plan and Supplemental Retirement Income Plan | SC-Open | 2022 | 723 | 76 | 1 | 427 | 69 | 21 | 95 | 34 |
| | Non-Qualified | 2023 | 929 | 98 | 1 | 548 | 89 | 27 | 123 | 44 |
| | | 2024 | 1,016 | 107 | 1 | 600 | 98 | 29 | 134 | 48 |
| **Total** | | **2022** | **1,298,072** | **548,138** | **364,715** | **145,865** | **49,340** | **17,552** | **138,856** | **33,606** |
| | | **2023** | **901,533** | **372,244** | **326,044** | **79,281** | **32,073** | **2,998** | **70,817** | **18,077** |
| | | **2024** | **1,046,810** | **521,257** | **252,212** | **92,506** | **38,501** | **4,693** | **112,337** | **25,303** |

[g] May be small variances in totals due to rounding. For the Naval Reactors contractor's plans, Reimbursable Work includes the portion of contributions covered by the contract with the Department of the Navy. Reimbursement for the Washington Government Services Executive Pension Plan (West Valley Participants Only) is currently under review by Department of Energy.

**Section II - Other Postretirement Benefit Plans**

For the most part, contractors do not fund other postretirement benefit plans in advance, but instead pay the claims incurred by the retired members or the premiums required to cover the plan benefits. The other postretirement benefits covered by the contractors are primarily medical, including prescription drugs, but may also include dental, vision, and life insurance benefits that are provided upon retirement from the contractor. The costs associated with these plans are expected to grow as the retired population grows and as healthcare cost trends continue to increase.

Due to the fact that the claims are not paid until incurred and processed, the actual amounts of contractors' payment of claims that DOE will reimburse for FY 2023 and FY 2024 will not be known until after budget development. The contractor costs are included in indirect costs. The budget assumes an indirect rate sufficient to meet reimbursement requirements. [h] As mentioned in the pension section, the allocation of contributions among NNSA, the Program Offices, and Reimbursable Work, is done based on each site's best estimate of the allocation of work based on current and anticipated work for the various parties that the site serves.

The contractors are making concerted efforts to reduce the costs associated with these plans as the costs have steadily increased. In recent years, contractors have made changes to their other postretirement benefit plans in an effort to reduce the costs associated with them, simplify administration, or increase the efficiency of the delivery of benefits. These changes include adjusting plan options to include high deductible health plan options, putting in place Employer Group Waiver Plans (EGWP) and other programs to manage prescription drug costs, adjusting the premiums for health and dental plans, and adjusting eligibility rules for retiree health plans.

Projections of future postretirement benefits to be paid are highly sensitive to underlying data, methods, and assumptions, particularly assumptions related to future increases in the expected claims paid each year as well as the underlying assumptions regarding usage and coverage. Thus, the actual amounts reimbursed in a future fiscal year may be different. All of the information for FY 2023 and FY 2024 is based on expected reimbursements as reported by the DOE's respective contractors in July 2022; this information has been reviewed by the appropriate NNSA and DOE program office and the Office of the Chief Financial Officer. The information reported for FY 2022 is primarily based on information of final employer contributions as reported by the contractors for the FY 2022 agency financial statements. Table 5 provides these aggregate FY 2022-2024 projected other postretirement benefit reimbursements.

**Table 5: FY 2022-2024 NNSA and DOE Program Office Projected Other Postretirement Benefits Payments ($K)**
Based on July 2022 data and allocated by Program Office [h]

| Program Office | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| NNSA | 159,312 | 180,437 | 182,434 |
| EM | 66,452 | 67,742 | 67,920 |
| SC | 50,440 | 58,145 | 61,526 |
| EERE | 6,043 | 7,298 | 7,690 |
| NE | 6,044 | 7,231 | 7,680 |
| Reimbursable Work | 40,323 | 46,245 | 47,247 |
| LM | 35,000 | 36,957 | 36,405 |
| Other | 7,541 | 8,177 | 9,200 |
| **Total** | **371,155** | **412,231** | **420,104** |

There may be small variances in totals due to rounding. Numbers may not add in total.

[h] The LM plans rely on direct costs.

**Research and Development Crosscut**

(dollars in thousands)

| R&D and Related Equipment and Construction | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| Basic Research | 5,970,625 | 6,581,153 | 6,998,899 | 417,745 | 6% |
| Applied Research | 6,163,425 | 6,643,892 | 7,126,628 | 482,736 | 7% |
| Development | 4,427,316 | 3,921,722 | 4,395,219 | 473,497 | 12% |
| **Subtotal, Research and Development** | **16,561,366** | **17,146,768** | **18,520,746** | **1,373,978** | **8%** |
| R&D Related Construction | 2,172,715 | 1,901,732 | 1,963,587 | 61,855 | 3% |
| R&D Related Equipment | 2,082,138 | 1,308,893 | 1,411,957 | 103,065 | 8% |
| **Subtotal, R&D and Related Facilities** | **4,254,854** | **3,210,625** | **3,375,544** | **164,920** | **5%** |
| **Total, R&D and Related Equipment and Construction** | **20,816,220** | **20,357,393** | **21,896,290** | **1,538,897** | **8%** |

**Summary**

The FY 2024 Request includes an overall increase of $1.5 billion (or 8 percent) in Research and Development (R&D) and Related Equipment and Construction compared with FY 2023 Enacted. The Department has identified challenging goals in the effort to avoid the worst effects of anthropogenic climate change and mitigate the effects of changes that can no longer be avoided. These goals towards decarbonization across all segments of the economy will be managed across the Department through crosscutting activities, enabling synergies that can be developed only through the collaboration and coordination of multiple Department offices. Each R&D related crosscut is described in its own section in the budget justification and new crosscuts have been added in response to the Administration goal of a carbon free economy by 2050 through a concerted effort in transportation, agriculture, industry, and electric power generation. Each DOE office has contributions to the overall success of our R&D efforts. These are summarized as follows.

**Office of Science (SC)** supports a balanced research portfolio of basic scientific research probing some of the most fundamental questions in areas such as: high energy, nuclear, and plasma physics; materials and chemistry; biological and environmental systems; applied mathematics; next generation high-performance computing and simulation capabilities; and basic research for advancement in new energy technologies. The SC FY 2024 Request increases investments in Administration priorities including basic research on climate change and clean energy, artificial intelligence (AI) and machine learning (ML), and biopreparedness. SC's Reaching a New Energy Sciences Workforce (RENEW) initiative doubles to expand targeted efforts to increase participation and retention of underrepresented groups in SC research activities. The Request also supports ongoing investments in priority areas including fusion, microelectronics, critical materials, quantum information science (QIS), exascale computing, fundamental science to transform manufacturing, and accelerator science and technology. These initiatives position SC to address new research opportunities through more collaborative, cross-program efforts.

The SC portfolio has two principal 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 extramural grants and contracts supporting nearly 29,000 researchers located at over 300 institutions and the 17 DOE national laboratories, spanning all fifty states and the District of Columbia. The portfolio of 28 scientific user facilities serves nearly 34,000 users per year. SC programs invest in foundational

science, including basic research for the advancement of clean energy, to transform our understanding of nature and strengthen the connection between advances in fundamental science and technology innovation.

**Energy Efficiency and Renewable Energy (EERE)** accelerates the research, development, demonstration, and deployment (RDD&D) of technologies and solutions to equitably transition America to net-zero greenhouse gas emissions economy-wide by no later than 2050, creating good paying jobs, and ensuring the clean energy economy benefits all Americans, especially workers and communities impacted by the energy transition and those historically underserved by the energy system and overburdened by pollution. To achieve this mission, EERE is increasing investment in the integration of clean energy technologies that are ready to be demonstrated and deployed, as well as R&D activities that advance early-stage technologies with a clear path to deployment. The Request prioritizes increased investments in these priority areas critical to reduce emissions in the near term drastically, while investing in research to ensure American leadership and competitiveness in advanced clean energy technology.

**Office of Cybersecurity, Energy Security, and Emergency Response (CESER)** seeks to enhance the security and resilience of the r nation's critical energy infrastructure from all hazards. CESER's R&D investments aim to bolster capabilities by developing game-changing cybersecurity tools, technologies, methodologies, and guidance that aid in securing energy infrastructure. These tools and technologies will help energy industry identify, protect, detect, respond, and recover in the face of increasingly advanced cyber threats. CESER has instituted coordination and integration of cybersecurity requirements in research and development efforts across DOE's science and energy programs, building cybersecurity into the energy delivery system components. CESER will supplement these efforts with development, demonstration and deployment of crosscutting tools leveraging emerging technologies and techniques CESER also includes RD&D to address risks to the energy sector from non-cyber hazards such as physical attack and impacts of climate change, e.g., increased wildfires and severe hurricanes. CESER will develop tools that help with risk characterization and analysis and enable early detection and mitigation of these risks.

**Office of Electricity (OE)** supports R&D for new technologies to strengthen, transform, and improve electricity delivery infrastructure so consumers have access to resilient, secure, and clean sources of electricity. OE provides solutions to technical, market, institutional, and operational failures that go beyond any one utility's ability to solve. OE works to ensure that our Nation's electricity delivery system can accommodate all the changes at generation and load sides of the grid and ensure reliable, resilient, and secure operations of the decarbonized electric grid.

**Nuclear Energy (NE)** supports the diverse civilian nuclear energy programs of the U.S. Government to research and develop nuclear energy technologies, including generation, safety, and security technologies, assisting in unleashing the clean energy transition through strategic and innovative methods. NE seeks to enhance availability, economics, and security of nuclear-generated electricity in the United States (U.S.). NE focuses on small modular reactor research as well as materials aging and degradation, safety margin characterization, safety technologies, and instrumentation and controls. Research into other Advanced Reactor Technologies, such as fast reactor technologies and high temperature reactor technologies for the production of electricity and high temperature process heat to improve the economic competitiveness and flexibility of nuclear energy is also conducted. Additionally, NE provides research and development activities in advanced manufacturing methods, fabrication, and instrumentation technologies that includes strong investments in modeling and simulation tools.

**Fossil Energy and Carbon Management (FECM)** supports increased funding for a revitalized perspective on fossil energy that advances carbon reduction and mitigation in sectors and applications that are difficult to decarbonize, including the industrial sector, with technologies and methods such as carbon capture and storage, hydrogen, and direct air capture—all while ensuring that overburdened communities are protected from increases in cumulative pollution. The FECM Request will help support communities left behind, workers translating their skills to new positions in various areas, such as, building carbon capture and hydrogen systems on existing industrial and power plant facilities, and reinforcing existing pipelines to minimize methane emissions.

**Advanced Research Projects Agency – Energy (ARPA-E)** supports the delivery of innovative, investable opportunities to the commercial sector. ARPA-E will continue to deliver value to the U.S. economy with continued emphasis on maintaining a healthy portfolio of projects. These projects cover a broad range of topics, with a growing focus on additional scale-up of the most promising projects that have demonstrated success in technical development, project management, and definition of commercial pathways. ARPA-E executes its budget through funding opportunity announcements that address applications that are not represented in its present portfolio and develops new opportunities opened by the outcomes of previous programs.

**National Nuclear Security Administration** contributes directly and crucially to U.S. nuclear security R&D by supporting key investments in science and technology innovation that support the stewardship of the nuclear weapons stockpile, modernize the nuclear security enterprise, protect the United States from weapons of mass destruction threats, enable science-based certification of the stockpile, and provide the U.S. Navy with nuclear reactors that meet complex evolving requirements.

**Administrative and Support Functions:** The Department's funding estimates of R&D activities include those administrative and support functions that are necessary to the success of the R&D programs consistent with government-wide and international reporting practices. These include program direction, safeguards and security, and infrastructure costs. The following table details funding of R&D in the budget by categories; basic, applied, development, equipment, and related construction; and program office.

| Basic Research | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| Cybersecurity, Energy Security & Emergency Response | 5,000 | 12,320 | 9,418 | (2,902) | -58% |
| Defense Nuclear Nonproliferation | 161,165 | 180,633 | 169,889 | (10,745) | -7% |
| Electricity | 9,055 | 13,363 | 12,117 | (1,246) | -9% |
| Science | 5,795,405 | 6,374,837 | 6,807,475 | 432,638 | 7% |
| **Subtotal, Basic Research** | **5,970,625** | **6,581,153** | **6,998,899** | **417,745** | **6%** |

| Applied Research | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| Advanced Research Projects Agency-Energy | 225,000 | 235,000 | 325,100 | 90,100 | 38% |
| Bonneville Power Administration Fund | 1,000 | 1,000 | 1,000 | - | N/A |
| Cybersecurity, Energy Security, & Emergency Response | - | 59,000 | 63,000 | 4,000 | 7% |
| Defense Environmental Cleanup (EM) | 10,890 | 14,190 | 10,890 | (3,300) | -23% |
| Defense Nuclear Nonproliferation | 193,973 | 205,570 | 193,967 | (11,603) | -6% |
| Electricity | 63,980 | 66,498 | 74,589 | 8,091 | 12% |
| Energy Efficiency and Renewable Energy | 676,784 | 836,967 | 1,275,590 | 438,623 | 52% |
| Fossil Energy and Carbon Management | 738,520 | 843,070 | 844,040 | 970 | 0% |
| Naval Reactor | 191,110 | 141,400 | 137,000 | (4,400) | -3% |
| Nuclear Energy | 965,099 | 1,001,402 | 962,535 | (38,867) | -4% |
| Weapons Activities | 3,082,069 | 3,262,813 | 3,263,833 | 1,019 | 0% |
| **Subtotal, Applied Research** | **6,148,425** | **6,666,910** | **7,151,544** | **484,634** | **7%** |

| Development | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| Advanced Research Projects Agency-Energy | 225,000 | 235,000 | 325,100 | 90,100 | 38% |
| Bonneville Power Administration Fund | 1,000 | 1,000 | 1,000 | - | N/A |
| Cybersecurity, Energy Security, & Emergency Response | 70,000 | 29,000 | 31,000 | 2,000 | 7% |
| Defense Environmental Cleanup (EM) | 22,110 | 28,810 | 22,110 | (6,700) | -23% |
| Defense Nuclear Nonproliferation | 133,285 | 129,361 | 139,121 | 9,760 | 8% |
| Electricity | 63,917 | 86,292 | 104,224 | 17,932 | 21% |
| Energy Efficiency and Renewable Energy | 1,378,725 | 607,324 | 817,959 | 210,635 | 35% |
| Fossil Energy and Carbon Management | 1,000,000 | 1,000,000 | 1,000,000 | - | N/A |
| Naval Reactors | 616,255 | 700,073 | 815,180 | 115,107 | 16% |
| Nuclear Energy | 309,492 | 336,816 | 327,065 | (9,751) | -3% |
| Weapons Activities | 662,532 | 777,348 | 822,704 | 45,356 | 6% |
| **Subtotal, Development** | **4,482,316** | **3,931,024** | **4,405,464** | **474,440** | **12%** |

| R&D Construction | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| Electricity | 50,658 | - | - | - | N/A |
| Energy Efficiency and Renewable Energy | 73,421 | 1,688 | 57,000 | 55,312 | 3277% |
| Naval Reactors | 567,620 | 554,218 | 246,284 | (307,934) | -56% |
| Nuclear Energy | 41,850 | 7,300 | - | (7,300) | -100% |
| Science | 1,261,206 | 1,255,013 | 1,383,973 | 128,960 | 10% |

| | | | | | |
|---|---|---|---|---|---|
| Weapons Activities | 177,960 | 83,513 | 276,330 | 192,817 | 231% |
| **Subtotal, R&D Related Facilities** | **2,172,715** | **1,901,732** | **1,963,587** | **61,855** | **3%** |

| **R&D Equipment** | **FY 2022 Enacted** | **FY 2023 Enacted** | **FY 2024 Request** | **FY 2024 vs FY 2023** | **% Change** |
|---|---|---|---|---|---|
| Bonneville Power Administration Fund | 267,000 | - | - | - | N/A |
| Construction, Rehabilitation, Operation & Maintenance, Western Area Power Administration | 3,000 | - | - | - | N/A |
| Construction, Rehabilitation, Office of Nuclear Energy | 37,000 | - | - | - | N/A |
| Defense Nuclear Nonproliferation | 30,396 | 31,339 | 32,228 | 889 | 3% |
| Energy Efficiency and Renewable Energy | 20,262 | 38,775 | 66,526 | 27,751 | 72% |
| Fossil Energy and Carbon Management | 29,000 | 25,000 | 26,000 | 1,000 | 4% |
| Naval Reactors | 6,900 | 23,005 | 8,800 | (14,205) | -62% |
| Operation and Maintenance, Southwestern Power Administration | 10,000 | - | - | - | N/A |
| Transmission Facilitation Fund | 380,000 | - | - | - | N/A |
| Science | 258,389 | 251,699 | 212,901 | (38,798) | -15% |
| Weapons Activities | 640,191 | 939,075 | 1,065,502 | 126,428 | 13% |
| Western Area Power Administration, Borrowing Authority, Recovery Act | 400,000 | - | - | - | N/A |
| **Subtotal, R&D Equipment** | **2,082,138** | **1,308,893** | **1,411,957** | **103,065** | **8%** |

| **R&D and Related Equipment & Construction** | **FY 2022 Enacted** | **FY 2023 Enacted** | **FY 2024 Request** | **FY 2024 vs FY 2023** | **% Change** |
|---|---|---|---|---|---|
| Advanced Research Projects Agency-Energy | 450,000 | 470,000 | 650,200 | 180,200 | 38% |
| Bonneville Power Administration Fund | 269,000 | 2,000 | 2,000 | - | N/A |
| Construction, Rehabilitation, Operation & Maintenance, Western Area Power Administration | 3,000 | - | - | - | N/A |
| Construction, Rehabilitation, Office of Nuclear Energy | 37,000 | - | - | - | N/A |
| Cybersecurity, Energy Security, & Emergency Response | 75,000 | 100,320 | 103,418 | 3,098 | 3% |
| Defense Environmental Cleanup (EM) | 33,000 | 43,000 | 33,000 | (10,000) | -23% |
| Defense Nuclear Nonproliferation | 518,819 | 546,903 | 535,205 | (11,698) | -2% |
| Electricity | 187,610 | 166,153 | 190,930 | 24,777 | 15% |
| Energy Efficiency and Renewable Energy | 2,149,192 | 1,484,754 | 2,217,075 | 732,321 | 49% |
| | | | | | |
| Federal Energy Management Program | - | 25,000 | 26,000 | 1,000 | 4% |
| Fossil Energy and Carbon Management | 767,520 | 843,070 | 844,040 | 970 | 0% |
| Naval Reactors | 1,381,885 | 1,418,696 | 1,207,264 | (211,432) | -15% |
| Nuclear Energy | 1,316,441 | 1,345,518 | 1,289,600 | (55,918) | -4% |

| | | | | | |
|---|---|---|---|---|---|
| Operation and Maintenance, Southwestern Power Administration | 10,000 | - | - | - | N/A |
| Transmission Facilitation Fund | 380,000 | - | - | - | N/A |
| Science | 7,315,000 | 7,881,549 | 8,404,349 | 522,800 | 7% |
| Weapons Activities | 4,562,753 | 5,062,749 | 5,428,370 | 365,620 | 7% |
| Western Area Power Administration, Borrowing Authority, Recovery Act | 400,000 | - | - | - | N/A |
| **R&D and Related Equipment & Construction** | **20,856,220** | **20,389,713** | **21,931,451** | **1,541,738** | **8%** |

## Program Mission

The Safeguards and Security (S&S) program at headquarters and each DOE field site focuses on enterprise security, protecting against theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts which may cause damage to national security, program continuity, the health and safety of employees, the public or the environment. The 'crosscut' summarizes the S&S programs that are distributed through the budget volumes. Each program's S&S components are described in the budget justifications for:

- Science
- Weapons Activities
- Defense Nuclear Nonproliferation
- Naval Reactors
- Defense Environmental Cleanup
- Nuclear Energy
- Energy Efficiency and Renewable Energy
- Fossil Energy R&D
- Strategic Petroleum Reserve
- Legacy Management
- Loans Program Office
- Enterprise Assessments
- Environment, Health, Safety and Security
- Energy Information Administration
- Specialized Security Activities
- NNSA Federal Salaries and Expenses
- Chief Financial Officer
- Chief Information Officer

## Program Overview

The budget for the direct funded S&S programs is organized to ensure consistency in program and budget execution and ensure management, direction, tracking and monitoring of security costs throughout the Department. Each program budget provides visibility for S&S issues to help management ensure effective and efficient S&S program implementation. Figure 1 shows comparable overall funding for S&S in the FY 2022 Enacted, FY 2023 Enacted and the FY 2024 Request.

**Figure 1: Overall DOE S&S Funding**

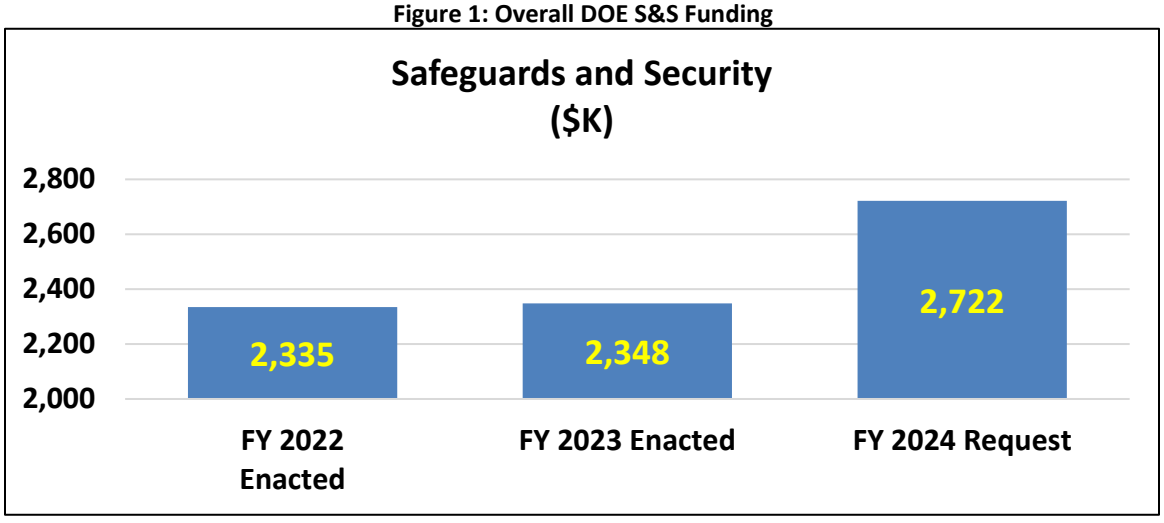

**Table 1: Functional Components of S&S**

The S&S crosscut budget is comprised of the functional components shown in the following table.

| | |
|---|---|
| **Protective Forces** | Provides for the protection of special nuclear materials, information, employees, and government property from theft, diversion, sabotage, and malicious destruction. |
| **Physical Security Systems** | Addresses access control and interior/exterior intrusion detection systems. |
| **Information Security** | Ensures that individuals protect classified matter and sensitive unclassified matter and establishes protection systems that require degrees of protection for each classification level. |
| **Cybersecurity** | Assures protection of IT resources and networks, to include modernizing cybersecurity defenses by protecting federal networks, improving information-sharing between the U.S. government and the private sector on cyber issues, and strengthening the United States' ability to respond to incidents when they occur. |
| **Personnel Security** | Supports activities associated with the access authorization program. |
| **Material Control and Accountability** | Provides assurance that the nuclear materials used and/or stored at DOE facilities are always properly controlled and accounted for. |
| **Program Management** | Assures a framework for efficient and effective security operations. |
| **Security Investigations** | Provides for background investigations for access authorizations. |
| **Transportation Security** | Provides secure transportation of nuclear materials. |
| **Security Infrastructure/ Construction** | Provides for update and repair of security-related infrastructure and construction for that purpose. |

Table 2 shows S&S funding by program cost elements; and Table 3 by functional cost elements. Subsequent sections break out each functional element of safeguards and security by program.

**Highlights:**
In FY 2024, the Department's overall S&S investment (field and HQ) is $2.7 billion, an increase of +$374 million, or 15.9%, above the FY 2023 Enacted level.

By functional element, DOE is making strategic investments in Cybersecurity (+$118 million, or +23.6%), Protective Forces (+$85 million, or +9.8%), Physical Security Systems (+$30.9 million, or 15.1%), Information Security (+$11.5 million, 12.3%) and Security infrastructure (+$193 million).

By program, there are significant increases from FY 2023 Enacted to FY 2024 Request for Weapons Activities (+$258 million, or +18%) for additional security requirements associated with mission growth across the nuclear security enterprise, including plutonium pit production and preparation for operation of the Uranium Processing Facility at the Y-12 National Security Complex. Additionally, there are notable increases in the Office of Science (+$16 million, or +8.6%) Fossil Energy & Carbon Management (+$7.7 million, or +74.5%) and the Office of the Chief Information Officer (+$6.7 million or +7.3%) primarily for investments in cybersecurity in response to Executive Order 14028, Improving the Nation's Cybersecurity by moving to Zero Trust Architecture.

**Table 2: S&S Funding by Program ($K)**

| Safeguards and Security (S&S) by Program | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| Chief Financial Officer | 1,692 | 2,450 | 3,650 | 1,200 | 49.0% |
| Chief Information Officer | 71,800 | 92,361 | 99,097 | 6,736 | 7.3% |
| Defense Environmental Cleanup | 323,144 | 329,220 | 332,645 | 3,425 | 1.0% |
| Defense Nuclear Nonproliferation | 336 | 380 | 400 | 20 | 5.3% |
| Energy Efficiency and Renewable Energy | 15,200 | 16,750 | 17,950 | 1,200 | 7.2% |
| Energy Information Administration | 1,105 | 1,405 | 2,015 | 610 | 43.4% |
| Enterprise Assessments | 9,505 | 9,535 | 10,273 | 738 | 7.7% |
| Environment, Health, Safety and Security | 74,903 | 80,430 | 84,575 | 4,145 | 5.2% |
| Federal Salaries and Expenses | 2,588 | 2,822 | 2,882 | 60 | 2.1% |
| Fossil Energy & Carbon Management | 9,869 | 10,392 | 18,132 | 7,740 | 74.5% |
| Legacy Management | 2,244 | 2,676 | 2,698 | 22 | 0.8% |
| Naval Reactors | 1,381 | 1,441 | 1,359 | -82 | -5.7% |
| Nuclear Energy | 149,800 | 149,820 | 177,773 | 27,913 | 18.6% |
| Science | 170,000 | 184,099 | 200,000 | 15,901 | 8.6% |
| Strategic Petroleum Reserve | 25,950 | 28,475 | 74,367 | 45,892 | 161.2% |
| Title 17: Loan Guarantee Program | 304 | 543 | 560 | 17 | 3.1% |
| Weapons Activities | 1,475,245 | 1,435,313 | 1,693,522 | 258,209 | 18.0% |
| **Total, Program S&S** | **2,335,066** | **2,348,112** | **2,721,858** | **373,746** | **15.9%** |

**Table 3: S&S Funding by Functional Cost Element ($K)**

| S&S by Functional Cost Element | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| Protective Forces | 827,169 | 865,214 | 950,326 | 85,112 | 9.8% |
| Physical Security Systems | 182,382 | 204,263 | 235,190 | 30,927 | 15.1% |
| Information Security | 87,062 | 93,342 | 104,866 | 11,524 | 12.3% |
| Cybersecurity | 560,671 | 499,148 | 616,865 | 117,717 | 23.6% |
| Personnel Security | 83,401 | 86,750 | 94,697 | 7,947 | 9.2% |
| Material Control and Accountability | 57,586 | 60,720 | 66,493 | 5,773 | 9.5% |
| Program Management | 145,546 | 133,831 | 141,035 | 7,204 | 5.4% |
| Security Investigations | 10,364 | 10,902 | 11,336 | 434 | 4.0% |
| Transportation Security | 330,979 | 344,652 | 357,279 | 12,627 | 3.7% |
| Security Infrastructure/Construction | 49,906 | 49,290 | 143,771 | 193,061 | 391.7% |
| Total, Functional S&S | **2,335,066** | **2,348,112** | **2,721,858** | **373,746** | **15.9%** |

## Protective Forces
## Funding Schedule ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| Protective Forces | | | | | |
| Defense Environmental Cleanup | 181,805 | 194,598 | 202,659 | 8,061 | 4.1% |
| Energy Efficiency and Renewable Energy | 3,470 | 3,600 | 3,890 | 290 | 8.1% |
| Environment, Health, Safety and Security | 35,419 | 40,000 | 43,500 | 3,500 | 8.8% |
| Fossil Energy & Carbon Management | 3,164 | 3,164 | 4,325 | 1,161 | 36.7% |
| Legacy Management | 642 | 670 | 681 | 11 | 1.6% |
| Nuclear Energy | 85,356 | 88,497 | 92,922 | 4,425 | 5.0% |
| Science | 46,710 | 52,341 | 53,911 | 1,570 | 3.0% |
| Strategic Petroleum Reserve | 18,691 | 21,407 | 20,872 | -535 | -2.5% |
| Weapons Activities | 451,912 | 460,937 | 527,566 | 66,630 | 14.5% |
| Total, Protective Forces | **827,169** | **865,214** | **950,326** | **85,113** | **9.8%** |

**Mission**

The Protective Forces element of field and headquarters S&S provides funding to protect the Department's critical assets, which include nuclear weapons in DOE custody, nuclear weapons components, special nuclear materials, classified information, and DOE facilities against a spectrum of threats, including terrorist activity, sabotage, espionage, theft, diversion, loss, or unauthorized use.

Protective Forces programs throughout the complex provide for personnel salaries, wages, and benefits for personnel; management and supervision; and well-maintained and logically deployed equipment and facilities to ensure effective performance of assigned functions and tasks under normal and emergency conditions.

Protective Forces programs include the conduct of access control and security response operations; the physical protection of special nuclear material, classified matter and information, and government property; emergency response forces and tactical assistance during events as well as an on-scene security commander; random patrols; coordination with local law enforcement and protective force elements aimed at providing effective response to emergency situations; random prohibited article inspections; security alarm monitoring and dispatch services; the collection and destruction of classified matter; and testing of the protective force to respond to various event scenarios.

Protective Forces programs maintain a Special Response Team capability to provide resolution of incidents that require effective and timely response with force options that exceed the capability of front-line protective force personnel. This includes prevention, recapture and recovery operations involving the use of special weapons systems and tactics to prevent access to special nuclear material or effect recovery from unauthorized control.

**Highlight:**

- For Weapons Activities, increase reflects additional security requirements associated with growth across the nuclear security enterprise, in particular the plutonium pit production mission at Los Alamos National Laboratory, and Kansas City expansion.

**Physical Security Systems**
**Funding Schedule ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| Physical Security Systems | | | | | |
| Defense Environmental Cleanup | 28,504 | 29,944 | 29,077 | -867 | -2.9% |
| Energy Efficiency and Renewable Energy | 875 | 925 | 1,000 | 75 | 8.1% |
| Environment, Health, Safety and Security | 6,138 | 6,238 | 6,238 | 0 | 0.0% |
| Fossil Energy & Carbon Management | 171 | 171 | 150 | -21 | -12.3% |
| Legacy Management | 120 | 127 | 130 | 3 | 2.4% |
| Nuclear Energy | 11,575 | 12,023 | 12,853 | 830 | 6.9% |
| Science | 22,490 | 24,693 | 35,812 | 11,119 | 45.0% |
| Strategic Petroleum Reserve | 1,075 | 1,123 | 1,143 | 20 | 1.8% |
| Weapons Activities | 111,434 | 129,019 | 148,787 | 19,768 | 15.3% |
| Total, Physical Security Systems | **182,382** | **204,263** | **235,190** | **30,927** | **15.1%** |

**Mission**

The Physical Security Systems element of field and headquarters S&S provides for the physical protection of special nuclear material and equipment, sensitive information, Departmental property, and unclassified facilities. Included are buildings, fences, barriers, lighting, sensors, surveillance devices, entry control devices, access control systems, explosive detection systems, power systems and other real property and hardware designed for or affecting security. This hardware and equipment are operated and used to support the protection of DOE property and other interests of national security.

Security Systems programs support DOE-wide efforts required to conduct performance assurance testing. These programs also ensure that security alarm systems are operational and functioning in accordance with applicable DOE requirements. Physical Security System programs are also responsible for two subprograms: (1) a barriers, secure storage, and lock program to restrict, limit, delay or deny entry into a designated area; and (2) an entry control and access program that provides positive identification of personnel requiring access to facilities and initial access to facilities in general, ensuring that persons entering or leaving facilities are authorized, and do not introduce prohibited articles into or remove Government property from Departmental facilities.

The budget estimates include all access control administrative activity involving production, accountability and destruction of access authorization badges and firearms credentials. They also include systems components and tamper-safe oversight by monitoring and responding to alarms, determining access, and securing all alarmed structures on site. In addition, this element provides for handling all radio communications for the protection of the facilities.

**Highlights:**

- For Science, the increase will support the continued implementation of new standards to conduct investigations for uncleared long-term contractor personnel and the associated modernization of select risk and priority-driven-systems. These systems also mitigate active shooter, as well as providing control and compartmentalization of classified matter, intellectual property, sensitive information, and hazardous materials.
- For Weapons Activities, the increase is associated with mission growth across the nuclear security enterprise (NSE) including pit production and UPF preparation efforts.

**Information Security**
**Funding Schedule ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| Information Security | | | | | |
| Defense Environmental Cleanup | 5,911 | 6,697 | 6,472 | -225 | -3.4% |
| Energy Efficiency and Renewable Energy | 550 | 575 | 620 | 45 | 7.8% |
| Environment, Health, Safety and Security | 13,179 | 13,679 | 13,679 | 0 | 0.0% |
| Fossil Energy & Carbon Management | 156 | 163 | 3,239 | 3,076 | 1887.1% |
| Legacy Management | 71 | 72 | 72 | 0 | 0.0% |
| Nuclear Energy | 6,174 | 5,016 | 5,748 | 732 | 14.6% |
| Science | 4,490 | 5,660 | 5,830 | 170 | 3.0% |
| Strategic Petroleum Reserve | 238 | 241 | 246 | 5 | 2.1% |
| Weapons Activities | 56,293 | 61,239 | 68,960 | 7,721 | 12.6% |
| Total, Information Security | **87,062** | **93,342** | **104,866** | **11,524** | **12.3%** |

**Mission**

The Information Security element of field and headquarters S&S ensures that material and documents that may contain sensitive and classified information are accurately and consistently identified, properly reviewed for content, appropriately marked, and protected from unauthorized disclosure, and ultimately destroyed in an approved manner.

Information Security programs provides for plans, policies, procedures, and training to ensure that all employees are aware of the requirements for the identification, review, classification, declassification, marking, protection and proper disposal of sensitive information and classified material. In addition, operational security considerations are used to preclude inadvertent compromise of classified material.

**Highlight:**

For Weapons Activities, the increase in Information Security is associated with mission growth including pit production and Kansas City expansion efforts.

## Cybersecurity
## Funding Schedule ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| **Field Cybersecurity*** | | | | | |
| Defense Environmental Cleanup | 50,600 | 45,454 | 42,150 | -3,304 | -7.3% |
| Energy Efficiency and Renewable Energy | 9,200 | 10,500 | 11,200 | 700 | 6.7% |
| Fossil Energy & Carbon Management | 4,416 | 4,416 | 7,398 | 2,982 | 67.5% |
| Legacy Management | 1,067 | 1,383 | 1,159 | -224 | -16.2% |
| Nuclear Energy | 21,912 | 23,916 | 27,612 | 3,696 | 15.5% |
| Science | 81,260 | 81,260 | 83,697 | 2,437 | 3.0% |
| Strategic Petroleum Reserve | 3,763 | 3,144 | 4,177 | 1,033 | 32.9% |
| Weapons Activities | 297,243 | 215,451 | 315,902 | 100,451 | 46.6% |
| Total, Field Cybersecurity | **469,461** | **385,524** | **493,295** | **107,771** | **28.0%** |

*Cybersecurity amounts shown do not include Working Capital Fund or Energy Information Technology System contributions

| Cybersecurity (including Headquarters Offices) | | | | | |
|---|---|---|---|---|---|
| **Field Cybersecurity** | **469,461** | **385,524** | **493,295** | **107,771** | **28.0%** |
| **Headquarters Cybersecurity** | **91,210** | **113,624** | **123,570** | **9,946** | **8.8%** |
| Chief Financial Officer | 1,692 | 2,450 | 3,650 | 1,200 | 49.0% |
| Chief Information Officer | 71,800 | 92,361 | 99,097 | 6,736 | 7.3% |
| Energy Information Administration | 1,105 | 1,405 | 2,015 | 610 | 43.4% |
| Enterprise Assessments | 9,335 | 9,335 | 10,123 | 788 | 8.4% |
| Environment, Health, Safety and Security | 5,734 | 5,830 | 5,925 | 95 | 1.6% |
| Title 17: Loan Guarantee Program | 244 | 443 | 460 | 17 | 3.8% |
| Fossil Energy & Carbon Management | 1,300 | 1,800 | 2,300 | 500 | 27.8% |
| **Total, Cybersecurity (Field & HQ)** | **560,671** | **499,148** | **616,865** | **117,717** | **23.6%** |

**Mission**

The Cybersecurity element of field and headquarters S&S improves the nation's cybersecurity and protects the federal government networks, in line with Executive Order 14028, Improving the Nation's Cybersecurity by moving to Zero Trust Architecture. Recent cybersecurity incidents such as SolarWinds, Microsoft Exchange, and the Colonial Pipeline incident are a sobering reminder that U.S. public and private sector entities increasingly face sophisticated malicious cyber activity from both nation-state actors and cyber criminals. These incidents share commonalities, including insufficient cybersecurity defenses that leave public and private sector entities more vulnerable to incidents.

In FY 2024, the Department of Energy is making significant contributions toward modernizing cybersecurity defenses by protecting federal networks, improving information-sharing between the U.S. government and the private sector on cyber issues, and strengthening the United States' ability to respond to incidents when they occur. Investments in Cybersecurity at the Department will focus on the following key areas, as identified in EO 14028:

- Remove Barriers to Threat Information Sharing Between Government and the Private Sector. Ensure that IT Service Providers can share information with the government and require them to share certain breach information. Removing any contractual barriers and requiring providers to share breach information that could impact Government networks is necessary to enable more effective defenses of Federal departments, including DOE, and to improve the Nation's cybersecurity.

- Modernize and Implement Stronger Cybersecurity Standards. Help move DOE enterprise to secure cloud services and a zero-trust architecture, and mandate deployment of multifactor authentication and encryption within a

specific time period. Outdated security models and unencrypted data have led to compromises of systems in the public and private sectors. DOE will increase its adoption of security best practices, by accelerating movement to a zero-trust security model and secure cloud services, and consistently deploying foundational security tools such as multifactor authentication and encryption.

- Improve Software Supply Chain Security. Continue to mature and expand the Information and Communication Technology Supply Chain Risk Management Program to improve the security of software and hardware. Too much of our hardware and critical software is shipped with significant vulnerabilities that our adversaries exploit.

- Improve Investigative and Remediation Capabilities. Improve cybersecurity threat hunting and response through improved logging and data analytics. Create cybersecurity event log and data retention requirements for DOE enterprise. Modernized perimeter sensors, improved data storage and search capabilities will improve the organization's ability to detect intrusions, mitigate those in progress, and determine the extent of an incident after the fact.

The amounts given here are program funds and do not include security elements that are within software applications developed for the Department's programmatic or administrative purposes, whether directly or indirectly funded. They do include IT Security and Compliance entries within the IT Investment portfolio. Highlights of cybersecurity activities can be found within the individual program budget requests.

**Field Cybersecurity Highlights:**

- Increase for Science will support investments in cyber infrastructure and cyber capability including new cyber tools, incident response enhancements, cyber workforce development, data protections, and protections for unique SC facilities and capabilities that cannot be protected with commercial tools and to strengthen protection at federal and M&O sites in the areas of: Cyber Threat Intelligence, Incident Response, Incident Recovery, Novel Security Techniques, Infrastructure Refresh, Industrial Control System Protection, Continuous Diagnostics and Mitigation, and Controlled Unclassified Information Protection. Additionally, the Request will continue implementation of Executive Order 14028 requirements at both federal and Management & Operating contract sites.
- Increase for Weapons Activities reflects investments in ZTA, Endpoint Detection and Response (EDR), operational technology, and other cybersecurity tools and services through the Enterprise Operations subprogram and supports labor rate increases and workforce growth at the laboratories, plants, and sites to address the significant increase in technology use as the NNSA mission has grown through the Site Infrastructure subprogram.

**Headquarters (HQ) Cybersecurity Highlights:**

- Increase for Chief Information Officer reflects dedicated cyber reserve fund for the entire DOE complex to address requirements of Executive Order 14028 Improving the Nation's Cybersecurity.

## Personnel Security
## Funding Schedule ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| Personnel Security | | | | | |
| Defense Environmental Cleanup | 12,647 | 11,892 | 11,949 | 57 | 0.5% |
| Energy Efficiency and Renewable Energy | 230 | 240 | 260 | 20 | 8.3% |
| Environment, Health, Safety and Security | 6,192 | 6,192 | 6,742 | 550 | 8.9% |
| Fossil Energy & Carbon Management | 346 | 358 | 383 | 25 | 7.0% |
| Legacy Management | 76 | 76 | 77 | 1 | 1.3% |
| Nuclear Energy | 4,714 | 5,593 | 5,953 | 0 | 6.4% |
| Science | 5,750 | 9,055 | 9,327 | 272 | 3.0% |
| Strategic Petroleum Reserve | 580 | 902 | 930 | 28 | 3.1% |
| Title 17: Loan Guarantee Program | 60 | 100 | 100 | 0 | 0.0% |
| Weapons Activities | 52,806 | 52,342 | 58,976 | 6,634 | 12.7% |
| Total, Personnel Security | **83,401** | **86,750** | **94,697** | **7,947** | **9.2%** |

**Mission**

The Personnel Security element of field and headquarters S&S supports the access authorization program and ensures security sensitivity through security briefings such as the initial refresher and termination briefings, re-orientations, computer-based training, special workshops and classes, publications, closed circuit television programs, signs, posters, and special event days. Support for the access authorization program includes: (1) personnel security assurance program, adjudications, screening, and analysis of personnel security cases for determining eligibility for access authorizations, administrative reviews, and handling of Freedom of Information Act and Privacy Act requests related to security access authorizations; (2) security awareness and education; and (3) activities associated with classified and unclassified visits and assignments by foreign nationals.

**Highlights:**

- For Weapons Activities, the increase reflects additional security requirements associated with mission growth across the nuclear security enterprise, in particular the plutonium pit production mission at Los Alamos National Laboratory and Kansas City expansion efforts.
- For Science, the increase will provide additional FTEs to support the increased HSPD-12 access authorization functions and the increased functions for the increased processing and vetting of foreign nationals.

## Material Control and Accountability
### Funding Schedule ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| Material Control and Accountability | | | | | |
| Defense Environmental Cleanup | 7,176 | 6,805 | 7,331 | 526 | 7.7% |
| Nuclear Energy | 6,376 | 5,825 | 6,525 | 700 | 12.0% |
| Science | 2,500 | 2,965 | 3,054 | 89 | 3.0% |
| Weapons Activities | 41,534 | 45,125 | 49,583 | 4,458 | 9.9% |
| Total, Material Control and Accountability | **57,586** | **60,720** | **66,493** | **5,773** | **9.5%** |

**Mission**

The Material Control and Accountability (MC&A) element of field S&S provides assurance that nuclear materials are properly controlled and always accounted for. MC&A provides evidence that all nuclear materials are accounted for appropriately and that theft, diversion, or operational loss has not occurred. MC&A also supports weapons production, nuclear nonproliferation, nuclear materials operations, facility closure, and nuclear critical safety by determining and documenting the amounts of nuclear materials in weapons and packaged items. MC&A administration includes the following: (1) assessing the levels of protection, control and accounting required for the types and quantities of materials at each facility; (2) documenting facility plans for nuclear materials control and accounting; (3) assigning authorities and responsibilities for MC&A functions; (4) ensuring that facility MC&A personnel are trained and qualified to perform their responsibilities; (5) establishing programs to report occurrences such as nuclear material theft, the loss of control or inability to account for nuclear materials, or evidence of malevolent acts; (6) conducting performance testing of required program elements; and (7) establishing facility programs to conduct and document internal assessments of their operations and MC&A programs.

**Highlight:**

- For Weapons Activities, the increase is associated with mission growth across NNSA's NSE, including for pit production and UPF preparation efforts.
- For Nuclear Energy, the increase is consistent with research and development operational schedules.

## Program Management
## Funding Schedule ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| Program Management | | | | | |
| Defense Environmental Cleanup | 25,742 | 26,579 | 26,098 | -481 | -1.8% |
| Energy Efficiency and Renewable Energy | 690 | 720 | 780 | 60 | 8.3% |
| Environment, Health, Safety and Security | 7,341 | 7,591 | 7,591 | 0 | 0.0% |
| Fossil Energy & Carbon Management | 316 | 320 | 337 | 17 | 5.3% |
| Legacy Management | 268 | 348 | 579 | 231 | 66.4% |
| Nuclear Energy | 10,175 | 8,000 | 8,100 | 100 | 1.3% |
| Science | 6,800 | 8,125 | 8,369 | 244 | 3.0% |
| Strategic Petroleum Reserve | 1,603 | 1,658 | 1,677 | 19 | 1.1% |
| Weapons Activities | 92,611 | 80,490 | 87,504 | 7,014 | 8.7% |
| Total, Program Management | **145,546** | **133,831** | **141,035** | **7,204** | **5.4%** |

**Mission**

The Program Management element of field and headquarters S&S develops the framework for efficient and effective security operations. This includes the development and updating of S&S plans, conducting vulnerability assessments to determine if assets are at risk, modeling to ensure the plans and operations meet mission objectives, identifying assets that need protection, developing local threat assessments and participating in the S&S quality panel process and security education. In addition, these programs ensure that plans are developed and revised in accordance with DOE requirements, professional and technical training is administered, and Departmental S&S goals and objectives are implemented complex wide.

The programs develop S&S plans or other applicable security plans and implement S&S requirements, conduct surveys to determine whether S&S requirements have been implemented, respond to national and local threats, and perform a vulnerability analysis that measures the risk of S&S assets. Program Management includes participation in the quality panel process, which raises issues from the field to the headquarters managers and ensures that the staff is properly educated in security matters.

**Highlight:**

- For Weapons Activities, the increase is due to requirements associated with growth across the nuclear security enterprise (NSE), including plutonium pit production and UPF preparation efforts.

## Security Investigations
## Funding Schedule ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| **Security Investigations** | | | | | |
| Defense Environmental Cleanup | 1,656 | 1,644 | 1,645 | 1 | 0.1% |
| Defense Nuclear Nonproliferation | 336 | 380 | 400 | 20 | 5.3% |
| Energy Efficiency and Renewable Energy | 185 | 190 | 200 | 10 | 5.3% |
| Enterprise Assessments | 170 | 200 | 150 | -50 | -25.0% |
| Environment, Health, Safety and Security | 900 | 900 | 900 | 0 | 0.0% |
| Federal Salaries and Expenses | 2,588 | 2,822 | 2,882 | 60 | 2.1% |
| Naval Reactors | 1,381 | 1,441 | 1,359 | -82 | -5.7% |
| Weapons Activities | 3,148 | 3,325 | 3,800 | 475 | 14.3% |
| **Total, Security Investigations** | **10,364** | **10,902** | **11,336** | **434** | **4.0%** |

**Mission**

The Security Investigations element of field and headquarters S&S funds background investigations associated with providing access authorizations (security clearances) to DOE Federal and contract personnel who, in the performance of their official duties, require access to classified information or certain quantities of special nuclear material. Background investigations are required by Section 145 of the Atomic Energy Act of 1954, as amended, and Executive Order 12968, Access to Classified Information. The investigations are performed, and access authorizations granted based on 10 C.F.R. 710, Criteria and Procedures for Determining Eligibility for Access to Classified Matter or Special Nuclear Material. Funding provides for initial single scope background investigations, periodic reinvestigations, and initial and reinvestigation national agency checks.

**Highlight:**

- No major changes in Security Investigations funding from FY 2023 Enacted to the FY 2024 Request.

## Transportation Security
## Funding Schedule ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| **Transportation Security** | | | | | |
| Defense Environmental Cleanup | 215 | 215 | 215 | 0 | 0.0% |
| Weapons Activities | 330,764 | 344,437 | 357,064 | 12,627 | 3.7% |
| **Total, Transportation Security** | **330,979** | **344,652** | **357,279** | **12,627** | **3.7%** |

**Mission**

Transportation security provides for the secure transport of weapons, weapons components, and nuclear materials to support Stockpile Management and consolidation and disposition of nuclear material within the complex; to meet DOE, DOD, and other customer requirements. This functional component of S&S is funded primarily within NNSA's Secure Transportation Asset (STA) Program.

STA provides safe and secure shipments for Weapons Activities and other Department elements requiring this capability. The STA program supports Departmental initiatives to convert weapons-grade material for use or disposal. STA supports other DOE programs, including Environmental Management; and others, including the National Aeronautics and Space Administration, and international shipments in cooperation with Canada, the United Kingdom, and France.

**Highlight:**

- For Weapons Activities, the increase reflects for the Mobile Guardian Transporter (MGT) and for Program Direction.

## Security Infrastructure/Construction
## Funding Schedule ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | $ Change FY24 vs. FY23 | % Change FY24 vs. FY23 |
|---|---|---|---|---|---|
| **Security Infrastructure/Construction** | | | | | |
| Defense Environmental Cleanup | 8,888 | 5,392 | 5,049 | -343 | -6.4% |
| Nuclear Energy | 3,518 | 950 | 18,020 | 17,070 | 1796.8% |
| Strategic Petroleum Reserve | | | 45,322 | 45,322 | |
| Weapons Activities | 37,500 | 42,948 | 75,380 | 32,432 | 75.51% |
| **Total, Security Infrastructure/Construction** | **49,906** | **49,290** | **143,771** | **94,481** | 191.68% |

**Mission**

Security Infrastructure provides critical security infrastructure investments and protection enhancements necessary to ensure adequate protection of DOE sites and personnel.

**Highlights:**

- For Weapons Activities, the increase reflects SIRP projects to be executed that include sensor, camera, lighting, and communication refreshes, and smaller capital equipment projects, as well as an increase to continue construction of the West-End Protected Area Reduction project.
- For Nuclear Energy, the increase reflects replacement of the Entrance Control Facility at the Materials and Fuels Complex to provide adequate space and flow to perform personnel inspections.

## Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)

(dollars in thousands)

| SBIR/STTR | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 vs FY 2023 | % Change |
|---|---|---|---|---|---|
| Advanced Research Projects Agency-Energy | 15,111 | 15,805 | 21,718 | +5,913 | +37.4% |
| Cybersecurity, Energy Security & Emergency Response | 1,185 | 2,482 | 2,491 | +9 | +0.4% |
| Defense Environmental Cleanup | 1,205 | 1,570 | 1,205 | -365 | -23.2% |
| Defense Nuclear Nonproliferation | 14,785 | 14,735 | 13,972 | -763 | -5.2% |
| Electricity | 4,581 | 5,589 | 6,407 | +818 | +14.6% |
| Energy Efficiency and Renewable Energy | 68,102 | 71,183 | 96,406 | +25,223 | +35.4% |
| Fossil Energy and Carbon Management | 15,922 | 20,493 | 18,964 | -1,529 | -7.5% |
| Nuclear Energy | 28,512 | 26,673 | 24,311 | -2,362 | -8.9% |
| Science[1] | 196,613 | 115,032 | 126,322 | +11,290 | +9.8% |
| **Total, SBIR/STTR** | **346,016** | **273,562** | **311,796** | **+38,234** | **+13.98%** |

The Department of Energy (DOE) manages two separate Small Business Innovation Research (SBIR) & Small Business Technology Transfer (STTR) programs, one administered by the Office of Science (SC) and the other by the Advanced Research Projects Agency – Energy (ARPA-E). SC has managed the DOE SBIR and STTR programs for the Department since the SBIR program was created in 1982 and the STTR program was created in 1992. The ARPA-E SBIR/STTR programs were created in FY 2012 to manage ARPA-E's SBIR & STTR allocations independently.

The SBIR and STTR Extension Act of 2022 (P.L. 117-183) reauthorizes the SBIR and STTR programs through September 30, 2025. DOE is required to expend not less than 3.2 percent of nonexempt extramural research and development (R&D) for SBIR and 0.45 percent on nonexempt extramural R&D for STTR, a total of 3.65 percent assessed for all contributing programs. The above table shows only the total by program with the precise splits by program determined in execution. The required percentages for SBIR and STTR are met on a Department-wide basis. By statute, "amounts obligated for Atomic Energy Defense Programs solely for Weapons Activities or for Naval Reactor Programs" are exempt [15 USC 638(e)(1)].

**DOE SBIR/STTR Programs Office**

The SBIR/STTR Programs Office works collaboratively with nine participating R&D program offices to administer the programs: SC; Cybersecurity, Energy Security and Emergency Response; Environmental Management (Defense Environmental Cleanup); Defense Nuclear Nonproliferation (within the National Nuclear Security Administration); Electricity; Energy Efficiency and Renewable Energy; Fossil Energy and Carbon Management; and Nuclear Energy. Each office makes awards commensurate with its allocation and collaborates with other offices during execution, as necessary.

The participating programs are responsible for topic selection, reviewer assignment, award selection, and project oversight. Each program office considers its high priority research needs and program mission, as well as the Department's goals for the program in developing research topics. The specific research topics selected for the SBIR and STTR programs are developed by the Department's technical program managers.

The SBIR/STTR Programs Office is responsible for issuing topics and solicitations, managing the peer review and award selection process, working with SC's Office of Acquisition and Assistance to award SBIR/STTR Phase I and Phase II grants, issuing annual reports to the U.S. Small Business Administration, performing outreach, and setting overall policy for the Department regarding the two programs.

In the implementation of SBIR/STTR, DOE assesses each program office at the minimum required percentages for both SBIR and STTR to meet expenditure requirements. DOE's current methodology is to vary the allocations such that each office will make the same total SBIR and STTR contribution, but the amounts given to SBIR and STTR will be adjusted to provide executable amounts, while in total DOE will meet the expenditure requirements for both SBIR and STTR.

[1] Starting in FY 2023, the Office of Science will not include facility operations funding as part of the extramural research and development total for calculating the SBIR/STTR estimates.

**ARPA-E SBIR/STTR Program**

ARPA-E executes its SBIR/STTR programs separate from the DOE-wide SBIR/STTR program. The ARPA-E SBIR/STTR program employs the same rigorous merit review, accelerated contracting, funding, and active project management as all other ARPA-E programs. The ARPA-E SBIR/STTR Program focuses on targeted, mission-relevant areas where the agency believes that small business provides the best opportunity for innovative technology development.

# Advanced Reasearch Projects Agency-Energy

# Advanced Reasearch Projects Agency-Energy

**Advanced Research Projects Agency – Energy**
**Proposed Appropration Languange**

For Department of Energy expenses necessary in carrying out the activities authorized by section 5012 of the America COMPETES Act (Public Law 110–69), [$470,000,000] *$650,200,000*, to remain available until expended: Provided, that of such amount, [$37,000,000] *$55,200,000* shall be available until September 30, [2024] *2025*, for program direction. (Energy and Water Development and Related Agencies Appropriations Act, 2023.)

**Public Law Authorizations**

P.L. 95-91, "Department of Energy Organization Act" (1977)
P.L. 109-58, "Energy Policy Act of 2005"
P.L. 110-69, "America COMPETES Act of 2007"
P.L. 111-358, "America COMPETES Reauthorization Act of 2010"
P.L. 116-260, Section 10001, "Consolidated Appropriations Act, 2021" ARPA-E Amendments

**Advanced Research Projects Agency – Energy**
**(dollars in thousands)**

| FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request |
|---|---|---|
| 450,000 | 470,000 | 650,200 |

**Overview**

The U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) was established by the America COMPETES Act of 2007 (Public Law 110–69), as amended. The mission of ARPA-E is to enhance the economic and energy security of the U.S. through the development of energy technologies that reduce imports of energy from foreign sources; reduce energy-related emissions, including greenhouse gases; improve the energy efficiency of all economic sectors; provide transformative solutions to improve the management, clean-up, and disposal of radioactive waste and spent nuclear fuel; and improve the resilience, reliability, and security of infrastructure to produce, deliver, and store energy. ARPA-E will ensure that the U.S. maintains a technological lead in developing and deploying energy technologies. ARPA-E will identify and promote revolutionary advances in energy, translating scientific discoveries and cutting-edge inventions into technological innovations. It will also accelerate transformational technological advances in areas where industry by itself is not likely to invest due to technical and financial uncertainty. ARPA-E focuses on novel early-stage energy research and development with technology applications that can be meaningfully advanced with a small investment over a defined period of time. ARPA-E coordinates its work with DOE's basic research and applied programs and other Federal research agencies to ensure work is not duplicated.

ARPA-E has established a nimble, effective management structure and developed a portfolio of technical programs that is delivering innovative, investable opportunities to the commercial sector. ARPA-E will continue to deliver value to the U.S. economy with continued emphasis on maintaining a healthy portfolio of projects. These projects cover a broad range of topics, with a growing focus on additional scale-up of the most promising projects that have demonstrated success in technical development, project management, and definition of commercial pathways.

Since its inception in 2009 through September 2022, ARPA-E has provided approximately $3.27 billion in funding to over 1,415 projects through focused programs and open funding solicitations. A total of 200 ARPA-E projects have attracted more than $11 billion in private-sector follow-on funding, 281 project teams have partnered with other agencies for further development, and 131 companies have been formed from ARPA-E projects. In addition, ARPA-E project teams have generated 6,257 peer-reviewed journal articles and received 934 patents from the U.S. Patent and Trademark Office.

Projects that receive ARPA-E support are considered ”high risk” and too early for private sector support. They are subject to strict technical and commercialization milestones intended to ensure accountability and transparency that enable rapid reprioritization of Agency funds towards only the most promising technologies. This has resulted in significant commercial interest, investment, and follow-on funding for successful technologies, amplifying the impact of the Agency’s funding decisions and accelerating progress towards achieving the Agency’s mission.

In FY 2024, ARPA-E’s will support research and development (R&D) on climate adaptation and resiliency energy innovations as well as support the Administration’s Net Zero Gamechangers Initiative. This will support the target to achieve net zero emissions by 2050, including coordination across agencies, to meet the Administration’s goals to adapt and strengthen resilience from the most devastating impacts of climate change. Funding is requested to support the Administration’s energy technology agenda that will drive innovation to tackle the climate crisis while creating good paying jobs, assure the United States remains the world’s leader in energy technologies, and increase societal resilience to climate change impacts. ARPA-E will work with the other Agencies to develop transformative solutions for the climate crisis, including adaptation and resilience, and lay the foundation for future improvements in R&D across the Federal Government.

ARPA-E also supports the Administration’s Justice40 and Equity initiatives. In FY 2024, ARPA-E will in engage in stakeholder consultation and outreach, including Historically Black Colleges and Universities and minority serving institutions , and the

broader R&D community, to advance equitable outcomes and explore benefits and investments that may benefit disadvantaged communities.

**Highlights and Major Changes in the FY 2024 Budget Request**

In FY 2024, ARPA-E plans to release OPEN 2024 and Seeding Critical Advances for Leading Energy Technologies with Untapped Potential (SCALEUP) funding solicitations and up to 12 new funding opportunity announcements (FOAs). The FOAs will address new areas not represented in the present portfolio and develop new opportunities opened by the outcomes of previous programs.

**Advanced Research Projects Agency - Energy**
**Funding by Congressional Control ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted | |
|---|---|---|---|---|---|
| | | | | $ | % |
| ARPA-E Projects | 414,000 | 433,000 | 595,000 | +162,000 | +37% |
| Program Direction | 36,000 | 37,000 | 55,200 | +18,200 | +49% |
| **Total, Advanced Research Projects Agency - Energy** | **450,000** | **470,000** | **650,200** | **+180,200** | **+38%** |
| **Federal FTEs** | **64** | **66** | **100** | **+34** | **+52%** |

## ARPA-E Projects

### Overview

ARPA-E identifies and supports revolutionary inventions and transformational energy advances, which requires constant evolution of its programmatic focus. This is accomplished by establishing dynamic technical programs (each lasting about three years) designed to accelerate innovation in high-potential areas. The breadth of the program portfolio that has developed over ARPA-E's lifetime addresses different parts of the energy technology space from year to year.

ARPA-E has demonstrated the efficacy of its model for accelerating high-potential, novel technical approaches to existing and emerging U.S. energy challenges. Program Directors, recruited for their technical expertise, leadership, and experience in energy issues, are given significant autonomy in identifying potential high-impact areas for R&D investment. ARPA-E's Program Directors work to develop their proposals in the context of both private sector and federally funded work in the technical space, and ultimately propose a program designed to accelerate research and commercial development in the topic area.

As a complement to its focused technology programs, ARPA-E also supports OPEN solicitations. OPEN solicitations seek the most innovative new ideas in energy technology across the full spectrum of energy applications, allowing the Agency to support the development of important technologies that fall outside the scope of its focused programs. OPEN solicitations are released every three years and were run in 2009, 2012, 2015, 2018, and 2021. Consistent with the triennial release schedule, ARPA-E plans on releasing another OPEN solicitation in 2024.

Selection of project awards within each program occurs by a rigorous process of proposal review. Selection criteria include the transformative character of the technology, the potential impact of the technology on ARPA-E's energy missions as defined in its authorizing statute, and the potential for the project to yield commercial applications that benefit U.S. economic and energy security. Within these criteria the most highly rated proposals are selected for award negotiations. The majority of the funded projects involve more than one institution, and the lead institutions are distributed among universities, businesses, federally funded R&D centers, and non-profit organizations.

The resulting portfolio of alumni and active R&D projects (shown below) broadly covers the U.S. energy technology landscape, from transportation fuels and energy storage, through residential, commercial, and manufacturing efficiency to the storage, distribution, and generation of electrical power. The programs are designed to deliver value given a targeted investment over a defined period of time. The projects are structured in a portfolio funding approach to 'de-risk' areas of technological opportunity by supporting multiple high-potential approaches to the program goals to the point where their relative value for further applications can be determined. This allows the most effective approaches to emerge based on their technical performance and potential. Under ARPA-E's rigorous project management process, project teams work to quarterly milestones for both technical and commercialization goals.


| FOA Acronym | Definition |
|---|---|
| **Electricity Generation and Delivery – Active** | |
| ATLANTIS | Aerodynamic Turbines Lighter and Afloat with Nautical Technologies and Integrated Servo-control |
| BETHE | Breakthroughs Enabling THermonuclear-fusion Energy |
| CHARGES | Cycling Hardware to Analyze and Ready Grid-Scale Electricity Storage |
| CURIE | Converting used nuclear fuel Radioisotopes into Energy |
| DAYS | Duration Addition to electricitY Storage |
| GAMOW | Galvanizing Advances in Market-aligned fusion for an Overabundance of Watts |
| GEMINA | Generating Electricity Managed by Intelligent Nuclear Assets |
| GENSETS | GENerators for Small Electrical and Thermal Systems |
| GRID DATA | Generating Realistic Information for the Development of Distribution and Transmission Algorithms |
| INTEGRATE | Innovative Natural-gas Technologies for Efficiency Gain in Reliable and Affordable Thermochemical Electricity-generation |
| IONICS | Integration and Optimization of Novel Ion-Conducting Solids |
| MEITNER | Modeling-Enhanced Innovations Trailblazing Nuclear Energy Reinvigoration |
| NODES | Network Optimized Distributed Energy Systems |
| ONWARDS | Optimizing Nuclear Waste and Advanced Reactor Disposal Systems |
| PERFORM | Performance-based Energy Resource Feedback, Optimization, and Risk Management |
| SHARKS | Submarine Hydrokinetic And Riverine Kilo-megawatt Systems |
| **Electricity Generation and Delivery – Alumni** | |
| ALPHA | Accelerating Low-cost Plasma Heating and Assembly |
| CHARGES | Cycling Hardware to Analyze and Ready Grid-scale Electricity Storage |
| FOCUS | Full-spectrum Optimized Conversion and Utilization of Sunlight |
| GENI | Green Electricity Network Integration |
| GRIDS | Grid-scale Rampable Intermittent Dispatchable Storage |
| HEATS | High Energy Advanced Thermal Storage |
| IMPACCT | Innovative Materials and Processes for Advanced Carbon Capture Technologies |
| MOSAIC | Micro-scale Optimized Solar-cell Arrays with Integrated Concentration |

| FOA Acronym | Definition |
|---|---|
| REBELS | Reliable Electricity Based on ELectrochemical Systems |
| Solar ADEPT | Solar Agile Delivery of Electrical Power Technology |
| **Efficiency – Active** | |
| BREAKERS | Building Reliable Electronics to Achieve Kilovolt Effective Ratings Safely |
| CIRCUITS | Creating Innovative and Reliable Circuits Using Inventive Topologies and Semiconductors |
| DIFFERENTIATE | Design Intelligence Fostering Formidable Energy Reduction and Enabling Novel Totally Impactful Advanced Technology Enhancements |
| ENLITENED | ENergy-efficient Light-wave Integrated Technology Enabling Networks that Enhance Dataprocessing |
| FLECCS | FLExible Carbon Capture and Storage (FLECCS) |
| HESTIA | Harnessing Emissions into Structures Taking Inputs from the Atmosphere |
| HITEMMP | High Intensity Thermal Exchange through Materials, and Manufacturing Processes |
| MINER | Mining Innovations for Negative Emissions Resource recovery |
| PNDIODES | Power Nitride Doping Innovation Offers Devices Enabling SWITCHES |
| REMEDY | Reducing Emissions of Methane Every Day of the Year |
| REPAIR | Rapid Encapsulation of Pipelines Avoiding Intensive Replacement |
| ROOTS | Rhizosphere Observations Optimizing Terrestrial Sequestration |
| SENSOR | Saving Energy Nationwide in Structures with Occupancy Recognition |
| SHIELD | Single-pane Highly Insulating Efficient Lucid Designs |
| **Efficiency – Alumni** | |
| ADEPT | Agile Delivery of Electrical Power Technology |
| ARID | Advanced Research In Dry cooling |
| BEETIT | Building Energy Efficiency Through Innovative Thermodevices |
| DELTA | Delivering Efficient Local Thermal Amenities |
| METALS | Modern Electro/Thermochemical Advances in Light metals Systems |
| MONITOR | Methane Observation Networks with Innovative Technology to Obtain Reductions |
| REACT | Rare Earth Alternatives in Critical Technologies |
| SWITCHES | Strategies for Wide bandgap, Inexpensive Transistors for Controlling High-Efficiency Systems |
| **Transportation – Active** | |
| ASCEND | Aviation-class Synergistically Cooled Electric-motors with iNtegrated Drives |
| ECOSynBio | Energy and Carbon Optimized Synthesis for the Bioeconomy |
| EVs4ALL | Electric Vehicles for American Low-carbon Living |
| MARINER | Macroalgae Research Inspiring Novel Energy Resources |
| NEXTCAR | Next-Generation Energy Technologies for Connected and Automated On-Road Vehicles |
| RANGE | Robust Affordable Next Generation Energy storage systems |
| REEACH | Range Extenders for Electric Aviation with low-Carbon and High-efficiency |
| REFUEL | Renewable Energy to Fuels through Utilization of Energy-dense Liquids |
| SMARTFARM | Systems for Monitoring and Analytics for Renewable Transportation Fuels from Agricultural Resources and Management |
| ULTIMATE | Ultrahigh Temperature Impervious Materials Advancing Turbine Efficiency |
| **Transportation – Alumni** | |
| AMPED | Advanced Management and Protection of Energy storage Devices |
| BEEST | Batteries for Electrical Energy Storage in Transportation |
| ElectroFuels | Microorganisms for Liquid Transportation Fuel |
| MOVE | Methane Opportunities for Vehicular Energy |
| PETRO | Plants Engineered To Replace Oil |
| REMOTE | Reducing Emissions using Methanotrophic Organisms for Transportation Energy |
| TERRA | Transportation Energy Resources from Renewable Agriculture |
| TRANSNET | Traveler Response Architecture using Novel Signaling for Network Efficiency in Transportation |

One significant component of ARPA-E's mission is accelerating the economic impact of U.S. investments in energy R&D, and advancing the commercialization readiness of successful projects (depth of investment) is essential to achieving this goal. Developing the pathway to commercial applications is an intrinsic component of all projects, and project teams are required to conduct activities such as development of a detailed techno-economic analysis, market research, intellectual property protection, and engagement with potential customers and investors. As project teams demonstrate success, ARPA-E's Technology-to-Market Advisors and Program Directors work closely with the teams to help identify pathways toward commercial deployment. Many of ARPA-E's alumni projects have been able to obtain follow-on funding from private investors, state agencies and/or federal programs, and ARPA-E's maturing portfolio is offering increasing opportunities for commercialization of ARPA-E funded technologies.

Despite the level of technology 'de-risking' projects from the focused and OPEN solicitations achieved, ARPA-E determined that in some areas, further de-risking was necessary to validate technologies at a scale pertinent to investment. To this end, ARPA-E released SCALEUP solicitations in 2019 and 2021. SCALEUP is designed to fund successful technologies that were previously funded by ARPA-E for which the proof-of-concept R&D challenges have been addressed, and which can progress toward real-world impact through scaling. An enduring challenge to ARPA-E's mission is that even technologies that achieve substantial technical advancement under ARPA-E support are at risk of being stranded in their development path once ARPA-E funding ends. Experience across ARPA-E's diverse energy portfolios, and with a wide range of investors, indicates that pre-commercial "scaling" projects are critical to establishing that performance and cost parameters can be met in practice for these very early stage technologies. Success in these scaling projects would enable industry, investors, and partners to justify substantial commitments of financial resources, personnel, production facilities, and materials to develop promising ARPA-E technologies into early commercial products. ARPA-E plans to release another SCALEUP FOA in FY 2024 to continue the push toward commercialization for previous extremely early-stage ARPA-E programs and to continue the focus on ensuring manufacturing in the U.S.

In FY 2024, ARPA-E plans to release OPEN and SCALEUP funding solicitations and up to 12 new focused FOAs including research and development in support of the Net Zero Gamechangers Initiative five priority areas. The focused FOAs will address new areas not represented in the present portfolio and develop new opportunities opened by the outcomes of previous programs. The assessment process for the new programs is now underway.

**Potential technology areas for focused programs in FY 2024:**

ARPA-E is developing programs for transformational research across a wide range of energy technologies, and applications including:

- Net-Zero Gamechangers Initiative five priority areas: net-zero low greenhouse gas (GHG) building heating and cooling; net-zero aviation; net-zero power grid and electrification; industrial products and fuels for a net-zero, circular economy; and fusion energy at scale.
- Other topic areas may include: climate sensors and monitoring for dramatically improved GHG detection for potential capture and sequestration; carbon neutral/negative agricultural production; innovative carbon capture technologies, including those utilizing land and water bodies; prevention of GHG emissions from land sources; carbon neutral waste and recycling; research of resilient energy infrastructure to facilitate protection against climate-related severe events, resiliency via wireless power transfer using novel configurations, and new technologies for difficult to address methane abatement.

ARPA-E will also continue its stand-alone SBIR/STTR program to provide additional support to small businesses beyond the significant number of awards to small businesses via ARPA-E's standard non-SBIR/STTR solicitations.

**ARPA-E Projects**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|---|
| **ARPA-E Projects:** | | | | |
| ARPA-E Projects: | 414,000 | 433,000 | 595,000 | +162,000 |
| **Total, ARPA-E Projects** | **414,000** | **433,000** | **595,000** | **+162,000** |

SBIR/STTR
- FY 2022 Enacted: $15,111 total (SBIR $13,248 / STTR $1,863)
- FY 2023 Enacted: $15,805 total (SBIR $13,856 / STTR $1,949)
- FY 2024 Request: $21,718 total (SBIR $19,040 / STTR $2,678)

**ARPA-E Projects**
**Explanation of Major Changes ($K)**

| | FY 2024 Request vs FY 2023 Enacted |
|---|---|
| **ARPA-E Projects:** The FY 2024 Request Level is $162 million greater than the FY 2023 Enacted. At the increased appropriation, ARPA-E will increase the number of focused FOAs, funding allocated towards the SCALEUP FOA, and/or funding allocated towards ARPA-E's triennial OPEN FOA.<br><br>The increase in ARPA-E's FY 2024 appropriation will also include funding towards the Net Zero Gamechangers Initiative, which aims to allocate funding towards five priority areas: (i) net-zero low GHG building heating and cooling; (ii) net-zero aviation; (iii) net-zero power grid and electrification; (iv) industrial products and fuels for a net-zero, circular economy; and (v) fusion energy at scale. | **+162,000** |
| **Total, ARPA-E Projects** | **+162,000** |

**Program Direction – Appropriations Request**
**Funding ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|---|
| **Washington Headquarters** | | | | |
| Salaries and Benefits | 11,810 | 12,666 | 20,189 | +7,523 |
| Travel | 400 | 1,000 | 2,000 | +1,000 |
| Support Services | 17,432 | 17,048 | 24,450 | +7,402 |
| Other Related Expenses | 6,358 | 6,286 | 8,561 | +2,275 |
| **Total, Program Direction** | **36,000** | **37,000** | **55,200** | **+18,200** |
| **Federal FTEs** | **64** | **66** | **100** | **+34** |
| | | | | |
| **Support Services** | | | | |
| Technical Support | 6,101 | 5,967 | 8,558 | +2,591 |
| Management Support | 11,331 | 11,081 | 15,892 | +4,811 |
| **Total, Support Services** | **17,432** | **17,048** | **24,450** | **+7,402** |
| | | | | |
| **Other Related Expenses** | | | | |
| Working Capital Fund | 4,123 | 4,123 | 5,061 | +938 |
| Energy Information Technology Services (EITS) | 1,588 | 1,588 | 2,500 | +912 |
| Other Services | 647 | 575 | 1,000 | +425 |
| **Total, Other Related Expenses** | **6,358** | **6,286** | **8,561** | **+2,275** |

## Program Direction

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Program Direction $37,000,000** | **$55,200,000** | **+ $18,200,000** |
| **Salaries and Benefits** | | |
| At the FY 2023 Enacted level, ARPA-E anticipates needing up to 66 Federal FTEs. | At the FY 2024 Request Level, ARPA-E anticipates needing up to 100 Federal FTEs. Federal salaries and benefits (S&B) cost is assumed to escalate by 5.2 percent in FY 2024. Additional Program Directors, Tech to Market, and Operations staff will be added in FY 2024 to support ARPA-E's growing portfolio.<br><br>Federal staff will be increased from 66 to 100 in a prudent manner that is consistent with applicable laws, hiring practices, and the Executive Order on Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce (E.O. 14035). Some of ARPA-E's FTE expansion will be from paid fellows and/or paid summer scholars via Oak Ridge Institute for Science and Education, consistent with E.O. 14035 section 6 (Promoting Paid Internships). | + $7,523,000: The increase from the FY 2023 Enacted level is due to an increased federal staff to support ARPA-E's growing portfolio. Additionally, federal S&B cost is assumed to escalate by 5.2 percent. |
| **Travel** | | |
| At the FY 2023 Enacted level, ARPA-E Program Directors and Technology-to-Market advisers will visit performers regularly as part of ARPA-E's hands-on engagement. The number of site visits will be commensurate with the number of ongoing projects. FY 2023 Travel is expected to return to pre-COVID levels. | At the FY 2024 Request level, ARPA-E Program Directors and Technology-to-Market advisers will increase visits to performers as part of ARPA-E's hands-on engagement. The number of site visits will increase with the number of ongoing projects. | + $1,000,000: Increase in travel budget commensurate with the increase in the mission portfolio and number of ongoing projects. |
| **Support Services** | | |
| At the FY 2023 Enacted level, ARPA-E anticipates continuing the use of support service contractors to support ARPA-E federal staff in the management and oversight of projects and other required functions. | At the FY 2024 Request level, ARPA-E anticipates the use of support service contractors to increase with the number of ongoing and anticipated projects. | + $7,402,000: Increase in support services budget commensurate with the increase in the mission portfolio and number of ongoing projects. |

| FY 2023<br>Enacted | FY 2024<br>Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| The level of support is commensurate with the number of ongoing and anticipated projects. | | |
| **Other Related Expenses** | | |
| The FY 2023 Enacted level for other related expenses primarily consists of Working Capital Fund and Energy Information Technology Services (EITS) support costs, which are commensurate with the level of FTEs and support services requested. | At the FY 2024 Request level, ARPA-E anticipates Other Related Expenses to increase although some WCF and IT fixed costs will not increase proportionally with appropriations. FY 2024 WCF costs are projected to increase by 23 percent. | + $2,275,000: Increase in other related expenses budget commensurate with the increase in the mission and program direction portfolios and the increased necessity for WCF, EITS and other program direction support. |

**Advanced Research Projects Agency - Energy**
**Research and Development ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted |
|---|---|---|---|---|
| Basic | 0 | 0 | 0 | 0 |
| Applied | 225,000 | 235,000 | 325,100 | +90,100 |
| Development | 225,000 | 235,000 | 325,100 | +90,100 |
| Subtotal, R&D | 450,000 | 470,000 | 650,200 | +180,200 |
| Equipment | 0 | 0 | 0 | 0 |
| Construction | 0 | 0 | 0 | 0 |
| **Total, R&D** | **450,000** | **470,000** | **650,200** | **+180,200** |

**Advanced Research Projects Agency - Energy**
**Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) ($K)**

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request |
|---|---|---|---|
| ARPA-E Projects | | | |
| SBIR | 13,248 | 13,856 | 19,040 |
| STTR | 1,863 | 1,949 | 2,678 |
| **Total, SBIR/STTR** | **15,111** | **15,805** | **21,718** |

**DEPARTMENT OF ENERGY**

**Funding by Site**

TAS_0337 - Advanced Research Projects Agency - Energy - FY 2024

(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| **Washington Headquarters** | | | |
| ARPA-E Projects | 414,000 | 433,000 | 595,000 |
| Program Direction - ARPA-E | 36,000 | 37,000 | 55,200 |
| **Total Washington Headquarters** | **450,000** | **470,000** | **650,200** |
| **Total Funding by Site for TAS_0337 - Advanced Research Projects Agency - Energy** | **450,000** | **470,000** | **650,200** |

# Energy Information Administration

# Energy Information Administration

**U.S. Energy Information Administration**
**Proposed Appropriation Language**

For necessary expenses in carrying out the activities of the U.S. Energy Information Administration, $156,550,000 to remain available until expended.

**Explanation of Change**

**Public Law (P.L.) Authorizations**
P.L. 83-703, Atomic Energy Act (1954)
P.L. 93-275, 15 U.S.C. 761, Federal Energy Administration Act (1974)
P.L. 93-319, Energy Supply and Environmental Coordination Act (1974)
P.L. 94-163, Energy Policy and Conservation Act (1975)
P.L. 94-385, 15 U.S.C. 790, Energy Conservation and Production Act (1976)
P.L. 95-91, 42 U.S.C. 7135, Department of Energy Organization Act (1977)
P.L. 95-619, 42 U.S.C. 7141 National Energy Conservation Policy Act (1978)
P.L. 95-620, 42 U.S.C. 8301, Power Plant and Industrial Fuel Use Act (1978)
P.L. 95-621, Natural Gas Policy Act (1978)
P.L. 96-294, Energy Security Act (1980)
P.L. 97-229, 42 U.S.C. 6245, Energy Emergency Preparedness Act (1982)
P.L. 97-415, Nuclear Regulatory Commission Authorization Act (1983)
P.L. 99-58, National Coal Imports Reporting Act (1985)
P.L. 99-58, 42 U.S.C. 6201, Energy Policy and Conservation Act Amendments of 1985
P.L. 99-509, 42 U.S.C. 7135, Omnibus Budget Reconciliation Act of 1986
P.L. 100-42, 42 U.S.C. 8312, Power Plant and Industrial Fuel Use Act Amendments of 1987
P.L. 102-486, 42 U.S.C. 13385, Energy Policy Act (1992)
P.L. 107-347, Title V of E-Government Act of 2002, Confidential Information Protection and Statistical Efficiency Act of 2002
P.L. 109-58, 42 U.S.C. 15801, Energy Policy Act of 2005
P.L. 110-140, Energy Independence and Security Act (2007)
P.L. 112-81, National Defense Authorization Act for Fiscal Year 2012
P.L. 112-158, Iran Threat Reduction and Syria Human Rights Act of 2012
P.L. 113-125, Reliable Home Heating Act of 2014
P.L. 114-11, Energy Efficiency Improvement Act of 2015
P.L. 117-58, Infrastructure Investment and Jobs Act (2021)

**U.S. Energy Information Administration**
**Congressional Control: National Energy Information System (NEIS)**
**Funding ($K)**

| FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|
| $129,087 | $135,000 | $156,550 | $21,550 | 16% |

**Overview**

The U.S. Energy Information Administration (EIA) is the statistical and analytical agency within the U.S. Department of Energy (DOE). EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment. EIA is the nation's premier source of energy information and, by law, its data, analysis, and forecasts are independent of approval by any other officer or employee of the U.S. government.

EIA conducts a wide range of data collection, analysis, forecasting, and dissemination activities to ensure that its customers, including Congress, federal and state governments, the private sector, the public, and the media, have ready access to timely, reliable, and relevant energy information. EIA's data and analysis inform important energy-related decisions, such as policy development; the availability of energy sources; and government, business, and personal investment decisions.

**Highlights of the FY 2024 Budget Request**

The FY 2024 Budget Request of $156,550,000 will enable EIA to continue delivering the critical energy information products on which its stakeholders rely, including weekly petroleum and natural gas inventory reports, comprehensive monthly forecasts of rapidly-changing energy markets, and long-term outlooks for U.S. and global energy production and consumption. This funding will also enable EIA to follow through on efforts to expand its coverage of a dynamic and transitional energy sector, including initiatives undertaken in response to the Infrastructure Investment and Jobs Act (IIJA). For example, EIA will:

- **Deliver timely insights on electric grid operations** so that stakeholders have access to high-value, near real-time data on actual electricity demand, demand forecasts, pricing, and emissions; and expanded information on electric vehicle (EV) integration with the grid, including historical data on EV electricity consumption and infrastructure.
- **Expand the energy consumption data program** to enable EIA to track and report on short-term shifts in energy consumption patterns and begin developing enhanced visualization capabilities for these data.
- **Modernize the National Energy Modeling System (NEMS)** to expand scenario analysis of decarbonization pathways, for example, developing model representations for increased electrification, biofuels, hydrogen, and carbon capture, transport, and sequestration; and begin developing an open source, next generation energy model.
- **Improve tracking of emissions** by acquiring or developing relevant new data and providing enhanced public trend analysis for sectoral emissions.
- **Expand analysis of international energy issues, trends, and events**, such as time-sensitive assessments of significant geopolitical events, and development of spatially resolved international data via interactive maps.
- **Enhance EIA's short-term forecasts** to expand coverage of near-term energy market volatility and transition, and fill a gap in EIA's modeling portfolio to address market conditions over a three- to five-year timeframe.
- **Increase information accessibility and usability** by leveraging new technologies that offer exciting opportunities for users to access, customize, view, and retrieve data from EIA's website; and modernize EIA's IT infrastructure to increase operational reliability and security.

**Energy Data Program**

EIA's comprehensive energy data program conducts surveys of energy suppliers and consumers and then processes the data to produce a full range of publicly available reports. EIA provides this high-quality, relevant, and timely data in a range of formats and structures to serve the various analytical needs of its customers. Where appropriate, EIA uses administrative and third-party data to cost-effectively close energy information gaps and minimize respondent burden. The energy data program also provides the basis for EIA's energy analysis and forecasting activities, including key inputs for its short- and long-term energy models. EIA regularly reviews its energy data program to ensure the agency remains current with evolving market trends.

*Energy Supply Surveys*

The energy supply survey program represents EIA's data foundation and largest operational area. Information from these surveys is published in more than 300 reports each year across weekly, monthly, quarterly, and annual product lines. EIA also collects and disseminates hourly electricity demand data from the nation's balancing authorities, which provides timely insights into grid operations. The energy supply survey program collects comprehensive data that illustrate the complex flows of energy production, conversion, distribution, and end uses across the nation, including oil and natural gas, coal, refined products, nuclear power, renewables, biofuels, and electric power. The program is staffed with a broad range of technical expertise to ensure the quality of EIA's data and the integrity of its underlying statistical processes. Producers, consumers, investors, traders, and analysts use EIA energy statistics in their day-to-day activities. For example, the *Weekly Petroleum Status Report* and *Weekly Natural Gas Storage Report* typically spur price formation activity to balance energy markets.

*Energy Consumption and Efficiency Surveys*

EIA collects and publishes national, end-use consumption data for commercial buildings, residential buildings, and manufacturing through three large-scale, multi-year surveys. The *Commercial Buildings Energy Consumption Survey* (CBECS) provides the only comprehensive, statistically reliable source of information on energy consumption, expenditures, and end uses in U.S. commercial buildings. The *Residential Energy Consumption Survey* (RECS) collects information from a national sample of housing units, including data on energy characteristics of homes, usage patterns, and household demographics. The *Manufacturing Energy Consumption Survey* (MECS), which is linked to production and employment data from Census Bureau economic surveys, provides information on energy throughput and economic and operational characteristics of U.S. manufacturers. These surveys are critical to understanding changes in U.S. energy use and are the basis for developing projections of future U.S. energy scenarios. Because of the scale and complexity of these surveys, EIA is exploring innovative methods for collecting valid, timely data at lower costs.

**Energy Analysis Program**

EIA conducts a robust energy analysis program to increase understanding of a dynamic and transitional energy marketplace. The program maintains and operates NEMS, the nation's leading tool for developing long-term projections of U.S. energy production, consumption, prices, and technology usage; the *World Energy Projection System*, used for developing long-term projections of international energy markets; and the *Short-Term Integrated Forecasting System*, used to develop short-term domestic energy market forecasts. EIA's energy models support the production of its flagship publications: the *Annual Energy Outlook* (AEO), the *Short-Term Energy Outlook* (STEO), and the *International Energy Outlook* (IEO), as well as other special and periodic topical analyses.

EIA also produces many recurring reports that provide context for dynamic energy markets, such as *Today in Energy*, a concise, highly accessible overview of a topical energy issue published four times weekly on EIA's website. The *Drilling Productivity Report, This Week in Petroleum*, and *Natural Gas Weekly Update* are additional examples of relevant analysis products that serve EIA's broad stakeholder community. In addition, EIA provides periodic reports and ad hoc analyses of important energy issues, including, for example, factors affecting natural gas prices, battery storage for the U.S. electric grid, the potential impact of carbon fees on energy-related emissions, and modeled projections of a broad range of future energy scenarios. The program is staffed with experts in all areas of the energy sector, including oil, gas, coal, nuclear, renewables, electricity, transportation, emissions, and energy consumption and efficiency.

EIA also provides context and analysis on global energy issues by responding to official government requests for international energy analysis. EIA coordinates these responses with other DOE programs while maintaining its mission-mandated independence and impartiality. For example, EIA analyzed the energy implications and contingencies related to Russia's full-scale invasion of Ukraine. EIA also publishes updated reports that focus on the energy sectors in specific countries and regions, as well as country-level energy statistics and rankings for major fuels and activities.

**Resources and Technology Management**
This function provides overall business management, analysis, and mission support to EIA and responds to requests from other DOE offices and programs. Activities include workforce development and administration, financial and budget management, acquisition of support services, project management, program evaluation, and communications activities. The program also manages EIA's IT enterprise to ensure a stable, operable IT infrastructure that meets data confidentiality and cybersecurity requirements.

EIA maintains a dynamic stakeholder outreach and communications program that interacts with a diverse external customer base and manages the public website (www.eia.gov), press and media relations, marketing and outreach services, and the employee intranet. EIA's website features state-of-the-art tools such as customizable data browsers; interactive state, national, and North American energy infrastructure maps; open data initiatives such as Application Programming Interfaces (APIs); and highly visited online resources such as *Energy Kids* and *Energy Explained* that have increased information accessibility to EIA's customers.

**Cybersecurity**
EIA allocates funding for cybersecurity, while maintaining capabilities in response to new threats and evolving DOE and federal requirements (such as those outlined in the Executive Order on Improving the Nation's Cybersecurity) and enhancing the organization's Enterprise Cybersecurity Program as it transitions to support EIA's expanding cloud presence.

**Information Technology Modernization**
EIA continues to upgrade its IT infrastructure to mitigate critical operational risks to mission delivery. This includes development of a multi-year cloud migration strategy to place EIA's IT infrastructure on a more stable, secure, and maintainable platform, as well as continued efforts to modernize EIA's data management systems and processes, and collaborative tools to support a hybrid workplace.

**Using Administrative Data for Statistical Purposes**
EIA engages with other federal agencies in sharing and using administrative data sets for statistical purposes where appropriate. Using administrative and third-party data sets is a key strategy for EIA to close energy information gaps while minimizing the costs and respondent burden of survey data collection. EIA currently uses more than 60 administrative data sets and has negotiated successfully to obtain movements of commodities (crude oil, ethanol, coal) by rail using data from the Surface Transportation Board; and weekly petroleum export data from the U.S. Department of Homeland Security's Customs and Border Protection. EIA maintains strict measures to safeguard the privacy and confidentiality of the businesses, individuals, and institutions providing the data.

**Key Program Accomplishments**

EIA delivers timely, relevant information that increases public understanding of a dynamic energy landscape. Noteworthy recent accomplishments include:

- **Delivered informed analysis** of U.S. and global energy market uncertainty and volatility resulting from Russia's full-scale invasion of Ukraine.
- **Released new household energy consumption data** from the *Residential Energy Consumption Survey***,** including data for all 50 states for the first time.
- **Introduced a new layout for the STEO** to better highlight the most critical aspects of EIA's monthly forecast, and expanded the forecast through the end of 2024.
- **Published the *Annual Energy Outlook 2022***, with projections for U.S. energy markets through 2050, and additional analyses examining alternate long-term policy, weather, and infrastructure scenarios.
- **Published national and regional estimates of hourly carbon dioxide emissions** from electricity generation to augment grid operations data in the *Hourly Electric Grid Monitor*.
- **Reported on energy disruptions** caused by extreme weather and other events, such as Hurricane Ian, and the Freeport, Texas LNG terminal shutdown.
- **Developed new and more timely international data,** such as crude oil spare capacity, hydrocarbon gas liquids, and electricity generation; and updated EIA's international statistics database a full year sooner than before.
- **Released new commercial buildings energy consumption data**, including energy consumption, expenditures, and intensity information for major fuels.

**Congressional Control: National Energy Information System (NEIS)**
**Explanation of Major Changes ($K)**

| | FY 2024 Request vs FY 2023 Enacted |
|---|---|
| **Salaries and Benefits:** | |
| Projected increase for 5 FTEs and a cost of living adjustment of 5.2%. | +$4,032 |
| **Support Services:** | |
| Increase in Energy Supply Surveys. | +$5,000 |
| Increase in Consumption and Efficiency Surveys. | +$3,450 |
| Increase in Energy Modeling and Analysis. | +$5,900 |
| Increase in Resources and Technology Management. | +$3,168 |
| **Total, Program Direction** | **+$21,550** |

## Program Direction
## Funding ($K)

| | FY 2022 Enacted | FY 2023 Enacted | FY 2024 Request | FY 2024 Request vs FY 2023 Enacted ($) | FY 2024 Request vs FY 2023 Enacted (%) |
|---|---|---|---|---|---|
| Salaries and Benefits | $58,082 | $60,754 | $64,786 | $4,032 | 7% |
| Travel | $306 | $306 | $306 | $0 | 0% |
| Support Services | $50,201 | $56,442 | $73,960 | $17,518 | 31% |
| Other Related Expenses | $20,498 | $17,498 | $17,498 | $0 | 0% |
| **Total, Program Direction** | **$129,087** | **$135,000** | **$156,550** | **$21,550** | 16% |
| **Federal FTEs** | **366** | **366** | **371** | **5** | 1% |
| | | | | | |
| **Support Services** | | | | | |
| Technical Support | | | | | |
| Administrative Support Services | $9 | $9 | $9 | $0 | 0% |
| Human Resources Support Services | $4 | $4 | $4 | $0 | 0% |
| E-Government Support Services | $1 | $1 | $1 | $0 | 0% |
| Scientific/Technical and IT Training | $40 | $40 | $40 | $0 | 0% |
| Data Center (Application Hosting/Housing) | $180 | $180 | $180 | $0 | 0% |
| IT Management Services | $5,508 | $5,508 | $5,508 | $0 | 0% |
| Other Advisory and Assistance Services | $43,029 | $49,270 | $66,788 | $17,518 | 36% |
| **Total, Technical Support** | **$48,771** | **$55,012** | **$72,530** | **$17,518** | 32% |
| | | | | | |
| Management Support | | | | | |
| Program Management | $1,430 | $1,430 | $1,430 | $0 | 0% |
| Total, Management Support | $1,430 | $1,430 | $1,430 | $0 | 0% |
| **Total, Support Services** | **$50,201** | **$56,442** | **$73,960** | **$17,518** | 31% |
| | | | | | |
| **Other Related Expenses** | | | | | |
| Communications, utilities, and misc charges | $4,257 | $4,257 | $4,257 | $0 | 0% |
| Training | $466 | $466 | $466 | $0 | 0% |
| Other goods and services from Federal sources | $345 | $345 | $345 | $0 | 0% |
| Working Capital Fund | $9,694 | $6,694 | $6,694 | $0 | 0% |
| O&M of IT systems or equipment | $1,144 | $1,144 | $1,144 | $0 | 0% |
| Printing, supplies and materials | $1,300 | $1,300 | $1,300 | $0 | 0% |
| Equipment | $2,967 | $2,967 | $2,967 | $0 | 0% |
| Grants, subsidies, and contributions | $325 | $325 | $325 | $0 | 0% |
| **Total, Other Related Expenses** | **$20,498** | **$17,498** | **$17,498** | **$0** | 0% |

**Activities and Explanation of Changes**

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Salaries and Benefits $60,754,000** | **Salaries and Benefits $64,786,000** | **+$4,032,000** |
| Provide salaries and benefits for 366 FTEs. | Provide salaries and benefits for 371 FTEs | Increase for 5 FTEs and a cost of living adjustment of 5.2%. |
| **Travel $306,000** | **Travel $306,000** | **$0** |
| Provide essential travel for EIA stakeholder engagement—for representing EIA in public forums and engaging with industry experts. | Provide essential travel for EIA stakeholder engagement—for representing EIA in public forums and engaging with industry experts. | Maintain travel costs at FY 2023 level. |
| **Support Services $56,442,000** | **Support Services $73,960,000** | **+$17,518,000** |
| *Energy Supply Surveys $17,406,000*<br>Continue to operate the core energy supply data collection program. Includes efforts to standardize the processes, systems, and methods used to efficiently collect and process survey data. | *Energy Supply Surveys $22,406,000*<br>Continue to operate the core energy supply data collection program. Includes efforts to standardize the processes, systems, and methods used to efficiently collect and process survey data. | *Energy Supply Surveys +$5,000,000*<br>• Expand near real-time electric grid operations data, including new information on regional emissions and EV integration.<br>• Improve tracking for GHG emissions. |
| *Energy Consumption and Efficiency Surveys $12,781,000*<br>Conduct commercial, residential, and manufacturing energy consumption surveys. | *Energy Consumption and Efficiency Surveys $16,231,000*<br>Conduct commercial, residential, and manufacturing energy consumption surveys. | *Energy Consumption and Efficiency Surveys +$3,450,000*<br>Expand energy consumption data to track and report on short-term shifts in energy consumption patterns. |
| *Energy Modeling and Analysis $9,121,000*<br>Deliver core analysis, forecasts, and projections (for example, AEO, IEO, and STEO). | *Energy Modeling and Analysis $15,021,000*<br>Deliver core analysis, forecasts, and projections (for example, AEO, IEO, and STEO). | *Energy Modeling and Analysis +$5,900,000*<br>• Retool long-term modeling capability to more fully address the transitional nature of the energy sector, including decarbonization scenarios.<br>• Improve analysis of international energy issues, trends, and events.<br>• Enhance EIA's short-term forecasts. |
| *Resources and Technology Management $17,134,000*<br>Continue providing business management, IT and network services, and administrative support to EIA staff.<br>Maintain communication activities and invest in flexible web platforms to enhance data delivery. Maintain scope of energy mapping system and continue to integrate mapping with relevant EIA data. | *Resources and Technology Management $20,302,000*<br>Continue providing business management, IT and network services, and administrative support to EIA staff.<br>Maintain communication activities and invest in flexible web platforms to enhance data delivery. Maintain scope of energy mapping system and continue to integrate mapping with relevant EIA data. | *Resources and Technology Management +$3,168,000*<br>• Maintain and enhance cybersecurity capabilities.<br>• Increase information accessibility and usability on EIA's website.<br>• Modernize EIA's IT infrastructure to enable IIJA requirements. |

| FY 2023 Enacted | FY 2024 Request | Explanation of Changes<br>FY 2024 Request vs FY 2023 Enacted |
|---|---|---|
| **Other Related Expenses $17,498,000** | **Other Related Expenses $17,498,000** | **$0** |
| Pay rent and shared services through the DOE Working Capital Fund and provide IT equipment and licenses, subscriptions and data purchases, and employee training among other activities. | Pay rent and shared services through the DOE Working Capital Fund and provide IT equipment and licenses, subscriptions and data purchases, and employee training among other activities. | |

**DEPARTMENT OF ENERGY**

**Funding by Site**

TAS_0216 - Energy Information Administration - FY 2024

(Dollars in Thousands)

| | Request Detail | | |
|---|---|---|---|
| | Requested Total | | |
| | FY 2022 | FY 2023 | FY 2024 |
| **Washington Headquarters** | | | |
| Energy Information Administration (EIA) | 129,087 | 135,000 | 156,550 |
| **Total Washington Headquarters** | **129,087** | **135,000** | **156,550** |
| **Total Funding by Site for TAS_0216 - Energy Information Administration** | **129,087** | **135,000** | **156,550** |

**GENERAL PROVISIONS—DEPARTMENT OF ENERGY**

SEC. 301.

(a) No appropriation, funds, or authority made available by this title for the Department of Energy shall be used to initiate or resume any program, project, or activity or to prepare or initiate Requests For Proposals or similar arrangements (including Requests for Quotations, Requests for Information, and Funding Opportunity Announcements) for a program, project, or activity if the program, project, or activity has not been funded by Congress.

(b)

(1) Unless the Secretary of Energy notifies the Committees on Appropriations of both Houses of Congress at least 3 full business days in advance, none of the funds made available in this title may be used to—

(A) make a grant allocation or discretionary grant award totaling $1,000,000 or more;

(B) make a discretionary contract award or Other Transaction Agreement totaling $1,000,000 or more, including a contract covered by the Federal Acquisition Regulation;

(C) issue a letter of intent to make an allocation, award, or Agreement in excess of the limits in subparagraph (A) or (B); or

(D) announce publicly the intention to make an allocation, award, or Agreement in excess of the limits in subparagraph (A) or (B).

(2) The Secretary of Energy shall submit to the Committees on Appropriations of both Houses of Congress within 15 days of the conclusion of each quarter a report detailing each grant allocation or discretionary grant award totaling less than $1,000,000 provided during the previous quarter.

(3) The notification required by paragraph (1) and the report required by paragraph (2) shall include the recipient of the award, the amount of the award, the fiscal year for which the funds for the award were appropriated, the account and program, project, or activity from which the funds are being drawn, the title of the award, and a brief description of the activity for which the award is made.

(c) The Department of Energy may not, with respect to any program, project, or activity that uses budget authority made available in this title under the heading "Department of Energy—Energy Programs", enter into a multiyear contract, award a multiyear grant, or enter into a multiyear cooperative agreement unless—

(1) the contract, grant, or cooperative agreement is funded for the full period of performance as anticipated at the time of award; or

(2) the contract, grant, or cooperative agreement includes a clause conditioning the Federal Government's obligation on the availability of future year budget authority and the Secretary notifies the Committees on Appropriations of both Houses of Congress at least 3 days in advance.

(d) Except as provided in subsections (e), (f), and (g), the amounts made available by this title shall be expended as authorized by law for the programs, projects, and activities specified in the "Final Bill" column in the "Department of Energy" table included under the heading "Title III—Department of Energy" in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act).

(e) The amounts made available by this title may be reprogrammed for any program, project, or activity, and the Department shall notify the Committees on Appropriations of both Houses of Congress at least 30 days prior to the use of any proposed reprogramming that would cause any program, project, or activity funding level to increase or decrease by more than $5,000,000 or 10 percent, whichever is less, during the time period covered by this Act.

(f) None of the funds provided in this title shall be available for obligation or expenditure through a reprogramming of funds that—

(1) creates, initiates, or eliminates a program, project, or activity;

(2) increases funds or personnel for any program, project, or activity for which funds are denied or restricted by this Act; or

(3) reduces funds that are directed to be used for a specific program, project, or activity by this Act.

(g)

(1) The Secretary of Energy may waive any requirement or restriction in this section that applies to the use of funds made available for the Department of Energy if compliance with such requirement or restriction would pose a substantial

risk to human health, the environment, welfare, or national security.

(2) The Secretary of Energy shall notify the Committees on Appropriations of both Houses of Congress of any waiver under paragraph (1) as soon as practicable, but not later than 3 days after the date of the activity to which a requirement or restriction would otherwise have applied. Such notice shall include an explanation of the substantial risk under paragraph (1) that permitted such waiver.

(h) The unexpended balances of prior appropriations provided for activities in this Act may be available to the same appropriation accounts for such activities established pursuant to this title. Available balances may be merged with funds in the applicable established accounts and thereafter may be accounted for as one fund for the same time period as originally enacted.

SEC. 302. Funds appropriated by this or any other Act, or made available by the transfer of funds in this Act, for intelligence activities are deemed to be specifically authorized by the Congress for purposes of section 504 of the National Security Act of 1947 (50 U.S.C. 3094) during fiscal year *2024* until the enactment of the Intelligence Authorization Act for fiscal year 2023.

SEC. 303. None of the funds made available in this title shall be used for the construction of facilities classified as high-hazard nuclear facilities under 10 CFR Part 830 unless independent oversight is conducted by the Office of Enterprise Assessments to ensure the project is in compliance with nuclear safety requirements.

SEC. 304. None of the funds made available in this title may be used to approve critical decision–2 or critical decision–3 under Department of Energy Order 413.3B, or any successive departmental guidance, for construction projects where the total project cost exceeds $100,000,000, until a separate independent cost estimate has been developed for the project for that critical decision.

SEC. 305. Notwithstanding section 161 of the Energy Policy and Conservation Act (42 U.S.C. 6241), upon a determination by the President in this fiscal year that a regional supply shortage of refined petroleum product of significant scope and duration exists, that a severe increase in the price of refined petroleum product will likely result from such shortage, and that a draw down and sale of refined petroleum product would assist directly and significantly in reducing the adverse impact of such shortage, the Secretary of Energy may draw down and sell refined petroleum product from the Strategic Petroleum Reserve. Proceeds from a sale under this section shall be deposited into the SPR Petroleum Account established in section 167 of the Energy Policy and Conservation Act (42 U.S.C. 6247), and such amounts shall be available for obligation, without fiscal year limitation, consistent with that section.

SEC. 306. No funds shall be transferred directly from "Department of Energy—Power Marketing Administration—Colorado River Basins Power Marketing Fund, Western Area Power Administration" to the general fund of the Treasury in the current fiscal year.

SEC. 307. None of the funds made available in this title may be used to support a grant allocation award, discretionary grant award, or cooperative agreement that exceeds $100,000,000 in Federal funding unless the project is carried out through internal independent project management procedures.

## TITLE V—GENERAL PROVISIONS

SEC. 501. None of the funds appropriated by this Act may be used in any way, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. 1913.

SEC. 502. None of the funds made available by this Act may be used in contravention of Executive Order No. 12898 of February 11, 1994 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations).

SEC. 503. (a) None of the funds made available in this Act may be used to maintain or establish a computer network unless such network blocks the viewing, downloading, and exchanging of pornography. (b) Nothing in subsection (a) shall limit the use of funds necessary for any Federal, State, Tribal, or local law enforcement agency or any other entity carrying out criminal investigations, prosecution, or adjudication activities.