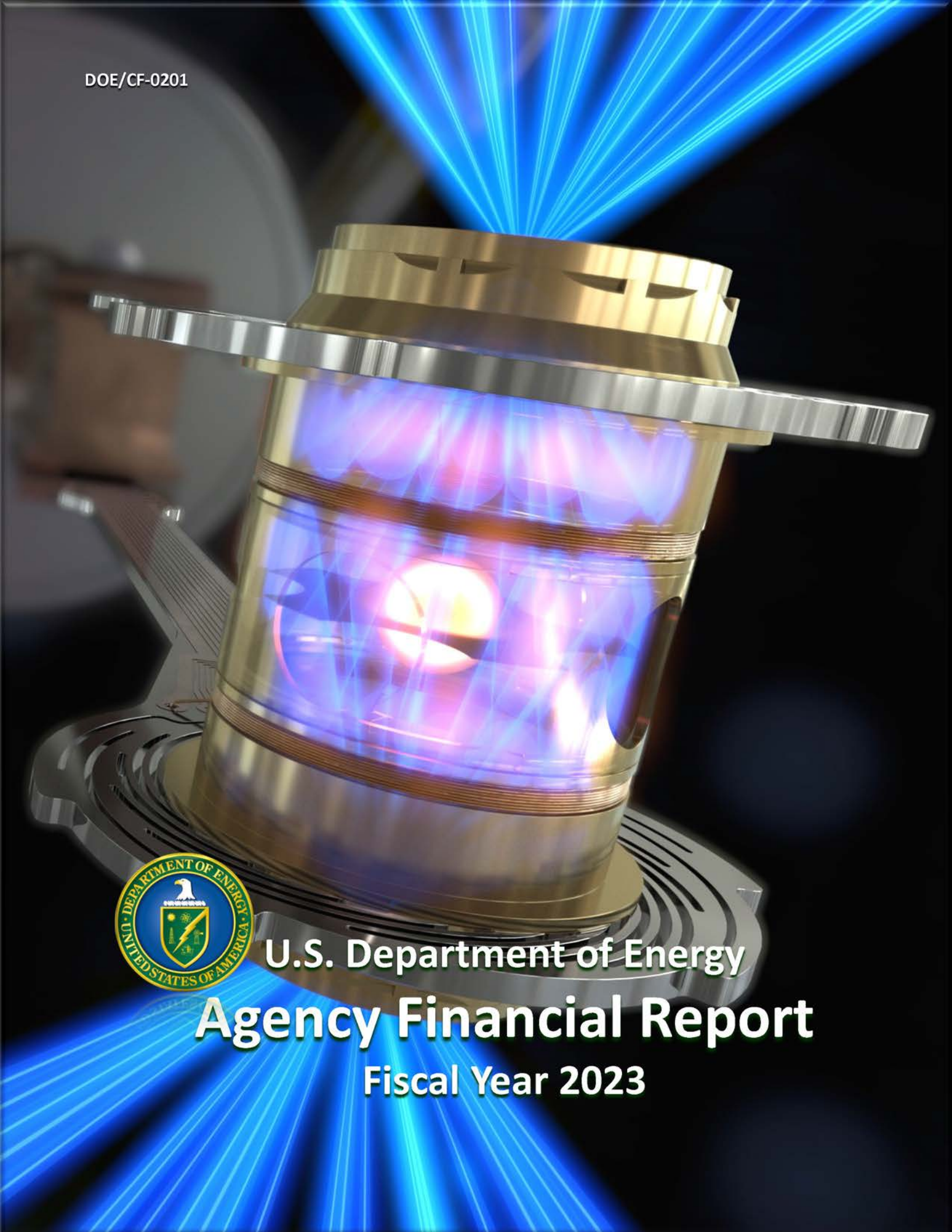
DOE/CF-0201



U.S. Department of Energy

Agency Financial Report

Fiscal Year 2023

About This Report

The mission of the Department of Energy (DOE or Department) is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions. DOE's *Fiscal Year (FY) 2023 Agency Financial Report (AFR)* presents key financial and performance information in support of DOE's mission and demonstrates DOE's accountability to the American people.

DOE's AFR: https://www.energy.gov/cfo/listings/agency-financial-reports

- DOE's AFR is prepared by the Office of the Chief Financial Officer. For more information, please e-mail afrproject@hq.doe.gov.
- **DOE's AFR is presented in three major sections**:
  - **Management's Discussion and Analysis** provides executive-level information on DOE's history, mission, organization, Secretarial priorities, analysis of financial statements, systems, controls and legal compliance, and other management priorities facing the Department.
  - **Financial Results** provides DOE's consolidated and combined financial statements and the Auditors' Report.
  - **Other Information** provides the Inspector General's Statement of Management Challenges and other statutory reporting.
- DOE's audit, inspection, and other reports are available on **DOE's Office of Inspector General (OIG)** website: https://www.energy.gov/ig/office-inspector-general.
- DOE's financial results are included in the annual **Financial Report of the United States Government** website: https://www.fiscal.treasury.gov/reports-statements/financial-report/.

DOE's AFR meets the following reporting requirements:

- Office of Management and Budget (OMB) Circular A-136, *Financial Reporting Requirements*
- Payment Integrity Information Act of 2019 (PIIA)
- Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act)
- Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015
- Digital Accountability and Transparency Act of 2014 (DATA Act)
- Federal Information Security Modernization Act of 2014 (FISMA)
- Government Performance and Results Act Modernization Act of 2010 (GPRAMA)
- Reports Consolidation Act of 2000
- Federal Financial Management Improvement Act of 1996 (FFMIA)
- Government Management Reform Act of 1994 (GMRA)
- Government Performance and Results Act of 1993 (GPRA)
- Federal Managers' Financial Integrity Act of 1982 (FMFIA)
- Prompt Payment Act of 1982

DOE's Annual Performance Report/Annual Performance Plan (APPR): https://www.energy.gov/budget-performance
The APPR provides detailed performance information and descriptions of results for each performance measure, and performance targets for the current and upcoming fiscal years, including performance measures related to the DOE Management Priorities as required by the GPRAMA.

Photo Captions: See inside back cover.

Connect with DOE on social media:

- **Facebook** https://www.facebook.com/energygov
- **Flickr** https://www.flickr.com/photos/departmentofenergy/
- **Instagram** https://www.instagram.com/energy/
- **LinkedIn** https://www.linkedin.com/company/u-s--department-of-energy
- **Pinterest** https://www.pinterest.com/energy/
- **Vimeo** https://vimeo.com/energygov
- **X (Twitter)** https://twitter.com/ENERGY
- **YouTube** https://www.youtube.com/c/EnergyGov

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Message from the Secretary of Energy (Unaudited)

Department of Energy's Mission

Ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions.

I am pleased to present the United States Department of Energy's (DOE) Fiscal Year (FY) 2023 Agency Financial Report. This report provides DOE's key performance and financial information and demonstrates DOE's commitment to meeting the Administration's priorities by:

1. Driving U.S. Energy Innovation and Deployment on a Path to Net-Zero Emissions by 2050;
2. Advancing Scientific Discovery;
3. Strengthening and Modernizing National Nuclear Security;
4. Creating New Jobs and Research Opportunities in the Energy Economy; and
5. Building a Modern, Sustainable Cybersecurity Infrastructure.

In FY 2023, the Department furthered progress in each priority and remained "America's Solutions Department" through continued investments in scientific research, clean energy, nuclear security, and environmental cleanup, all while addressing the impacts of racial and economic inequalities.

In FY 2023, the Department advanced clean energy initiatives while Driving U.S. Energy Innovation and Deployment on a Path to Net-Zero Emissions by 2050. The Department focused on clean energy solutions within various sectors – including Solar, Wind, Water, Hydrogen, Advanced Nuclear, Long Duration Energy Storage, Carbon Management, Geothermal, and Industrial Decarbonization – and formed critical partnerships within private industry. The Office of Nuclear Energy documented the initial results of the Advanced Gas Reactor-5/6/7 nuclear fuel experiments to accelerate deployment of high temperature advanced reactors. The Department's achievements in battery research, manufacturing, processing, and workforce furthered progress towards establishing a national charging network and decarbonizing the transportation sector. Funding from the Bipartisan Infrastructure Law and Inflation Reduction Act was instrumental in our endeavors and will continue to propel the Nation to a more secure energy future.

Also in FY 2023, the Department Advanced Scientific Discovery with achievements that caused excitement throughout the scientific community. The National Nuclear Security Administration (NNSA) achieved fusion yields greater than 1 megajoule five times and achieved fusion ignition, which is a first-of-its-kind capability anywhere around the world. The Department of Science (SC) produced a compound from yeast to advance economically feasible biofuels and bioproducts production. The newest SC user facility– the Facility for Rare Isotope Beams – made more than 210 rare-isotope beams for experiments involving 180 institutions representing 50 countries. Furthermore, the Nation's first exascale supercomputer established the U.S. as a global leader in high resolution prediction science while researchers worked on the next generation of greener advanced computing.

NNSA's nuclear deterrence mission remains the cornerstone of our Nation's security posture as the Department continued Strengthening and Modernizing National Nuclear Security. For the 26th consecutive year, NNSA's science-based Stockpile Stewardship Program enabled DOE and the Department of Defense (DOD) to certify to the President the safety, security, and effectiveness of the

U.S. nuclear weapons stockpile without the use of nuclear explosive testing. NNSA's ongoing warhead modernization activities ensure that the U.S. nuclear weapons stockpile continues to meet DOD requirements while enhancing safety and security through alteration, modification, and life extension programs.

The Department was dedicated to Creating New Jobs and Research Opportunities in the Energy Economy in FY 2023. DOE outreach continued expanding for communities that were disproportionately impacted, including Tribal and other disadvantaged communities, Minority-serving Institutions, Emerging Research Institutions, and Minority-owned Businesses. The Office of Economic Impact and Diversity worked with the Black Owners of Solar Services (BOSS) and hosted the inaugural Minority Business Enterprise (MBE) Summit. The Department also generated hundreds of new jobs, training opportunities, and research activities in the energy sectors and battery manufacturing.

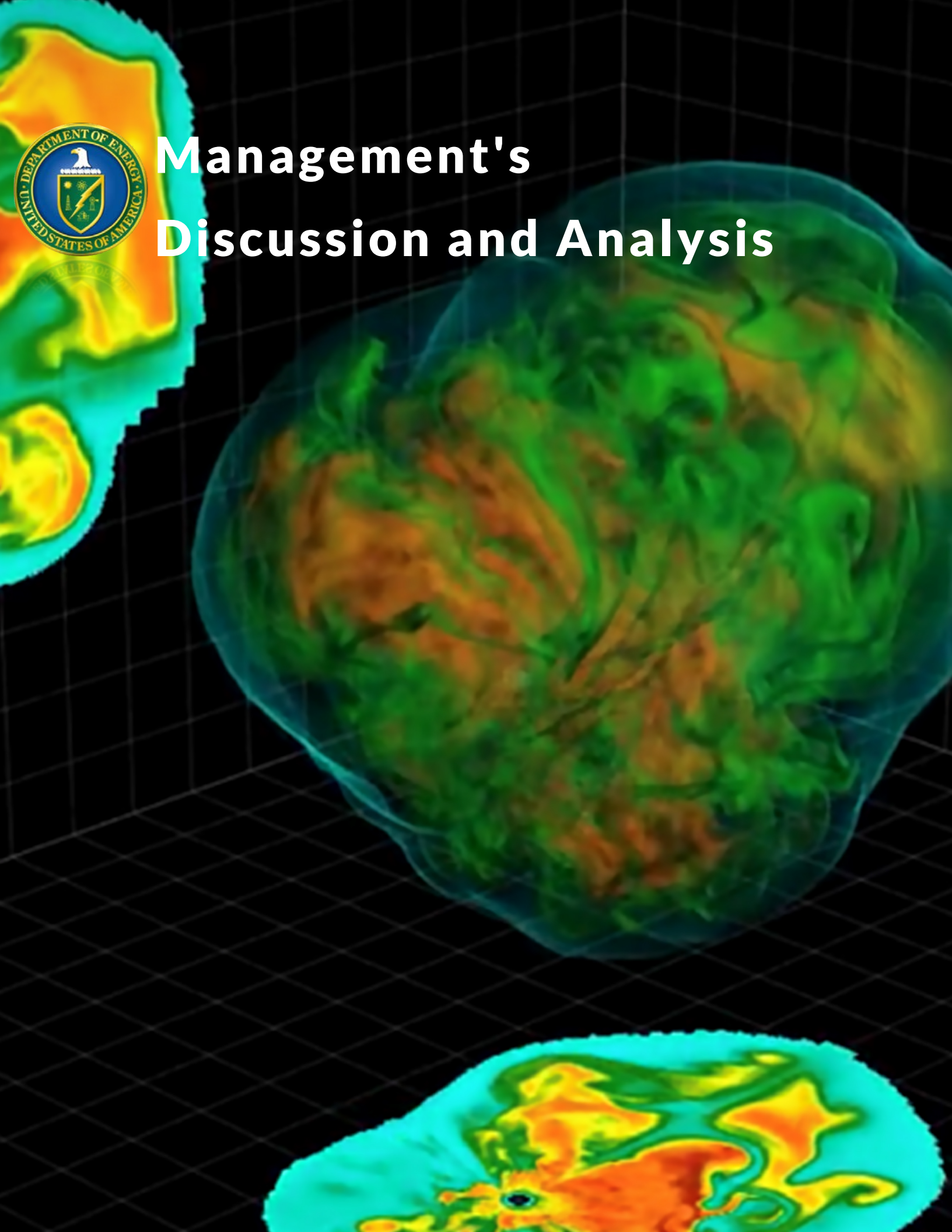
DOE is Building a Modern, Sustainable Cybersecurity Infrastructure while also moving the Nation closer to a secure and resilient EV charging infrastructure. The Department helped establish self-reliant communities and developed methods to secure connections, networks, and external interfaces. Further, the Office of the Chief Information Officer (OCIO) improved and expanded the adoption of Technology Business Management (TBM) framework across the enterprise. OCIO actively socialized TBM to all stakeholders and implemented internal processes and tools to increase utilization and help drive value-based decision-making on IT investments.

The Department accomplished all this while also responding to near-term crises. DOE helped restore and improve access to electrical power to Americans recovering from natural disasters in Puerto Rico, Hawaii, and across the Southeast U.S. We also provided equipment, training, and technical expertise to the people of Ukraine as they respond to Russia's unprovoked aggression. We are working with our Ukrainian counterparts to protect their electrical grid from Russian missile and drone attacks and reduce nuclear and radiological risks across Ukraine.

The independent public accounting firm KPMG LLP conducted an audit of the FY 2023 DOE financial statements contained in this report and issued an unmodified audit opinion for the 17th consecutive year. Based on internal evaluations, I can provide reasonable assurance that the financial and performance information contained in this report is complete and reliable, and accurately describes the results achieved by the Department in FY 2023.

DOE has continued its excellence in operations throughout the enterprise due to the hard work and resilience of its dedicated Federal and contractor workforce and the successes in this report would not have been possible without them.

Jennifer M. Granholm
Secretary of Energy
November 15, 2023



Management's Discussion and Analysis

Agency Highlights

MISSION

The mission of the Department of Energy is to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions.

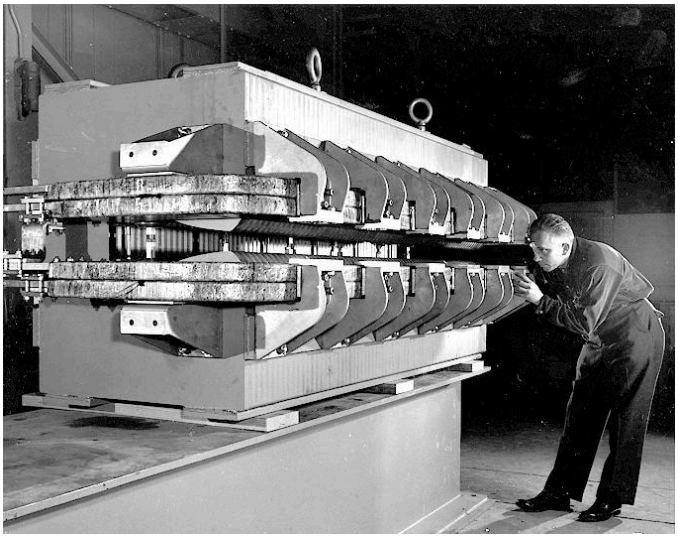
History

The Department of Energy's lineage can be traced back to the Manhattan Project and the race to develop the atomic bomb during World War II. Following the war, Congress created the Atomic Energy Commission (Commission) in 1946 to oversee the sprawling nuclear scientific and industrial complex supporting the Manhattan Project and maintain civilian Government control over atomic research and development (R&D). During the early Cold War years, the Commission focused on designing and producing nuclear weapons and developing nuclear reactors for naval propulsion. The creation of the Commission ended the exclusive Government use of the atom and began the growth of the commercial nuclear power industry, with the Commission having authority to regulate the new industry.

In response to changing needs and an extended energy crisis, the Congress passed the Department of Energy Organization Act in 1977, creating one of the most diverse agencies in the Federal Government. That legislation brought together for the first time not only most of the Government's energy programs, but also science and technology programs and defense responsibilities that included the design, construction, and testing of nuclear weapons. The Department provided the framework for a comprehensive and balanced national energy plan by coordinating and administering the energy functions of the Federal Government. The Department undertook responsibility for long-term, high-risk R&D of energy technology, Federal power marketing, energy conservation activities, the nuclear weapons programs, certain energy regulatory programs, and a central energy data collection and analysis program.

Over its history, the Department has shifted its emphasis and focus as the energy and security needs of the Nation have changed. During the late 1970s, the Department emphasized energy development and regulation but shifted to nuclear weapons R&D and production during the 1980s. With the end of the Cold War, DOE focused on environmental cleanup of the nuclear weapons complex, as well as nonproliferation and stewardship of the nuclear stockpile. Today, the Department is committed to meeting America's energy, nuclear security, and environmental challenges through science and technology innovation.

Historical photo: The card reader sorted keypunched cards for data entry to the first mainframe computer at Fernald, an IBM1620, located in the Accounting Division. Photo posted at https://www.flickr.com/photos/departmentofenergy/29242374641/in/photostream/.



Historical photo: Inspecting pilot magnet C#1 of Brookhaven's Alternating Gradient Synchrotron (AGS). The AGS became the world's premiere accelerator when it reached its design energy of 33 billion electron volts (GeV) on July 29, 1960. Until 1968, the AGS was the highest energy accelerator in the world. Photo posted at https://www.flickr.com/photos/bro okhavenlab/8495311598/in/album-72157611796003039/.

FY 2023 DOE Highlight: Achieving Fusion Ignition

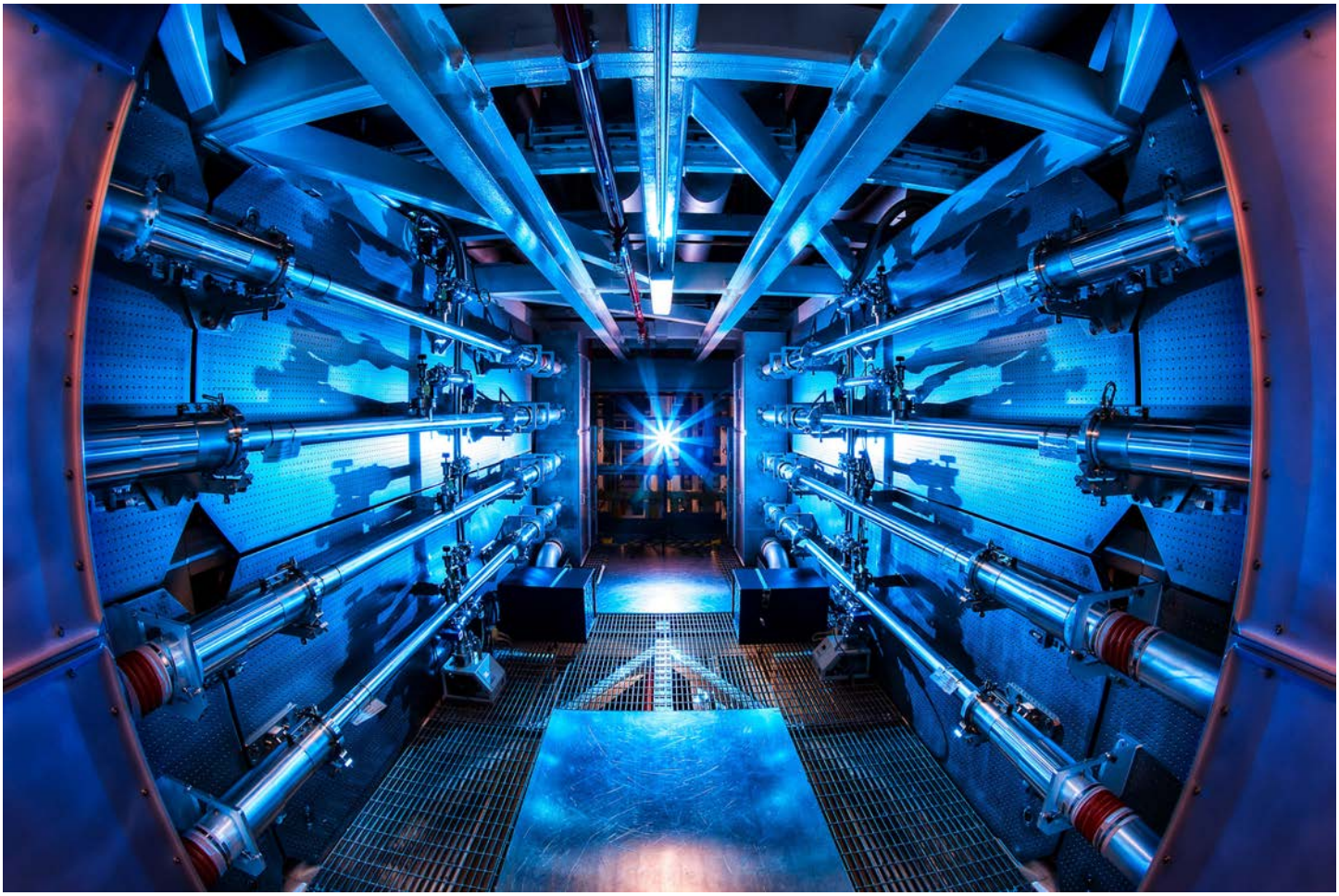
On December 5, 2022, DOE's Lawrence Livermore National Laboratory (LLNL) made history by demonstrating fusion ignition for the first time in a laboratory setting, an achievement six decades in the making. Fusion ignition will provide unprecedented capability to support the National Nuclear Security Administration's (NNSA) Stockpile Stewardship Program and invaluable insights into the prospects of clean fusion energy.

"This is a landmark achievement for the researchers and staff at the National Ignition Facility (NIF) who have dedicated their careers to seeing fusion ignition become a reality, and this milestone will undoubtedly spark even more discovery," said U.S. Secretary of Energy Jennifer M. Granholm.

Kim Budil, Director of LLNL, said, "The pursuit of fusion ignition in the laboratory is one of the most significant scientific challenges ever tackled by humanity. Achieving it is a triumph of science, engineering, and, most of all, people."

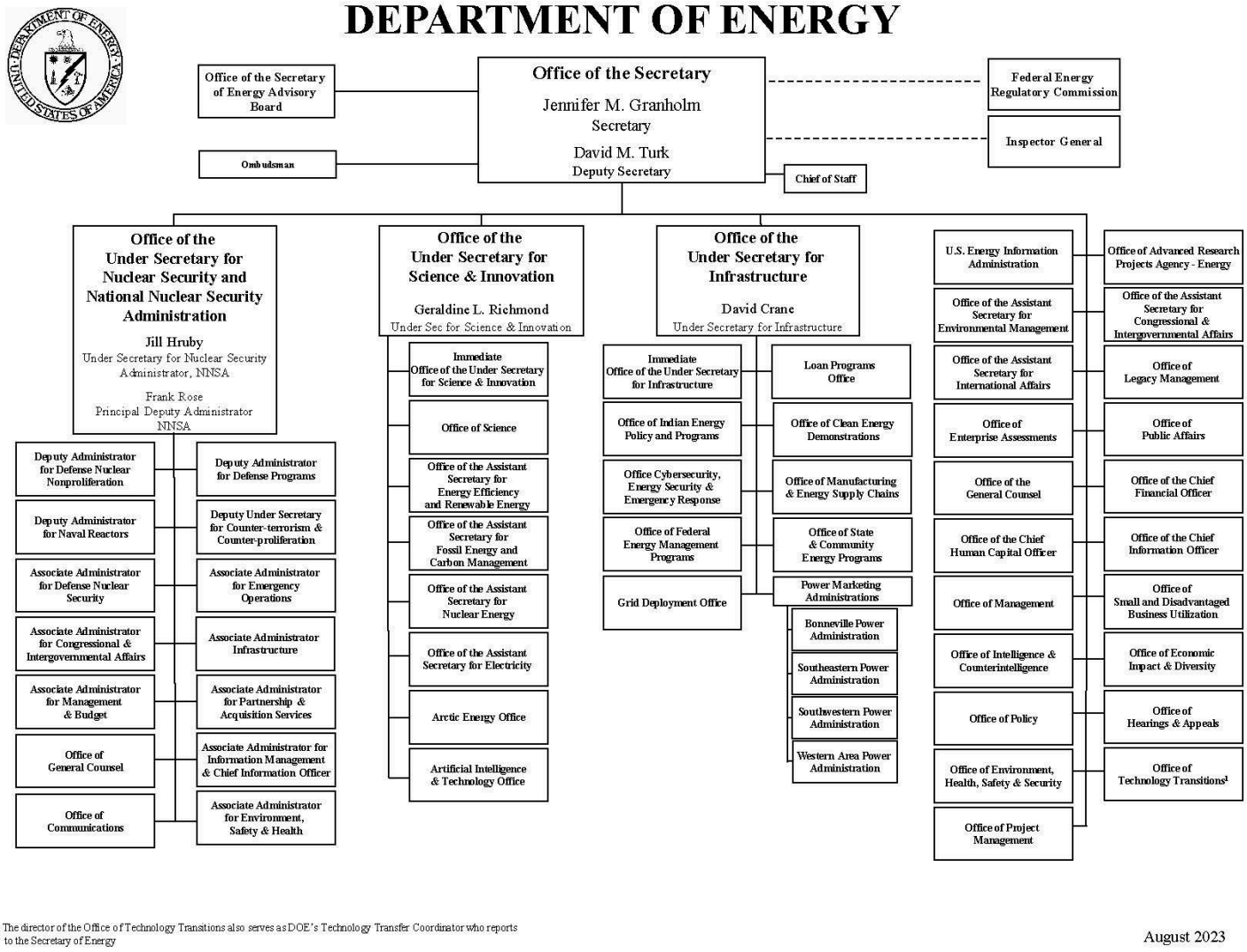
Continuing the story from the Agency Financial Report's (AFR) cover photo, this is a color-enhanced image of the inside of a NIF preamplifier support structure. Photo by Damien Jemison/LLNL.

For more information, visit https://www.llnl.gov/news/ignition.



Organizational Structure

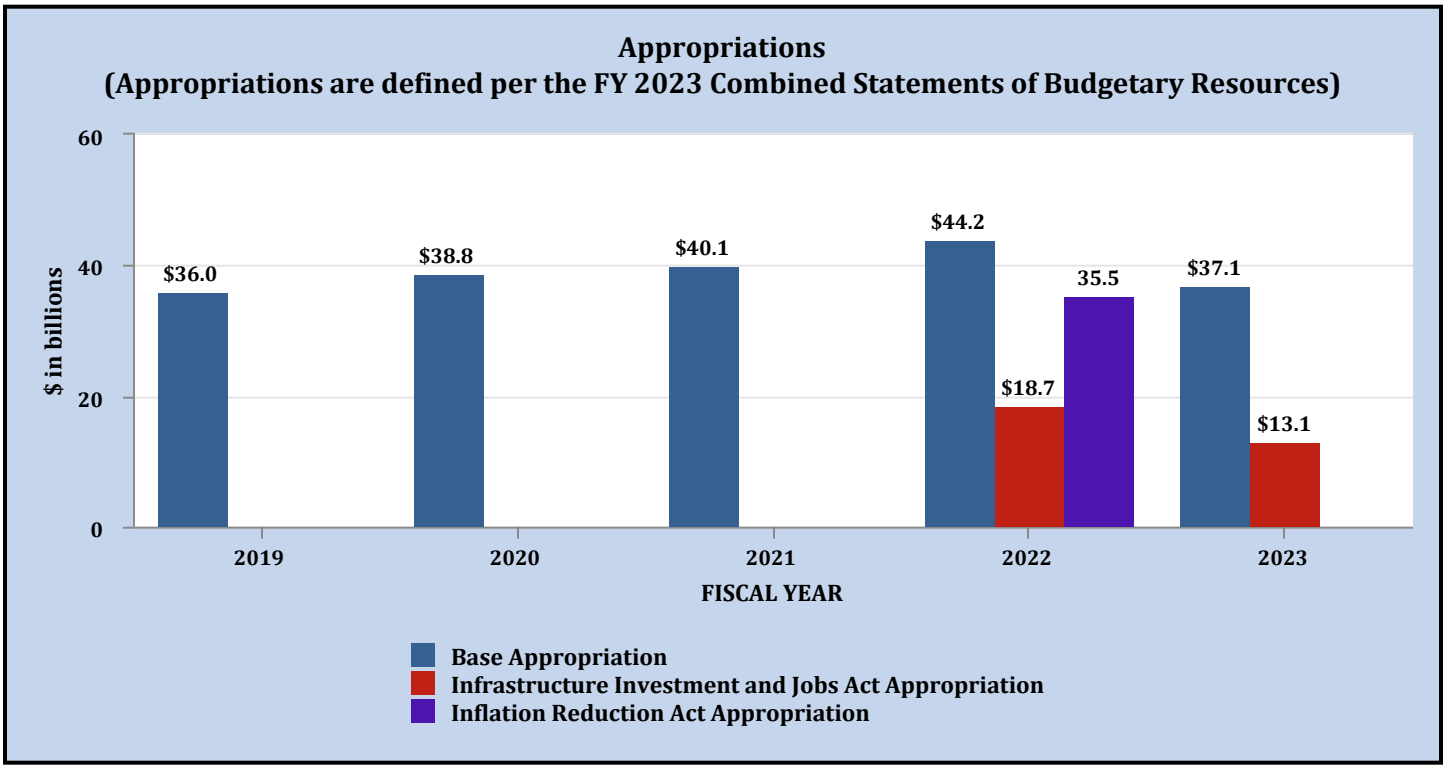
Organizational structure as of August 2023. For more information, visit https://www.energy.gov/organization-chart.



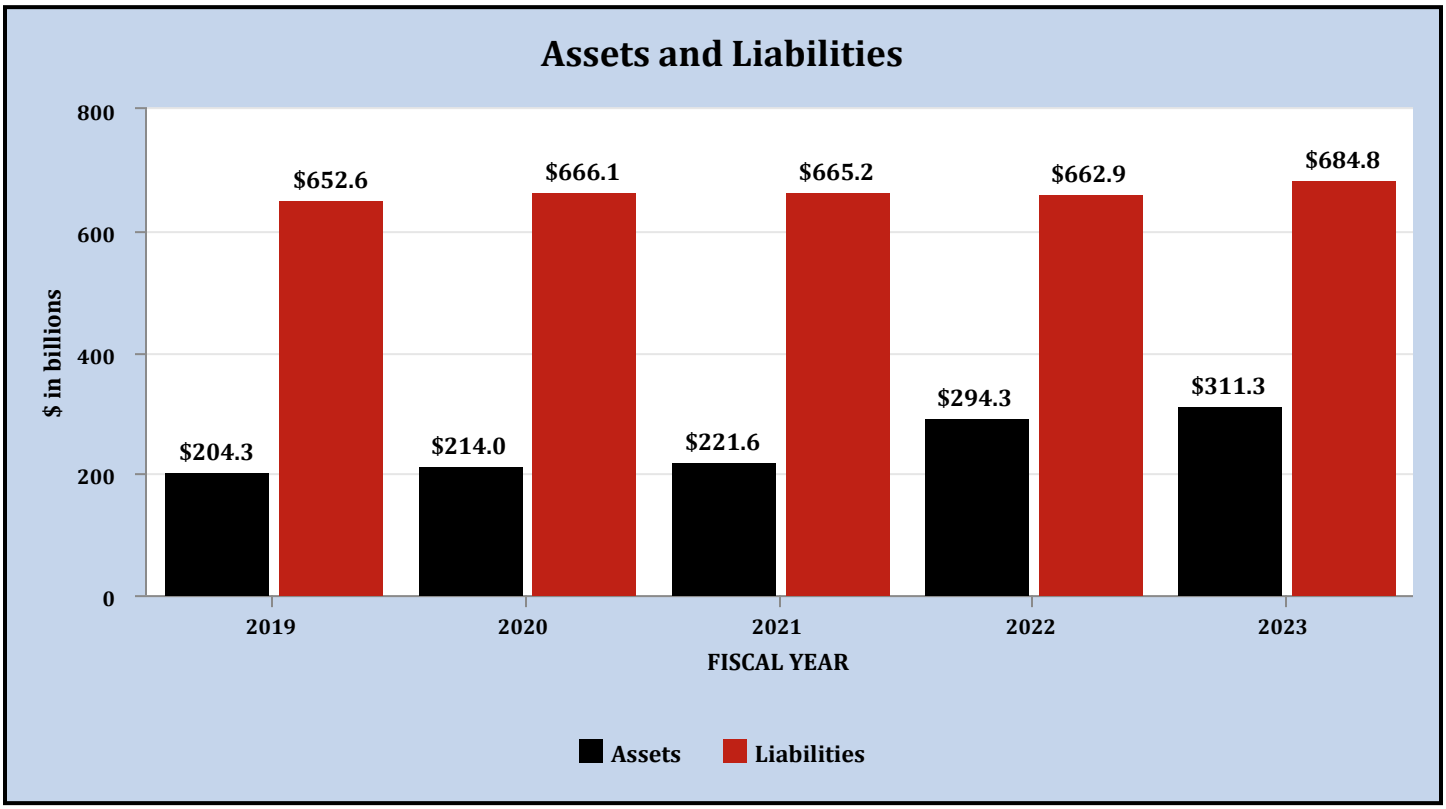
[1] The director of the Office of Technology Transitions also serves as DOE's Technology Transfer Coordinator who reports to the Secretary of Energy

August 2023

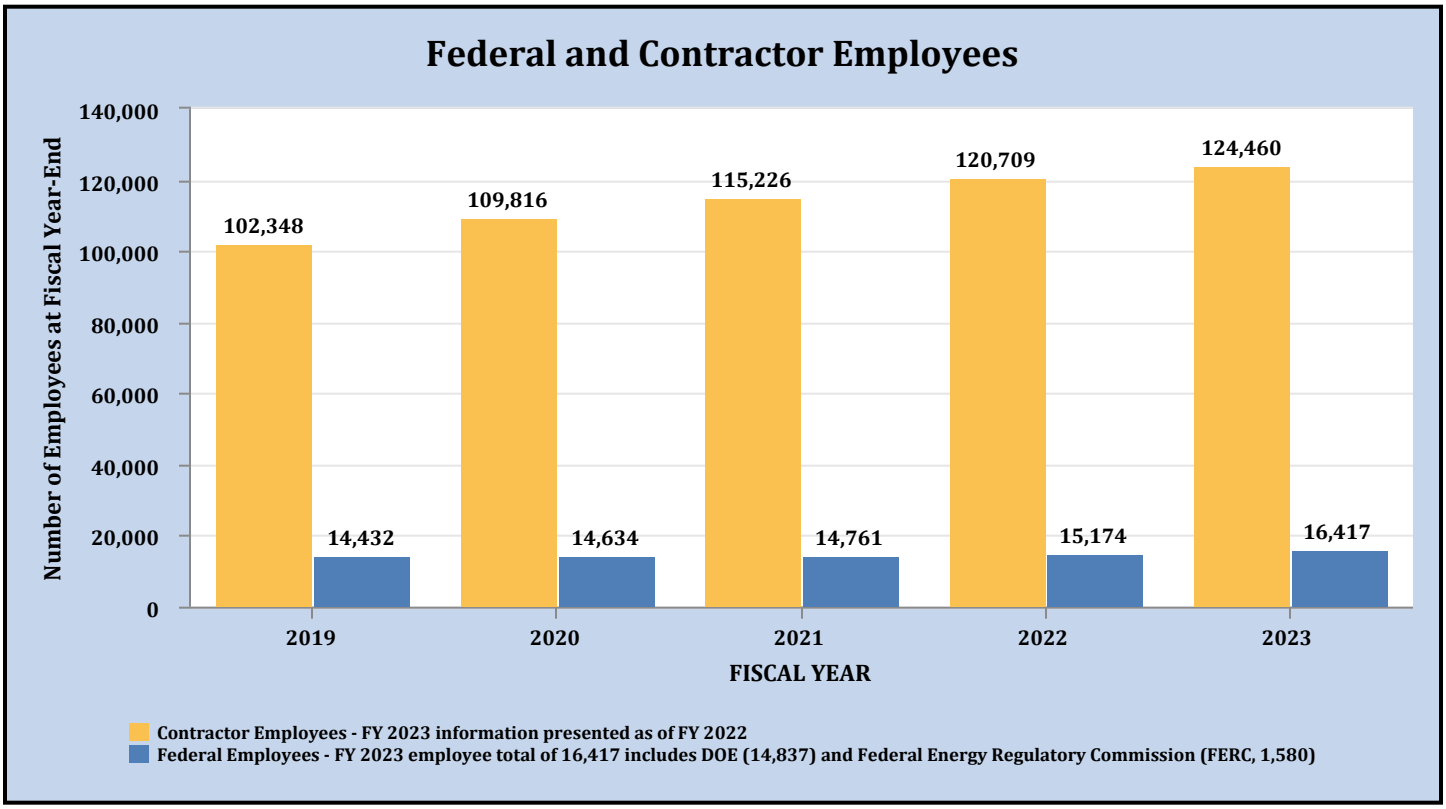
Financial Resources



Appropriations amounts include appropriated receipts, transfers, reductions, and temporarily not available. The $50.2 billion of FY 2023 appropriations shown above differs from the Budget in Brief amount of $45.8 billion due to the Budget in Brief amount not including supplemental and rescissions included in the FY 2023 enacted appropriation language.



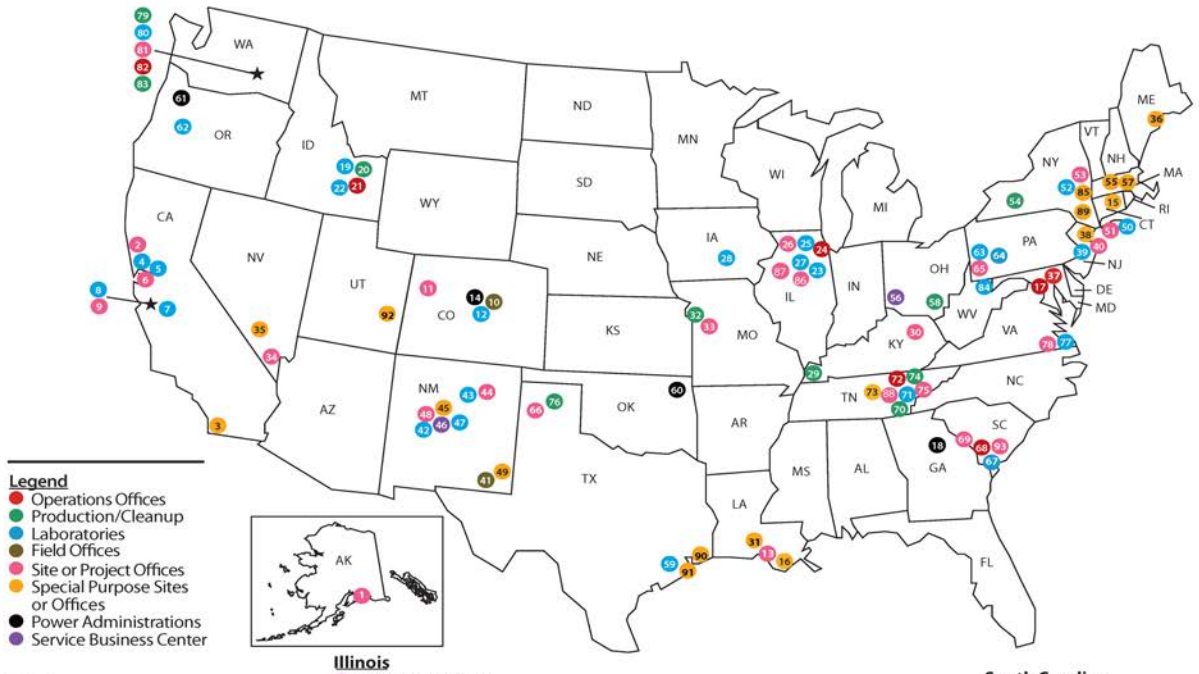
Human Capital Resources



FY 2023 Financial Management Report Card

COMPLIANCE		REQUIREMENT OR INITIATIVE	SUPPORTING INDICATORS (see page references for more detail)
YES	NO		
✓		Government Management Reform Act of 1994 (GMRA) – Financial Statement Audit	Unmodified Audit Opinion (see pages 160-169)
✓		Federal Managers' Financial Integrity Act of 1982 (FMFIA) – Internal Controls (Section II) – Financial Systems (Section IV)	No Material Weaknesses (Section II) (see pages 55-56 and 172) Financial Systems generally conform to (Section IV) requirements (see pages 55-56 and 172)
✓		Appendix A to OMB Circular No. A-123, Management of Reporting and Data Integrity Risk (2018)	No Material Weaknesses (see pages 55-56 and 172)
✓		Federal Financial Management Improvement Act of 1996 (FFMIA)	Substantially comply with Federal financial management system requirements (see pages 55-56 and 172)
✓		Federal Information Security Modernization Act of 2014 (FISMA)	Substantially comply with FISMA requirements as evidenced by annual FISMA reporting data (see pages 55-56 and 172)
✓		Payment Integrity Information Act of 2019 (PIIA)	<1 percent overall Erroneous Payment Rate and not susceptible to significant improper payments (see pages 183-185)

Major Laboratories and Field Facilities



Legend
- Operations Offices
- Production/Cleanup
- Laboratories
- Field Offices
- Site or Project Offices
- Special Purpose Sites or Offices
- Power Administrations
- Service Business Center

Alaska
1 Arctic Energy Office

California
2 Berkeley Site Office
3 Energy Technology Engineering Center
4 Lawrence Berkeley National Laboratory
5 Lawrence Livermore National Laboratory
6 Livermore Field Office
7 Sandia National Laboratories
8 SLAC National Accelerator Laboratory
9 SLAC Site Office

Colorado
10 Golden Field Office
11 Grand Junction Office
12 National Renewable Energy Laboratory
14 Western Area Power Administration

Connecticut
15 Northeast Home Heating Oil Reserve

District of Columbia
17 Washington D.C. Headquarters

Georgia
18 Southeastern Power Administration

Idaho
19 20 Idaho National Laboratory
21 Idaho Operations Office
22 Radiological Environmental Sciences Laboratory

Illinois
87 Ames Site Office
23 Argonne National Laboratory
86 Argonne Site Office
24 Consolidated Service Center (Lemont)
25 Fermi National Accelerator Laboratory
26 Fermi Site Office
27 New Brunswick Laboratory

Iowa
28 Ames Laboratory

Kentucky
29 Paducah Gaseous Diffusion Plant
30 Portsmouth/Paducah Project Office

Louisiana
13 Strategic Petroleum Reserve (SPR) Project Management Office
16 SPR - West Hackberry Site
31 SPR - Bayou Choctaw Site

Maine
36 Northeast Gasoline Supply Reserve

Maryland
37 DOE Headquarters - Germantown Campus

Massachusetts
55 Northeast Gasoline Supply Reserve
57 Northeast Home Heating Oil Reserve

Missouri
32 Kansas City National Security Campus
33 Kansas City Field Office

Nevada
34 Nevada Field Office
35 Nevada National Security Site

New Jersey
38 Northeast Home Heating Oil Reserve
39 Princeton Plasma Physics Laboratory
40 Princeton Site Office

New Mexico
41 Carlsbad Field Office
42 Inhalation Toxicology Research Institute
43 Los Alamos National Laboratory
44 Los Alamos Field Office
45 National Training Center
46 NNSA Albuquerque Complex
47 Sandia National Laboratories
48 Sandia Field Office
49 Waste Isolation Pilot Plant

New York
50 Brookhaven National Laboratory
51 Brookhaven Site Office
52 Knolls Atomic Power Laboratory
53 Naval Reactors Laboratory Field Office - Schenectady
54 West Valley Demonstration Project
85 Separations Process Research Unit
89 Northeast Gasoline Supply Reserve

Ohio
56 EM Consolidated Business Center
58 Portsmouth Gaseous Diffusion Plant

Oklahoma
60 Southwestern Power Administration

Oregon
61 Bonneville Power Administration
62 National Energy Technology Laboratory – Albany

Pennsylvania
63 Bettis Atomic Power Laboratory
64 National Energy Technology Laboratory –Pittsburgh
65 Naval Reactors Laboratory Field Office - Pittsburgh

South Carolina
67 Savannah River National Laboratory
68 Savannah River Operations Office
69 Savannah River Field Office
93 Savannah River Site

Tennessee
70 East Tennessee Technology Park
71 Oak Ridge National Laboratory
48 Oak Ridge National Laboratory Site Office
72 Consolidated Service Center (Oak Ridge)
73 Office of Scientific and Technical Information
74 Y-12 National Security Complex
75 NNSA Production Office - Oak Ridge

Texas
76 Pantex Plant
66 NNSA Production Office - Amarillo
59 National Energy Technology Lab – Sugar Land
90 Strategic Petroleum Reserve - Big Hill Site
91 Strategic Petroleum Reserve - Bryan Mound Site

Utah
92 Moab UMTRA Project

Virginia
77 Thomas Jefferson National Accelerator Facility
78 Thomas Jefferson Site Office

Washington
79 Hanford Site
80 Pacific Northwest National Laboratory
81 Pacific Northwest Site Office
82 Richland Operations Office
83 Office of River Protection

West Virginia
84 National Energy Technology Laboratory – Morgantown

Program Performance

FY 2023 results and outcomes for DOE programs, as aligned with the strategic goals presented in the draft 2022-2026 DOE Strategic Plan, are summarized within this report. A detailed discussion of results for the Department's performance goals, assessment methodologies, metrics, external reviews, and documentation of performance data are presented in the *DOE Annual Performance Report*. Additional performance information is available at http://energy.gov/about-us/budget-performance.

Drive U.S. Energy Innovation and Deployment on a Path to Net-Zero Emissions by 2050

Participating Programs	
• Advanced Research Projects Agency-Energy • Arctic Energy • Clean Energy Demonstrations • Electricity • Energy Efficiency and Renewable Energy • Fossil Energy and Carbon Management • Federal Energy Management Program • Grid Deployment	• Loan Programs • Manufacturing and Energy Supply Chains • Nuclear Energy • Policy • Science • State and Community Energy Programs • Technology Transitions

The Biden-Harris Administration's Long-Term Strategy calls for the United States to achieve a clean energy economy with net-zero emissions no later than 2050, with an interim target of reducing greenhouse gas emissions 50-52 percent below 2005 levels by 2030. To meet this challenge, DOE will facilitate unprecedented advances in scientific research, applied energy R&D, and the deployment and commercialization of clean energy technologies. Throughout the clean energy transition, DOE will work to ensure that all Americans retain access to affordable, reliable energy, and benefit from the creation of millions of quality jobs in the clean energy economy. DOE's collaboration with international partners will further amplify the benefits to American workers and communities as it supports partners in achieving their own clean energy and economic goals. Examples of FY 2023 program accomplishments in these areas include:

Drive innovation of cost-efficient and affordable clean technologies and solutions through Research, Development, Demonstration and Deployment (RDD&D)

Office of Energy Efficiency and Renewable Energy (EERE)
EERE's Hydrogen and Fuel Cell Technologies Office has made investments to drive down the cost of platinum-group-metal-free catalysts by approximately 60 percent from the 2021 baseline. EERE's Bioenergy Technologies Office has supported a range of industry partners in developing feedstocks and processes that decrease sustainable aviation fuel costs by 33 cents/gallon and achieve an 80 percent reduction in greenhouse gas emissions compared to petroleum-based jet fuel.

Office of Fossil Energy and Carbon Management (FECM)
FECM developed a natural gas-reciprocating compressor and natural gas-fueled engine retrofit technologies that optimize operation and eliminate fugitive emissions. Results were impressive, including achieving reductions of 84 percent in methane emissions and 63 percent in volatile organic compounds.

An FECM-supported project has successfully performed experiments for an environmentally benign process to extract, separate, recover, and purify germanium and gallium from lignite coal-derived rare earth element (REE) concentrates produced from lignite.

Five Carbon Storage Assurance Facility Enterprise (CarbonSAFE) Phase III projects successfully submitted 15 applications for permits to construct Underground Injection Control (UIC) Class VI injection wells for commercial storage facilities in accordance with U.S. Environmental Protection Agency (EPA) or equivalent state regulations: seven permit applications covered sites in four states and eight permit applications (submitted by private entities using detailed geologic and geophysical data collected at the sites under previously completed Phase II projects) covered sites in two states. On July 7, 2023, EPA announced intentions to issue permits to Wabash Valley Resources for construction of two Class VI wells at a site in Indiana.

In addition, FECM distributed Clean Energy Demonstration of 15 Solid Oxide Fuel Cell Systems (1.5 kW each) operating at the National Aeronautics and Space Administration (NASA) Independent Verification and Validation (IV&V) facility in Fairmont, WV; demonstrated moving bed microwave-enhanced gasifier at lab-scale; developed the compact Raman Gas Analyzer, which will provide real-time information on fuel gas blends for turbines; added several capabilities with respect to plastics

gasification to the Multi-Phase Flow with Interphase Exchanges software platform to enable this waste feedstock to be modeled in gasifiers; supported a Cooperative Research and Development Agreement with Argonne National Laboratory (ANL) and Baker Hughes to demonstrate a hydrogen/natural gas (H_2/NG) blend sensor for control of combustion turbines firing variable blends of H_2 with NG; and developed a defensible, cost-effective, easy-to-use means to estimate methane flow rate from orphan wells through Gaussian plume models.

Office of Electricity (OE)
OE modeling has established that the overall system cost of a 1–100 MW system at 1 to 10 hours duration, including manufacturing, battery management system, and additional components such as cables and sensors, is approximately $133/kWh and not dependent on duration or power levels. This continues previously demonstrated storage cost reductions from 2020 baselines (approximately $200/kWh).

Office of Nuclear Energy (NE)
Researchers at Idaho National Laboratory (INL), Oak Ridge National Laboratory (ORNL), and ANL collaborated with a broad set of stakeholders in performing materials R&D activities to advance a design code to facilitate the use of materials for high-temperature nuclear applications. The Nuclear Regulatory Commission (NRC) officially endorsed this design code, which was published by the American Society of Mechanical Engineers (ASME), for use in January 2023. This endorsement will help reduce the regulatory risk for advanced reactors and enable the use of high-temperature reactors to meet the United States' energy security and climate change goals.

Researchers at INL documented the initial results of the Advanced Gas Reactor (AGR)-5/6/7 nuclear fuel experiment—the final in a series of experiments for the AGR Fuel Development Program which began in 2002. This latest work documents post-irradiation disassembly and metrology of irradiated fuel specimens and prepares for a series of activities to evaluate fuel performance under the extreme conditions of a nuclear reactor core. ANL removed Thermal Hydraulic Experimental Test Article (THETA) from its sodium vessel and outfitted with new thermal insulators around the core barrel and intermediate heat exchangers.

Office of Policy (OP)
OP conducted several analyses in the past year that help the U.S. Government, private sector, and public at-large better understand the path toward achieving the Administration's clean energy and greenhouse gas emissions reductions goals. Analysis included "On the Path to 100 percent Clean Electricity," a report that outlines the key actions that the U.S. can take to accelerate the safe and rapid expansion of clean electricity throughout the economy. DOE's National Renewable Energy Laboratory (NREL) and OP released an analysis evaluating the impacts of the Inflation Reduction Act of 2022 (IRA) and Bipartisan Infrastructure Law (BIL) on the U.S. Power System, showing that the IRA and BIL, along with related technology advances, have the potential to drive transformational benefits. Finally, DOE released an economy-wide report with analysis demonstrating that the IRA and BIL have positioned the U.S. to achieve significantly reduced emissions, lower electricity costs, accelerated clean energy deployment, and reduced net crude oil imports and, thus, a more secure energy future.

Office of Science (SC)
The ANL-led Joint Center for Energy Storage Research (JCESR - DOE's Batteries and Energy Storage Energy Innovation Hub), completed 10 years of ground-breaking research for beyond lithium-ion (Li-ion) batteries, generating over 1,000 journal papers, nearly 100 inventions, 34 patents, and three startups. In addition, JCESR pioneered data/artificial intelligence (AI)/machine learning (ML) approaches for battery research that are available to the research/industrial community as part of the Lawrence Berkeley National Laboratory's (LBNL) Materials Project's online data and software. Furthermore, JCESR trained more than 330 students and postdoctoral researchers who now have careers in academia, industry, and at DOE national laboratories.

Advanced Research Projects Agency-Energy (ARPA-E)
In FY 2023, ARPA-E announced the Grid Overhaul with Proactive, High-Speed Undergrounding for Reliability, Resilience, and Security program to decrease the cost for and simplify construction of underground medium-voltage power distribution grids to enhance resiliency and reliability. In addition, ARPA-E performer Ampaire demonstrated hybrid electric flight in Alaska—a technology that could be vital to remote native villages to reduce energy costs and emissions.

Office of Manufacturing and Energy Supply Chains (MESC)
The MESC Battery Manufacturing team led the development and execution of the Phase 1 BIL Battery Manufacturing and Processing funding opportunity to significantly increase domestic production capacity of critical battery materials (such as lithium, nickel, cobalt, and graphite), battery components, cells and packs, and recycling facilities. This $6 billion Battery Materials Processing Battery Manufacturing and Processing Grant program funded by Section 40207 of the BIL seeks to achieve substantive manufacturing capacity supporting a domestic battery ecosystem.

MESC continued to implement $80 million in BIL grant funding for small- and medium-sized manufacturing firms (SMM) to implement recommendations made in two DOE-supported assessment programs. The Industrial Assessment Center (IAC) and Combined Heat and Power Technical Assistance Partnership (CHP TAP) programs provide in-depth assessments at SMMs, which comprise more than 90 percent of the nation's manufacturing base, to identify cost-effective opportunities to improve manufacturers' energy efficiency, increase competitiveness, and reduce emissions.

Federal Energy Management Program (FEMP)
FEMP undertook applied research and development initiatives to address real-world technical and

procurement challenges faced by Federal agencies and stakeholders, fostering greater efficiency, innovation, and scalability in their deployment. The result of these initiatives included updating 32 product categories (including 29 products covered by other Government programs, EnergyStar, and the Electronic Product Environmental Assessment Tool [EPEAT]) to determine the top 25 percent of energy efficiency for each product category.

Office of Technology Transitions (OTT)
OTT established the Department's first Partnership Intermediary Agreement (PIA), a new funding mechanism that provides greater flexibility for execution of funding programs across the DOE. PIA received 17 orders in half a year of operations. OTT also selectively supported prize design efforts across the Department.

The first program to make use of PIA was the new Voucher Program, announced by OTT in July 2023 in partnership with OCED, FECM, and EERE. The Voucher Program provides $32 million in commercialization support to organizations that have a role in bringing innovative energy technologies to market Nation-wide. The Voucher Program leverages DOE's recent partnership intermediary agreement with ENERGYWERX.

OTT built an entirely new team to manage the Technology Commercialization Fund (TCF) for the BIL and launched 12 new innovative programs, including the Manufacture of Advanced Key Energy Infrastructure Technologies (MAKE IT) Prize Program, which will award prizes totaling the largest amount ever by a single OTT program at nearly $30 million.

Accelerate deployment of clean technologies at scale and pace

Office of Energy Efficiency and Renewable Energy (EERE)
The Geothermal Technologies Office and the Frontier Observatory for Research in Geothermal Energy was instrumental in enabling Fervo Energy (a geothermal company) to successfully conduct a 30-day well test and break ground on a new greenfield sight for an enhanced geothermal system installation. This funding has helped accelerate progress on EGS demonstration and deployment to fully commercialize the next generation of geothermal systems.

The American Made Solar Prize helped Midday Tech deploy a tool to allow purchasers of carbon offsets to direct their funds to solar installations in Low-Moderate-Income (LMI) and disadvantaged communities, accelerating the pace of community and distributed solar installations across the country.

The Joint Office of Energy and Transportation and NREL released an extensive report detailing the system-wide needs and opportunities for establishing a national charging network capable of supporting 30-42 million plug-in electric vehicles (EV). This report lays out the pathway to building the infrastructure needed to deeply decarbonize the transportation sector and meet present-day and future demand for EVs.

Office of Fossil Energy and Carbon Management (FECM)
FECM joined other DOE offices to contribute to the "Pathways to Commercial Liftoff: Clean Hydrogen" report to establish a common fact base and ongoing dialogue with the private sector around the path to commercial liftoff for critical clean energy technologies, with the goal of catalyzing more rapid and coordinated action across the full technology value chain.

FECM selected 13 semifinalists to receive $100,000 per team for the pre-commercial direct air capture (DAC) prize to implement proposed recruitment strategies and resources that enable DAC innovators and entrepreneurs to develop and scale viable projects.

FECM expanded the Front-End Engineering Design (FEED) portfolio by completing 12 studies at industrial facilities (e.g., H_2, cement, steel, ethanol) and electric generation facilities (e.g., natural gas, coal). This work supports successful demonstration of retrofit-integrated carbon capture, as well as transport and storage projects. FECM also completed validation of a transformational carbon capture technology in a large pilot (10 MW) at Technology Center Mongstad, Norway and started operation of two carbon capture pilots (<1 MW) at NG facilities to validate Carbon Capture and Storage (CCS) system co-benefits, flexible operation, and 99 percent carbon capture efficiency. FECM also developed a version of the National Energy Modeling System with enhancements, including a hydrogen market model, industrial decarbonization, and direct air capture. Further, FECM led active engagement with over 160 CCS contacts from 10 Federal agencies and delivered one multi-day training for in-person and virtual attendees.

Office of Electricity (OE)
OE completed a simulation test validating Microgrid Building Block (MBB) virtual prototype performance for communications, control, and integration. Validation test results on use cases show MBB algorithms can easily adapt to work with different distributed energy resource (DER) penetration levels and with different control and communication capability levels. The results support the MBB objective to facilitate broad microgrid deployment, while reducing customized engineering time and effort.

Office of Clean Energy Demonstrations (OCED)
In February 2023, OCED released two new Funding Opportunity Announcements (FOA): $1.7 billion for Carbon Capture Demonstrations and $820 million for Carbon Capture Large-Scale Pilots. In July/August 2023, OCED completed reviews of proposals submitted in response to the $7 billion Hydrogen Hubs FOA, the $350 million Long Duration Energy Storage (LDES) FOA, and the $30 million LDES National Laboratory Call. In August 2023, $1.2 billion in selections were made to build the Nation's

first two Regional Direct Air Capture (DAC) Hubs. Additionally, OCED received full applications for the approximately $6 billion Industrial Decarbonization Demonstration FOA with merit reviews underway.

In September 2023, OCED released a Request for Proposal (RFP) to support the creation of a new market mechanism for up to $1 billion addressing demand-side challenges in support of the Regional Clean Hydrogen Hubs (H2Hubs). In May 2023, OCED announced nine project selections for over $180 million in Carbon Capture Demonstration FEED studies for industry, natural gas, and coal power plants. OCED released a new $50 million FOA for Distributed Energy Systems that demonstrated the Office's ability to effectively execute on base-level funding in decarbonization activities not addressed through BIL or IRA funding. OCED stood up a DOE Demonstration and Deployment Advisory Board (DDAB) to further its role as a center of excellence for overseeing large demonstration scale projects. Additionally, OCED, in collaboration with the DOE Office of Technology Transitions (OTT), launched several new programs for a total of more than $90 million to support commercialization, demonstration, and deployment of clean energy technologies.

Office of Policy (OP)
OP led and coordinated efforts across the Department to provide technical expertise to the U.S. Department of the Treasury (Treasury), Internal Revenue Service (IRS), and the White House related to development of public guidance and implementation of the 20 energy-related IRA tax credits. The uptake of these tax credits from individuals, families, businesses, nonprofits, Tribes, cities, and states will accelerate deployment and domestic manufacturing of clean energy technologies.

Loan Programs Office (LPO)
LPO has built a pipeline of 177 applications seeking an estimated $157.1 billion as of September 2023 across dozens of clean energy and decarbonization technologies. Over the past year, LPO closed a $2.5 billion loan to Ultium Cells to support Li-ion battery cell manufacturing and a $3 billion partial loan guarantee to Sunnova's Project Hestia to promote access to solar/battery storage services. LPO also announced seven conditional commitments totaling $13.7 billion to Rhyolite Ridge, Redwood Materials, Li-Cycle, CelLink, KORE Power, BlueOval SK, and Eos to support the deployment of critical materials, advanced vehicles and components, and storage projects throughout the U.S.

For emerging technologies, LPO shortened the timeline to access commercial debt and capital markets—mitigating risk and creating a "bridge-to-bankability;" for more mature technologies, as well as LPO financing-enabled expansion of domestic manufacturing and supply chains, while making energy transformation affordable and achievable for American workers, consumers, and communities. Insights from LPO applications contributed to the launch of the Pathways to Commercial Liftoff effort to inform private and public sector decision-making towards accelerated investment in clean energy technologies.

Office of Technology Transitions (OTT)
OTT coordinated the development of eight Pathways to Commercial Liftoff reports and implemented the Adoption Readiness Level framework across the Department to inform $30 billion in funding opportunities through the BIL and IRA.

OTT, in partnership with FECM and OCED, awarded TCF BIL funds to four DOE National Laboratory-led teams to develop carbon dioxide removal (CDR) measurement, reporting, and verification (MRV) best practices and capabilities that are necessary to enable CDR commercialization at scale. The four projects will work collaboratively with industrial partners to build an overarching framework for CDR MRV, as well as advance MRV for mineralization, cement and concrete, and biomass CDR pathways.

Office of Manufacturing and Energy Supply Chains (MESC)
MESC launched rebate programs to support the installation of energy-efficient distribution transformers and extended product systems that use equipment with electric motors, such as pumps, air compressors, and fans. MESC also led two cross-DOE strategy teams on batteries and industrial technologies, developing a holistic DOE-wide approach to align funding and activities to drive adoption of these necessary solutions to achieve the clean energy transition.

MESC partnered with states through the State Manufacturing Leadership Program to create or expand existing programs to support SMMs use smart manufacturing technologies and practices or access high-performance computing (HPC) resources. Additionally, MESC opened five additional industrial assessment centers with BIL support (bringing the total to 37 IACs). IACs train engineering students in energy efficiency and sustainability and provide on-site technical assistance to SMMs.

Federal Energy Management Program (FEMP)
FEMP provided more than 30 trainings to agencies with topic areas that included technology deployment and financing of projects. In addition, FEMP awarded $28 million grants to Federal agencies advancing clean energy and load management strategies; supported agencies in awarding over $480 million in performance contracts/ utility service contracts that advance energy savings and clean energy; released the Climate Smart Buildings Initiative (CSBI) Tool, coordinating with the Council on Environmental Quality(CEQ), to assist agencies with their building strategic plans as directed by Executive Order (EO) 14057 implementing instructions; and opened the first round of BIL grant funding advancing Net-Zero Facilities. FEMP also awarded DOE Energy Savings Performance Contracts Indefinite Delivery, Indefinite Quantity (IDIQ) Generation 4 contract to 20 energy services companies (ESCO), bringing the award total to over 400 projects with almost $8 billion in project investment and over 33 trillion BTU in annual energy savings.

Grid Deployment Office (GDO)
In support of the BIL, GDO has developed a $2.5 billion Transmission Facilitation Program (TFP) that will help build out new interregional transmission lines across the country. GDO released the first RFP to solicit capacity contracts, one of the three financing tools that includes loans and public-private partnerships, to late-stage transmission projects. TFP will use capacity contracts to commit to purchasing up to 50 percent of the maximum capacity of the transmission line.

GDO announced over $200 million through two solicitations to modernize and expand hydroelectric power and to advance new marine energy technologies. Through the Hydroelectric Production Incentives and Hydroelectric Efficiency Improvement Incentives BIL provisions, GDO invested in maintaining and enhancing existing hydroelectric facilities to ensure generators continue to provide clean electricity, while improving dam safety and reducing environmental impacts.

State and Community Energy Programs (SCEP)
In FY 2023, SCEP continued to be on schedule to implement 14 programs under the FY 2022 Infrastructure Investment and Jobs Act (IIJA) and IRA that expand the deployment and utilization clean energy technologies. Programs include the Weatherization Assistance Program; State Energy Program; Home Energy Performance-Based, Whole-House Rebates; High-Efficiency Electric Home Rebate Program; and Energy Efficiency and Conservation Block Grants.

Engage internationally to achieve global decarbonization and energy security while expanding markets for U.S. clean energy goods and services

Office of International Affairs (IA)
IA successfully advanced U.S. domestic and international energy priorities, including enhancing market access for U.S. energy goods and services, in the energy tracks of the G7, G20, the Asia Pacific Economic Cooperation (APEC) platform, the Clean Energy Ministerial, Mission Innovation, Global Power Systems Transformation Consortium, and other fora. IA also expanded clean energy and energy security cooperation with critical bilateral partners, including India, Brazil, Chile, Argentina, Nigeria, Egypt, Indonesia, Thailand, Vietnam, Singapore, the European Union, the Republic of Korea, Canada, Australia, Japan, the United Kingdom, France, Poland, and several other parties through more limited engagements. IA also coordinated the Partnership for Transatlantic Energy and Climate Cooperation platform (P-TECC), a collection of 24 Central and Eastern European countries, along with the United States and the European Union, to provide policymakers and civil-society stakeholders with the resources and technical tools to build secure, resilient, climate-conscious energy systems.

IA successfully led a USG effort to engage with Polish officials for the country's first civil nuclear tender, which resulted in the Polish selection of Westinghouse's AP1000 technology. The first phase of the project represents the creation or maintenance of 62,500 well-paying jobs in 17 states. The second phase will double this amount. DOE IA is leading similar efforts to land U.S. nuclear contracts in Bulgaria, Czech Republic, Slovenia, and Slovakia, and contributing to the effort for Romania.

Office of Energy Efficiency and Renewable Energy (EERE)
Through the P-TECC, EERE has funded lab work and organized panels with the international community to work on decarbonization of industrial heat and home heating and cooling.

Office of Nuclear Energy (NE)
INL developed a device that can test advanced reactor fuel in its Transient Reactor Test Facility, which brought the U.S. and Japan to team up for the world's first safety tests on fast reactor fuels in 20 years. INL will use fresh legacy fuel pins from its former Experimental Breeder Reactor-II; Japan will provide mixed oxide fuel used in its fast reactor designs. The tests mimic conditions of advanced fast reactors during postulated accident conditions.

In partnership with the International Atomic Energy Agency (IAEA), DOE (NE-6, Office of International Nuclear Energy Policy and Cooperation) successfully hosted the 5th IAEA Ministerial Conference on Nuclear Energy in the 21st Century on October 26-28, 2022, in Washington, D.C. Representatives from over 65 countries participated in the event, where Secretary of Energy Jennifer Granholm, IAEA Director General Rafael Grosse, and Nuclear Energy Agency Director General William Magwood discussed the key role of nuclear energy as part of a clean energy strategy. The three-day event offered sessions with members of Government and industry, focusing on issues such as employing nuclear energy to achieve net-zero emissions, developing advanced nuclear reactor technology, building a supply chain for small modular reactors, extending the clean energy contribution of the existing nuclear fleet, improving nuclear regulatory oversight, and encouraging youth and women to explore careers in nuclear energy.

Office of Electricity (OE)
OE scoped and co-chaired a new task force on energy storage under the U.S.-India Climate and Clean Energy Agenda 2030 Partnership, as highlighted in a White House statement on June 22, 2023. Activities in support of this task force included a series of monthly storage expert webinars co-led by OE. OE supports the group under the Partnership to Advance Clean Energy (PACE).

Office of Fossil Energy and Carbon Management (FECM)
FECM co-led the carbon management initiatives in the multilateral Clean Energy Ministerial and Mission Innovation, as well as led bilateral engagements with countries that have more mature carbon management strategies (i.e., Canada, Norway, Japan) and emerging

carbon management strategies (e.g., India, Brazil, Indonesia). These activities increased information-sharing, accelerated cost reductions and best practices globally, informed investments domestically, and strengthened partnerships with strategic nations and organizations to advance U.S. energy and climate priorities and global climate goals.

FECM co-led the launch of the multi-national Carbon Management Challenge, announced by President Biden, which increased support for carbon management from a wide coalition of countries and environmental and labor organizations. FECM joined the United Nations Economic Commission for Europe (UNECE) Hydrogen Task Force as the DOE representative. The Task Force is an international partnership created to collaborate on solutions for renewable and low-carbon hydrogen at all levels of policymaking in the Economic Commission for Europe region.

Arctic Energy Office (AE)
AE sponsored international cooperation on the challenges facing indigenous communities as part of the Arctic Remote Energy Networks Academy program, co-hosted by the United States, Canada, and Iceland.

Catalyze clean energy solutions for job creation and economic growth, including with a robust place-based focus

Office of Energy Efficiency and Renewable Energy (EERE)
Following the success of the EcoCar competitions, the Vehicle Technologies Office kicked off the Batteries Workforce Challenge, a three-year student competition that pairs 11 North American colleges with community colleges to train a diverse battery and EV workforce.

Office of Fossil Energy and Carbon Management (FECM)
On July 10, 2023, FECM announced 16 projects across 14 states to provide locally tailored technical assistance and enhanced stakeholder engagement around geologic carbon storage technologies. The projects connect carbon storage developers with local communities to foster collaboration and education toward the advancement of commercial deployment of carbon capture, transport, and storage technologies across the United States.

Office of Electricity (OE)
OE held 11 listening sessions from January through April 2023 with hundreds of storage innovators to identify specific R&D barriers. These listening sessions led to the July 19, 2023 publication of the Storage Shot Technology Strategy Assessments, which explore the Research, Development, and Demonstration (RD&D) pathways for 10 technologies to achieve the Storage Earthshot cost and performance targets. OE subsequently announced a $15 million FOA for technology consortia to address pre-competitive barriers for energy storage technologies.

Grid Deployment Office (GDO)
GDO announced the conditional selection of the Diablo Canyon Power Plant to receive the first round of Civil Nuclear Credit Program BIL funding. Valued up to $1.1 billion in credits, the conditional award creates a path forward for the Diablo Canyon Power Plant to avoid being decommissioned in 2024 and 2025, saving 1,500 clean energy jobs.

GDO released the IRA-funded Transmission Siting and Economic Development Grants FOA to provide financial support to economic development projects in local communities where there is new transmission development. This funding can be used to support a growing workforce with job training and apprenticeship programs.

Office of Nuclear Energy (NE)
NE published "Investigated Benefits and Challenges of Converting Retiring Coal Plants into Nuclear Plants," which is its most popular report ever issued. The report noted that hundreds of U.S. coal power plant sites could convert to nuclear power plant sites, adding new jobs, increasing economic benefit, and significantly improving environmental conditions.

Office of Clean Energy Demonstrations (OCED)
As part of the $1 billion Energy Improvements in Rural or Remote Areas (ERA) Program, OCED released several offerings tailored to applicants' needs. In April 2023, OCED released a $450 million FOA for Clean Energy Demonstrations on Current or Former Mine Lands, with applications currently under review. Also in April 2023, OCED, in partnership with OTT and EERE, announced a $30 million MAKE IT Prize to catalyze domestic manufacturing of critical clean energy technology components, moving manufacturing facilities from planning to shovel-ready and enabling strategies for vibrant manufacturing activity in communities. In July 2023, OCED selected 67 winners in 31 states for Phase 1 of the Energizing Rural Communities Prize.

State and Community Energy Programs (SCEP)
Energy Future Grants and the Local Government Energy Program are community-oriented place-based programs with an emphasis on equity, clean energy, and economic development, environmental justice, and workforce development outcomes. These programs provided $39 million in competitive support for local government-led teams for equitable clean energy policy innovation in the power, building, and/or transportation sectors in FY 2023. SEP emphasizes the state's role as the decision-maker and administrator for program activities within their state that are tailored to their unique resources, delivery capacity, and energy goals. In FY 2023, SEP awarded $60 million in formula financial grants, resulting in an estimated $4.50 energy benefit per Federal grant dollar. In addition, SEP supports low-cost high impact voluntary technical assistance initiatives, such as the Sustainable Wastewater Infrastructure of the Future Initiative, which is on schedule to successfully engage over 300 facilities in a voluntary partnership to achieve 5 percent short-term and 25 percent long-term facility-wide energy savings.

Office of Policy (OP)
OP worked across DOE offices to incent energy investments in rural, remote, and energy communities, producing mapping tools and resource reports, including the official IRA Energy Communities Tax Credit Bonus map. Office of Energy Jobs updated and released the U.S. Energy and Employment Report, which provides annual insight to the U.S. energy sector jobs and helps guide U.S. and state energy policy. Office of Energy Jobs continued to engage stakeholders on the benefits of good quality jobs to employers and the United States and help stakeholders better understand how to access DOE information and resources.

Loan Programs Office (LPO)
LPO launched the new Energy Infrastructure Reinvestment Program and built a pipeline of over $17 billion in applications to support repurposing and reinvesting in existing energy infrastructure and the communities where it is located.

Office of Manufacturing and Energy Supply Chains (MESC)
The MESC Battery Manufacturing team helped establish the initial DOE template for BIL FOAs with strong language supporting the Administration's Build America Buy America; Workforce and Jobs; Diversity, Equity, Inclusion, and Accessibility (DEIA); and Justice40 priorities. The team chartered the first-ever Community Benefits application template, evaluation criteria, and award terms and conditions, specifically related to Justice40, DEIA, and Workforce. The initial selection of projects for negotiation of award will support up to 5,000 permanent, high-wage manufacturing jobs when production facilities are in operation and up to 3,000 temporary construction jobs.

MESC successfully launched $2 billion in IRA funding for Domestic Manufacturing Conversion Grants for EVs to provide cost-shared grants supporting the transition of existing vehicle and component manufacturing plants to the production of electric drive vehicles and components with an emphasis to retain and/or increase high-wage manufacturing jobs.

Strengthen the Nation's Energy Security, Resiliency, Affordability, and Reliability

Participating Programs	
• Cybersecurity, Energy Security, and Emergency Response • Electricity • Energy Efficiency and Renewable Energy • Fossil Energy and Carbon Management	• Grid Deployment • Manufacturing and Energy Supply Chains • National Nuclear Security Administration • Nuclear Energy • Policy

The U.S. energy system faces an unprecedented and evolving threat landscape. Energy infrastructure and the digital supply chain are a key target for cyber compromise, and the frequency and sophistication of cyber threats is increasing, including from nation-state actors. The Biden Administration has taken swift and extensive action to manage these rising and dynamic threats. DOE will harden infrastructure through technical assistance and grant programs, advance cybersecurity research, enhance threat modeling and detection capabilities, and test the cybersecurity of products and technologies intended for use in the energy sector. Examples of FY 2023 program accomplishments in these areas include:

Develop and deploy innovative solutions to harden energy infrastructure against physical threats including climate change

Office of Electricity (OE)
OE developed use cases for dynamic formation and operation of networked microgrids (DynaGrids) during normal operations and grid disruptions. OE also evaluated optimal reconfiguration algorithms with energy justice metrics, via laboratory-based simulation testing, on use cases for both offline and online applications. Testing on the use case of managing wildfire risk demonstrated that over 43 percent of the total load can be served from dynamically formed microgrids, an increase from the approximately 35 percent load served by static microgrids.

Office of Cybersecurity, Energy Security, and Emergency Response (CESER)
In response to the supply needs of Ukraine utilities severely affected by Russian aggression, CESER played a pivotal role in coordinating a swift and effective electricity subsector and Government response. This effort ensured vital energy resources were made available to support Ukraine's infrastructure recovery.

CESER actively engaged with a diverse range of international partners, from the Five Eyes alliance to European Union partners. These engagements facilitated meaningful conversations and collaboration aimed at expanding access to American energy resources on a global scale.

In August 2023, the first in a series of prizes from CESER's Rural and Municipal Utility Cybersecurity (RMUC) Program was the $8.96 million Advanced Cybersecurity Technology (ACT) 1 Prize competition. RMUC provides critical investments to strengthen utility systems, technical assistance, and cybersecurity training to the utility workforce.

Office of Fossil Energy and Carbon Management (FECM)
FECM, along with the National Energy Technology Laboratory (NETL), developed advanced, low-cost, accurate sensors for ensuring the efficiency, integrity, and reliability of the Nation's new and existing natural gas and oil infrastructure by enabling continuous monitoring, including point source and fiber-optic sensors. The developments have resulted in multiple provisional patents. FECM's Subsurface Hydrogen Assessment, Storage, and Technology Acceleration project launched the SHASTA Hydrogen Estimator for Logistical Planning tool to assess existing natural gas storage sites and provide screening-level evaluation of site capacity and storage, along with withdrawal operations for underground hydrogen storage.

FECM developed a field protective coatings for pipelines to mitigate methane emissions associated with corrosion. The field protective coating was field tested for three months and has demonstrated a reduced corrosion rate compared to existing solutions. FECM supported a project extracting rare earth elements from Acid Mine Drainage (AMD), thereby reclaiming legacy pollution from coal mines and potentially converting added-value products from a waste stream. The plant can produce 4.68 kg per hour of mixed rare earth oxides at 90 percent purity, amounting to 1.71 tons per year, while simultaneously treating up to 1,000 gallons per minute of AMD for compliant discharge.

Office of Manufacturing and Energy Supply Chains (MESC)
MESC is chair of the Federal Consortium for Advanced Batteries, fostering strategic alignment across 17 agencies to accelerate a domestic battery materials and technology supply chain serving commercial and military applications. MESC collaborated with the Departments of Commerce, Defense, and State to assess the current domestic and international supply chain landscape; engaged with key industry stakeholders; and supported key U.S. Government policy initiatives to protect, enhance, and grow domestic

development and production of Li battery technologies, as well as enable a robust battery supply chain and ecosystem.

In collaboration with EERE, MESC co-led the Li-Bridge Alliance, a Government-industry partnership to support a resilient U.S. high-capacity battery supply chain that engages over 600 companies across the battery ecosystem through three U.S.-based trade associations. The alliance released its Strategic Plan for Building a Sustainable Battery Supply Chain earlier this year, recommending actions to accelerate mineral extraction permitting in the U.S. and global mineral resource engagement, including collaboration with the European Battery Association.

Grid Deployment Office (GDO)
Authorized by BIL and administered by GDO, the Grid Resilience State and Tribal Formula Grants program is designed to strengthen and modernize America's power grid against wildfires, extreme weather, and other natural disasters that are exacerbated by the climate crisis. In FY 2023, GDO awarded 37 states, 29 Tribal entities, one territory, and the District of Columbia a combined total of more than $580.5 million to fund a diverse set of projects, with priority given to efforts that generate the greatest community benefit, providing clean, affordable, and reliable energy.

In FY 2023, GDO made $3.8 billion available for the first round of BIL-funded Grid Resilience and Innovation Partnerships (GRIP) Program funding to accelerate the deployment of transformative projects across the nation, which helps safeguard the reliability of the power sector's infrastructure, ensuring all American communities have access to affordable, reliable, clean electricity anytime, anywhere. GRIP aims to enhance grid flexibility and improve the resilience of the power system against growing threats of extreme weather and climate change.

Advance adoption of solutions to prevent and respond to cyber vulnerabilities and incidents

Office of Cybersecurity, Energy Security, and Emergency Response (CESER)
On December 8, 2022, DOE and NREL announced the first cohort of participants in the Clean Energy Cybersecurity Accelerator program, which aims to give next-generation cybersecurity technology a boost in the earliest stages of development to bring solutions to market more rapidly. Additionally, CESER led major initiatives, such as Cyber Informed Engineering, which establishes foundational principles for integrating cybersecurity and engineering practices, and the System for Protecting Against Distributed Energy Resources Cybersecurity Threats. These initiatives have proven effective in mitigating cyber threats to control systems. Achievements in these pioneering initiatives have resulted in significant publications and patent filings.

In a pivotal step to ensuring that advanced cyber solutions become an integral part of the infrastructure landscape, CESER supported the deployment of the National Rural Electric Cooperative Association Research Essence 2.0 to electric cooperatives. In collaboration with New York University, CESER developed the Real-time Anomaly Detection and Localization in Power Grids System (TRAPS) as an enhancement of situational awareness and grid stability that provides real-time anomaly detection and localization capabilities. CESER released three Analysis of Risk in the Energy Sector Reports during FY 2023, providing energy sector stakeholders with key technical insights and mitigation/remediation recommendations for owners and operators to implement.

CESER completed the first two-year demonstration (demo) for the Electric Vehicle (EV) Secure Architecture Laboratory Demonstration, which illustrates the feasibility of implementing security and resilience principles into EV charging infrastructure. The demos apply state-of-the-art high-power EV charging infrastructure currently or expected to be used by industry.

CESER established six RD&D projects working to build scalable cyber-physical solutions and capabilities for the energy industry. This RD&D involves unbiased tool and technology development activities, combined with industry priorities and guidance, resulting in real-world, impactful solutions. In addition, the program has made significant progress in establishing a network of university-based, regional electric power cybersecurity centers that will address interrelated R&D challenges of cybersecurity and critical energy infrastructure.

CESER implemented several holistic risk assessment and analysis efforts, conducting specialized studies encompassing both physical and cyber risks, providing a comprehensive understanding of the threats faced by critical infrastructure sectors. These studies culminate in the issuance of analysis reporting of detailed sector-specific vulnerabilities and potential threats, which can help organizations be proactive in prevention, identification, and mitigation.

Office of Energy Efficiency and Renewable Energy (EERE)
The Connected Community, a fully energy self-reliant community in Menifee, CA, switched on the lights in May 2023. The community is almost completely resistant to power outages and other disruptions. The Building Technologies Office's Connected Communities program required a cybersecurity plan to establish secure connections among devices, networks, and external interfaces to maintain security and reliability.

National Nuclear Security Administration (NNSA)
NNSA strengthened the resilience and agility of its cybersecurity posture by implementing roadmaps for adoption of zero-trust architecture pillars and generating enterprise-wide solutions for Endpoint Detection and Response and Continuous Diagnostics and Mitigation. NNSA also developed an operational technology strategy

and continues to enhance its exercise and red team capabilities.

Additionally, NNSA addressed findings from an independent, third-party cybersecurity assessment by investing in efforts that will improve the recruitment and retention of cybersecurity staff across NNSA, enhancing real-time monitoring capabilities, and expanding proven Center of Excellence (CoE) offerings. These investments serve to improve NNSA's cybersecurity capabilities and address identified gaps.

Secure the supply chain for a robust clean energy transition

Office of Electricity (OE)
In May 2023, OE conducted an industry-wide workshop to identify distribution transformer supply, R&D opportunities, and solutions to address availability concerns. Workshop findings identifying technology gaps and opportunities associated with transformers, and other potential substitute and supporting technologies were included in the October 2023 workshop report. A key workshop takeaway was the opportunities for more standardized distribution transformers to alleviate supply and demand imbalances. Technical specifications that can be standardized and continually updated based on lessons learned include loss evaluations, electrical ratings, detailed component (core, winding, lead support, and tank) design requirements, manufacturing process requirements (especially for winding stabilization and final clamping of the core and coil), standard components, control cabinets, monitoring systems, paint coatings, and gaskets. Insights from the May workshop are being shared with the currently ongoing DOE-industry collaboration on distribution transformers in which OE and technical experts from the Edison Electric Institute (EEI), the American Public Power Association (APPA), the National Rural Electric Cooperative Association (NRECA), and distribution transformer manufacturers are further exploring solutions to supply chain constraints.

Office of Cybersecurity, Energy Security, and Emergency Response (CESER)
CESER discovered 12 novel vulnerabilities through the Cyber Testing for Resilient Industrial Control Systems (CyTRICS) program. CESER is on track to hit more than 15 percent of critical components tested in energy infrastructure. CESER signed vendor agreements with participating manufacturers that collectively represent more than 30 percent market share of energy sector critical components. CESER also led the Government effort on the Electricity Subsector Coordinating Council Supply Chain Tiger Team identifying key gaps in labor, standardization, and raw materials. A DOE-led collaboration group is now in the implementation stage to address long-term issues and facilitate coordination with Government entities that can support nearer-term mechanisms.

CESER released an open-source library of tools, case studies, and lessons for Cyber-Informed Engineering Principles, summarizing a decade of DOE research in cyber-informed engineering containing work by various labs and in multiple application disciplines. As a Mission Advancements and Regional Initiative, CESER presented the mission assignment tool "Analysis of Alternatives" and initiated preliminary results for the regional Petroleum Products Reserve study. In July 2023, CESER announced a new initiative to research and develop cybersecurity labeling for energy products, mobilizing researchers from six National Laboratories to explore the best methods to present information about security features in energy products for consumer decisions.

Office of Policy (OP)
OP provided Treasury and the IRS with advice regarding energy technology issues relevant to tax credits to help bring clean energy resources to market, build domestic clean energy supply chains, and increase investment in domestic manufacturing. OP worked with other DOE offices to assess the challenges facing domestic distribution transformer supply chains and develop cross-agency opportunities to alleviate those supply chain constraints.

Office of Energy Efficiency and Renewable Energy (EERE)
DOE released its 2023 Critical Materials Assessment, including work from EERE's Geothermal Technologies, Advanced Materials and Manufacturing Technologies, and Vehicle Technologies Offices. Based on the results of the assessment, DOE determined the 2023 DOE Critical Materials List of energy-specific critical and near-critical materials. In addition to informing cross-cutting DOE priorities, including the Critical Materials Research, Development, Demonstration, and Commercialization Application Program (RDD&CA), the DOE Critical Materials List informs eligibility for tax credits under IRA Section 48C. The assessment focused on key materials with a high risk of supply disruption that are integral to clean energy technologies.

Office of Nuclear Energy (NE)
At the end of FY 2023, recycling-spent Experimental Breeder Reactor-II driver fuels produced more than 1.7 metric tons (MT) of high-assay low-enriched uranium (HALEU) using a molten salt-based pyro-processing technology at INL as feedstock for advanced fast-spectrum reactors in the near term.

ANL researchers modeled and evaluated nuclear-driven synthetic jet and diesel fuels production via the Fischer-Tropsch process (in the scale of 100-1,000 Megawatt electric). By considering the IRA's 45V tax credit for nuclear-produced Hydrogen, nuclear-driven synfuels show great decarbonization potential relative to the incumbent petroleum counterpart with a comparable production cost ($2.7-$3.6/gallon) and over 90 percent greenhouse gas emissions reduction (depending on CO_2 sources).

Office of Manufacturing and Energy Supply Chains (MESC)
In October 2022, MESC announced selections from the first IIJA-funded opportunity. MESC selected 21 Battery Materials Processing and Battery Component Manufacturing projects to receive a combined $2.8 billion to build and expand commercial-scale facilities in 12 states to process critical battery materials like lithium, nickel, and graphite; manufacture components like cathodes, anodes, separators, and lithium salts; and recycle spent batteries. The private sector will provide over $6 billion of matching funds, bringing the total investment to more than $9 billion.

In collaboration with the OTT, MESC launched a new Manufacturing Supply Chain Modeling, Mapping, and Analysis Lab Consortium to develop deep mapping tools to support integrated insights across supply chains to identify gaps and inform investment priorities and strategies.

Office of International Affairs (IA)
IA supported the interagency process to produce guidance defining key terms in the statutory phrase "Foreign Entity of Concern" (FEOC) in BIL and IRA. IA also stood up the new Office of Research, Technology, and Economic Security to support DOE programs in due diligence reviews and risk mitigation to ensure our national security, economic competitiveness, and technological leadership imperatives are duly incorporated into its financial assistance and loan activities.

Support an effective emergency response capability in the federal government for responding to critical energy events

Office of Fossil Energy and Carbon Management (FECM)
In FY 2023, FECM's Office of Environment, Security, Safety, and Health successfully conducted on-site Programmatic Assessment of NETL's Emergency Management and Continuity Programs. The Emergency Management recommendation to assist the National Laboratory increase emergency communication capacity via web-based technology was successfully accomplished by June 2023 to support the Pennsylvania, West Virginia, and Oregon Laboratory locations.

Office of Nuclear Energy (NE)
In FY 2023, DOE (NE-6) contributed staff to the NNSA Ukraine Task Force (UTF) to provide insight and guidance into Ukraine's nuclear energy infrastructure, operational requirements, and vulnerabilities. This expertise helped guide UTF policy decisions, such as whether to support Ukrainian requests for surplus reactor equipment from compatible nuclear power plants, and essential procurements, including mobile emergency diesel generators, chemical supplies for continued operation of the Ukrainian nuclear power plants, switchyard breakers, and other key systems, all to reduce the operational risk to Ukraine's nuclear fleet in wartime conditions. In addition, NE supported the Ukrainian graduate studies program for Nuclear Engineers, needed to replace Nuclear Operators and other staff reduced by wartime demands.

Office of Cybersecurity, Energy Security, and Emergency Response (CESER)
In the Summer of 2023, CESER successfully executed Clear Path XI, an all-hazards threat response training for energy sector partners. These exercises were strategically designed to enhance continuity communications for the entire energy sector and to refine DOE's social media response capabilities, specifically tailored for the energy community within Hawaii.

CESER planned and executed Liberty Eclipse 2023. This robust full-scale exercise, conducted within a live testbed environment, provided utilities, research, and Government organizations with a unique opportunity for hands-on, real-time engagement. The exercise encompassed cyber, operational technology, and power operators, as well as empowered participants to navigate critical energy scenarios effectively.

CESER drove progress through internal exercises that facilitated discussions and improvements to key response plans. These exercises focused on modifying the CESER continuity plan, enhancing the Cyber Incident Response Plan, and optimizing the deployment of the Catastrophic Incident Response Team, while providing technical assistance for island incident responses.

National Nuclear Security Administration (NNSA)
NNSA coordinates the Department's comprehensive and integrated approach to all-hazards emergency management and continuity of operations. In FY 2023, this included support for CESER in monitoring and responding to domestic energy events, as well as to NNSA programs responding to international incidents, including ongoing threats to the Zaporizhzhia Nuclear Power Station in Ukraine.

NNSA has provided significant equipment, training, and technical advice to Ukrainian partners to reduce nuclear risks—both to decrease the probability of a nuclear emergency in Ukraine and to minimize the consequences of such an event. NNSA personnel have continuously monitored radiation sensors deployed around Ukrainian nuclear facilities to ensure early warning of an emergency that might endanger public health. NNSA has also enhanced the resilience of Ukraine's nuclear power plants, providing physical and cyber security support, equipment for protective and response forces, and emergency diesel generators and consumables. Additionally, NNSA has provided extensive training to Ukrainian personnel on nuclear and radiological safety and security, aerial radiological measuring, countering nuclear smuggling, medical response to radiation emergencies, radiological source recovery, and consequence management.

Implement consolidated interim storage for the Nation's nuclear waste

Office of Nuclear Energy (NE)
The Department formed a working group with specialists with expertise in storing, transporting, and disposing spent nuclear fuel to evaluate different advanced reactor designs being proposed. NE gathered data, held meetings, and wrote reports to understand the impacts of the types of spent nuclear fuel (SNF) and/or high-level radioactive waste (HLW) types resulting from these reactors, which differ substantially from the existing commercial SNF inventory wastes.

In April 2023, NE publicly posted a revised version of the Consent-Based Siting Process for Federal Consolidated Interim Storage of Spent Nuclear Fuel process, outlining a roadmap for a consent-based approach to siting one or more Federal consolidated interim storage facilities that centers community needs, equity, and environmental justice. The updated process builds on domestic and international lessons learned and best practices, as well as incorporates public input and recommendations. In June 2023, Secretary Granholm announced selection of awardees for NE's $26 million consent-based siting funding opportunity. The 13 institutionally and geographically diverse awardees will form consent-based siting consortia to work with communities and organizations interested in learning more about both spent nuclear fuel management and DOE's community-centered approach to siting storage facilities for spent nuclear fuel. This significant step forward makes progress towards addressing the Nation's long-standing nuclear waste management issues, using a consent-based approach designed to prioritize community needs, reduces barriers for participation, and centers on equity and environmental justice.

Advance Science Discovery and National Laboratory Innovation

Participating Programs	
• Energy Efficiency and Renewable Energy • Fossil Energy and Carbon Management • Manufacturing and Energy Supply Chains	• National Nuclear Security Administration • Nuclear Energy • Science • Technology Transitions

Leadership in science and innovation is critical to America's security and prosperity. DOE will advance the Nation's pre-eminence in scientific discovery and technology innovation through support for cutting-edge basic research, global leadership in emerging technology areas, and partnership with the private sector and partner countries to transition new discoveries to deployable technologies in fields of strategic importance. Examples of FY 2023 program accomplishments in these areas include:

Advance basic scientific understanding and identify new methods and tools to further discovery

Office of Science (SC)
Using the newest SC user facility, the Facility for Rare Isotope Beams, composed of nuclei that do not occur naturally on earth and may only exist for fractions of a second, researchers have made more than 210 rare-isotope beams for experiments involving 180 institutions representing 50 countries. One exciting discovery from those rare beam experiments is an excited quantum state of sodium-32 which has a fleeting half-life of only 24 microseconds. This example of a nuclear isomer, or metastable state of an element with extra neutrons, exists right at the nexus of three nuclear theories, which all purport to explain its origin by invoking different geometrical shapes to this nucleus that has 10 extra neutrons beyond the normal number. Understanding the nature of nuclear isomers is important for developing their potential application in creating nuclear batteries, since isomers effectively store energy, and nuclear clocks which, given the precise energy of nuclear isomers, could be more accurate than current atomic clocks.

Actinium-225 (Ac-225) is a high-priority radioisotope within the medical research community developing targeted radioisotope therapies, including therapies to treat metastasized cancers. The Ac-225 Tri-Lab Research Effort—a collaboration of Los Alamos National Laboratory (LANL), ORNL and Brookhaven National Laboratory (BNL) scientists—produced over 100millicurie of Ac-225 in a single experimental run or batch in June 2023. The 100 millicurie batch achievement demonstrates that the DOE Isotope Program (DOE IP) production sites can produce sufficient quantities of Ac-225 to support clinical trials and represents a factor 10 increase in batch size over the initial Tri-Lab batches. A key component enabling this achievement was the completion of the All-Purpose hot cells at BNL, which allow for the BNL staff to safely manipulate the radioactive material (irradiated targets) and extract the desired Ac-225.

National Nuclear Security Administration (NNSA)
In FY 2023, the Inertial Confinement Fusion (ICF) program in NNSA's Office of Research, Development, Test, and Evaluation (RDT&E) twice achieved a chain reaction fusion burn in the laboratory that generated more energy than delivered to it, which is an historic and then repeated feat. Performed at the National Ignition Facility (NIF), this required the perseverance, commitment, and talent of a large team from around the Nation, as well as decades of NNSA support. This achievement provides access to extreme regimes of physics that were previously inaccessible through other techniques, enabling both new scientific understanding and novel science-based stockpile stewardship applications.

NNSA advanced basic science in the field of energetic materials by advocating for projects that focus on the fundamental/essential elements of material characteristics and processing technologies. Examples of these projects include development of predictive modeling tools for the synthesis and formulation of insensitive high explosives (IHE), development of the technology for capturing the fundamentals of detonator initiation so that margins of performance can accurately be determined, and using AI tools to study the impact of energetic material morphology changes to better understand how these materials age and change.

Strategic Partnership Projects (SPP) has successfully advanced national security missions through innovation by expanding the frontiers of science, technology, and engineering. This has been achieved through transformative and leading-edge R&D by creating a vibrant, creative environment that leverages effective partnerships (including SPP) and technology transfer endeavors.

Office of Nuclear Energy (NE)
Researchers from Purdue University have completed fundamental research into the neutron irradiation performance of an advanced manufacturing technology called powder metallurgy with hot isostatic pressing (PM-HIP). Through a competitively awarded Nuclear Science User Facilities project, the university team was able to use the Advanced Test Reactor at INL to show that a nickel (Ni) alloy fabricated by PM-HIP is more resistant to neutron radiation damage when compared to conventional manufacturing methods, which is a key step toward use in nuclear energy systems.

The Sample Preparation Laboratory (SPL) Project at INL completed 82 percent of its planned construction scope and is on schedule to complete construction in FY 2024. The SPL, when coupled with existing facilities and recapitalization efforts at INL, will fulfill the near-term capabilities necessary for conducting the advanced post-irradiation examination needed to improve the understanding of nuclear fuels and materials performance at the micro-, nano-, and atomic scales.

Lead globally in key innovation and national security areas including clean energy technologies artificial intelligence, quantum information sciences, microelectronics, advanced computing, particle accelerator technologies, and next generation biology and biosecurity

Office of Science (SC)
SLAC's Linac Coherent Light Source (LCLS) took another momentous step forward, accelerating electrons through the nearly 300 superconducting accelerator cavities that will power LCLS-II, an X-ray source 10,000 times brighter than its normal conducting predecessor. The culmination of more than 10 years of R&D, LCLS-II will provide one million high-brightness X-ray pulses per second that allow scientists to tackle challenges, such as understanding how to adapt natural approaches for harvesting solar energy for efficient production of a new generation of clean fuels, inventing sustainable manufacturing methods for industry, and designing a new generation of drugs based on the ability to create molecular movies of how our bodies respond to disease.

Researchers at the DOE Joint BioEnergy Institute and the DOE Agile BioFoundry engineered yeast that produces triacetic acid lactone (TAL) from lignocellulose. TAL can then be converted to valuable chemicals, including fungicides, plasticizers, adhesives, and emulsifiers, thereby making combined production of biofuels and bioproducts more economically feasible.

Biological and Environmental Research (BER)-supported scientists developed a 3-km resolution climate prediction capability that is the first to run on the exascale Frontier computer, placing the U.S. as the global leader in high-resolution prediction science. As a fully integrated system, this fine-scale resolution allows for unprecedented information for scientific analysis and stakeholder applications. A newly designed ML algorithm developed by researchers at ORNL and BNL, applied to cloud radar observation data from the Atmospheric Radiation Measurement User Facility, discovered more fine particle precipitation in marine stratus clouds than previous observing systems had detected. Precipitation dynamics exert significant control of the radiative properties of low warm clouds, influencing the rates of regional to global climate change. The new machine learning techniques will improve weather and climate predictions.

Led by Q-NEXT, one of DOE's National Quantum Information Science (QIS) Research Centers, the Argonne Quantum Foundry was launched to provide the Nation's QIS research community with high-quality, standardized semiconductor materials, tools, and data, offering end-to-end solutions for design, testing, fabrication, and integration of new materials into quantum systems. Q-NEXT is also leading the development of a second, complementary foundry at SLAC National Accelerator Laboratory that will focus on superconducting materials. The establishment of these two QIS foundries builds on years of foundational materials research supported by Basic Energy Sciences.

Office of Energy Efficiency and Renewable Energy (EERE)
In FY 2023, EERE invested more than $1.2 billion across RD&D efforts at all 17 National Laboratories. Additionally, EERE's investment portfolio includes $205 million in FY 2023 for NREL, DOE's flagship National Laboratory for energy efficiency and renewable energy-applied R&D. This includes investments in critical infrastructure and programs like the Energy Materials Processing at Scale facility and the Advanced Research on Integrated Energy Systems program. These facilities and programs meet EERE, DOE, and Administration goals to create and secure domestic materials supply chains and reliably and affordably decarbonize the electric grid.

Office of Fossil Energy and Carbon Management (FECM)
FECM's Energy Data eXchange® (EDX) is the first office-wide platform to enable curation of federally funded R&D data products and systematically connect researchers to advanced computational capabilities to enable next-generation, AI data-driven technology innovation. In 2023, the EDX platform was expanded to enable connections with internal and external (Cloud) AI computational resources.

NETL researchers drove next-generation, greener-advanced computing using Wafer-Scale Engine (WSE) innovations for Scientific Computing. The WSE is designed to accelerate the training of the world's largest deep neural AI models that make the WSE able to accelerate deep neural models to excel at computational fluid dynamics and other field equation models. The WSE and NETL-developed WSE/Field Equation/Application Programming Interface has delivered gains in performance and usability not obtained on conventional computers and supercomputers.

National Nuclear Security Administration (NNSA)
In FY 2023, NIF achieved fusion yields greater than 1 MJ five times and fusion ignition twice. The ability to generate multi-mega-joule yields at the NIF and the understanding developed at each stage of experimental performance along the path to a robust burning fusion plasma provides critical knowledge and constraining data for simulations, as well as access to material properties and outputs unachievable anywhere else in the world. Also in FY 2023, the Los Alamos Neutron Science Center (LANSCE) conducted several experiments to prepare for the proton

radiography plutonium experiments. This capability for explosively driven dynamic plutonium experiments is critical to ensuring the high explosives and energetic materials of the stockpile will function as designed for stockpile certification.

NNSA established the NNSA Bioassurance Program. NNSA signed two Memorandum of Understanding (MOU) with the DoD and Department of Homeland Security (DHS) that highlight capabilities required for NNSA's role in interagency to evaluate and anticipate threats and validate predictive capability development. NNSA developed the Bioassurance Goals, Objectives, and Requirements document to drive high-level technical focus. NNSA also initiated a seven-year technical roadmap with the first three workshops with labs and stakeholders, developing action plans for guiding annual research solicitations.

LANL, NRL, and BNL collaborated with the leads at the Goddard Space Flight Center (GSFC) as part of a successful launch of the Compton Pair (ComPair) telescope balloon mission from NASA's Columbia Scientific Balloon Facility (Palestine, TX) on August 27, 2023. This successful balloon mission, designed as a feasibility prototype of a space-based medium energy gamma-ray imager, is the next step toward credibly proposing the All-sky Medium Energy Gamma-ray Observatory (AMEGO).

NNSA committed $34.7 million to recapitalize classified high-performance computers at LANL, Lawrence Livermore National Laboratory (LLNL), and Sandia National Laboratory (SNL) to support assessment capabilities for the U.S. Government's counter-weapons of mass destruction mission. The deployment of El Capitan, NNSA's first exascale system, continued to be on track in FY 2023. In the Spring of 2023, LLNL began installing management, storage, and compute racks (without blades of central graphic processing units [CPU] or graphic processing units [GPU]).

In FY 2023, NNSA's Office of Defense Nuclear Nonproliferation (DNN) developed AI foundation models that perform better than humans on a variety of benchmarks, including the characterization of scientific images. This work at the Pacific Northwest National Laboratory (PNNL) used the SciTune framework developed at the lab, which enables the testing and evaluation of AI across a wide array of scientific disciplines relevant to nuclear nonproliferation. DNN R&D also developed and implemented mathematical methods to allow for training AI with data sets that are larger than the available system memory, enabling a new class of AI models for nuclear nonproliferation. This LANL method was demonstrated on ORNL's Summit high-performance computer. Furthermore, NNSA established a pilot project plan for scalable large language model protein models and protein database and developed an interface for automated protein-protein interaction data collection platform.

Commercialize innovations to improve the lives of Americans and the world

Office of Technology Transitions (OTT)
In FY 2023, OTT reintroduced the technology-specific partnership projects in the OTT-led Core Laboratory Infrastructure for Market Readiness (CLIMR) lab call, focusing on moving specific Lab-developed technologies to market. TCF funded 25 projects with contributions from across seven program offices. Additionally, five projects spanning 16 National Labs and sites were selected to improve internal lab processes and develop new methods to bring in new external partnerships.

OTT, in collaboration with OCED, announced the BIL TCF Collaborative Alignment for Critical Technology Industries (CACTI) Lab Call to bring together stakeholders across industries to address challenges that result when people work on similar issues in isolation, inhibiting scale-up and replication. OTT also awarded $15 million to projects led by DOE National Laboratories to accelerate commercialization in the clean hydrogen and long-duration energy storage industries.

Office of Science (SC)
In FY 2023, the SC awarded $285 million through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. A total of 374 Phase I awards emphasizing proof of concept research and 171 Phase II awards focusing on prototype and process development were issued with funding from the following DOE offices: CESER, EERE, EM, FECM, NNSA, NE, OE, and SC. SC implemented two new initiatives in FY 2023 to support the commercialization efforts of Phase II awardees: Phase Shift II and the Virtual Partner Pitch Program. Leveraging curriculum previously developed by the National Science Foundation (NSF) for the I-Corps™ Go Program, Phase Shift II utilizes a business model discovery program that focuses on the operational elements of running a technology-driven start-up post-Phase II funding. The four-month program, launched in July 2023, was piloted with 11 Phase II awardees. The Virtual Partner Pitch Program provides an opportunity for Phase II awardees to pitch their projects to strategic partners/ investors for potential follow-on funding or partnerships. The program provides pitch coaching and practice sessions prior to the virtual pitch sessions. In this inaugural year, 97 Phase II projects were pitched and over 200 strategic partners and investors registered to participate.

DOE IP is a primary U.S. producer of Astatine-211 (At-211) through the DOE IP's University Isotope Network (UIN) institutions. The U.S. joined the European Union and Japan to form the World Astatine Community (WAC), launched in FY 2023 as a collaborative effort to share At-211 production technology for the advancement of science and healthcare. The WAC aims to facilitate communication, share technology, and collaborate research globally to optimize and grow At-211 production through the world.

Office of Fossil Energy and Carbon Management (FECM)
In FY 2023, FECM launched the Carbon Utilization Procurement Grants Program, which provides funding to help offset 50 percent of the cost to states, local Governments, utilities, or agencies to procure products generated through the conversion of CO_2.

Office of Nuclear Energy (NE)
The NRC approved Westinghouse's Advanced Doped Pellet Technology (ADOPTTM) fuel for use that opens the way for U.S. utilities to apply to the NRC to use the fuel in their reactors. The fuel consists of uranium dioxide pellets with a small amount of additives that enhanced safety and the reliability of the reactor and improves fuel cycle economics.

In partnership with DOE, Carbon Free Power Project (CFPP) LLC submitted a Limited Work Authorization to the NRC to gain authorization to initiate early construction activities for CFPP. This first-of-a-kind approach supports the acceleration of project activities in support of finding faster and cheaper ways to deploy advanced nuclear technologies.

Office of Manufacturing and Energy Supply Chains (MESC)
MESC successfully launched $250 million to Accelerate Electric Heat Pump Manufacturing in America utilizing the Defense Production Act of 1950 that will increase use of electric heat pumps, which provide both lower-cost, higher-efficiency heating and cooling for buildings and homes and lower-energy costs.

Ensure America's Nuclear Security by Harnessing Unparalleled Science and Technology Capabilities

Participating Programs	
• National Nuclear Security Administration	• Nuclear Energy

The United States is at the forefront of global efforts to address risks to global nuclear security. Underpinning these efforts is the unparalleled scientific and technological capabilities resident in the NNSA, a semi-autonomous agency within the Department. World-class science, technology, manufacturing, and engineering capabilities, including people, infrastructure, and tools, make it possible for the Nation to lead the way in reducing nuclear dangers, however they emerge. Examples of FY 2023 program accomplishments in these areas include:

Design, deliver, and maintain a safe, secure, reliable, and effective nuclear stockpile in support of the Nation's integrated deterrent

National Nuclear Security Administration (NNSA)

Stockpile Stewardship: The B61-12 LEP was in Phase 6.6, *Full Rate Production*, through FY 2023. The LEP addresses multiple components that are nearing end of life, in addition to addressing military requirements for reliability, service life, field maintenance, safety, and use control. With the addition of an Air Force-procured tail-kit assembly, the B61-12 LEP will consolidate and replace the B61-3, -4, -7, and -10 bomb variants. B61-12 LEP production will continue though FY 2026.

The W88 Alteration (Alt) 370 Program modernizes the arming, fuzing, and firing subsystem; improves surety; replaces the conventional high explosive and associated materials; and incorporates a lightning arrestor connector, trainers, flight test assemblies, and associated handling gear. W88 Alt 370 production will continue through FY 2026.

The W87-1 Modification Program entered Phase 6.3, *Development Engineering*, in FY 2023. The W87-1 will be deployed alongside the W87-0 on a new delivery system, U.S. Air Force Sentinel, formerly known as Ground-Based Strategic Deterrent, between 2030 and 2032. It will replace the aging W78 warhead by modifying the existing legacy W87-0 design.

The W80-4 LEP transitioned to Phase 6.4, *Production Engineering*, in FY 2023. Delivery of the first production unit is scheduled for FY 2027 supporting U.S. Air Force achieving initial operational capability in FY 2030. W80-4 LEP production is expected to continue through FY 2033.

The W93 Program was in Phase 2, *Feasibility Study and Design Operations*, in FY 2023. The W93 will address future Navy ballistic missile warhead requirements and incorporate modern technologies to improve safety, security, and flexibility to address future threats. The first production unit is planned for the mid-2030s.

Secure Transportation Asset (STA): STA provides safe, secure transport of the Nation's nuclear weapons, weapon components, and special nuclear material (SNM) to meet national security requirements and support DoD and DOE/NNSA missions. In FY 2023, STA continued its record of 100 percent safe and secure shipments without compromise, loss of components, or release of radioactive material. This record is enabled by the core components of the STA security concept of specialized vehicles, secure trailers, highly trained Federal Agents (FA), and leading-edge communication systems. STA's Mobile Guardian Transporter (MGT) project acquired, assembled, and tested all modules for Test Article 2 (TA2), completed TA2 over-the-road testing, completed environmental testing of the door, delivered the rolling chassis for the Pre-Production Unit, and delivered the second developmental build of the Enhanced Bomb Restraint Loading Platform. In FY 2023, STA has also implemented initiatives to attract, hire, and maintain the FA workforce by increasing starting pay, offering recruitment and retention bonuses, and creating ladder positions to provide quicker growth.

Stockpile Research, Technology, and Engineering (SRT&E): For the 27th consecutive year, the science-based Stockpile Stewardship Program (SSP) allowed DOE and the DoD to certify the safety, security, and effectiveness of the U.S. nuclear weapons stockpile to the President. The annual stockpile assessment process evaluated the state of weapons by conducting stockpile maintenance, surveillance, experiments, simulations, and utilizing other sources to update the technical basis of each weapon system. RDT&E's critical national security responsibilities yielded major accomplishments in FY 2023 to sustain and modernize the stockpile and the production complex without underground nuclear explosive testing.
In FY 2023, the Office of Experimental Sciences (OES) provided experimental facilities and resources to support studies of hostile survivability, development and testing of special materials, assessment of plutonium aging, and opportunities for improvements in pit producibility. The unique scientific facilities and expertise in RDT&E represent the foundational tools of the SSP. In FY 2023, these tools supported the future nuclear stockpile, including the recently finalized Nimble subcritical experiment platform, which will inform W80-4 and W87-1 primary performance calculations accounting for deviations from our underground test history.
Additionally, the ICF program in OES twice achieved fusion ignition: on December 5, 2022 and July 30, 2023. The experiments and capabilities that will follow this scientific achievement are critical for understanding the

performance, survivability, and modernization of the nuclear stockpile.

In FY 2023, the Office of Engineering and Technology Maturation continued integrating the design, engineering, manufacturing, and testing of safer, secure, and reliable current and future stockpile technologies, thus deriving critical performance parameters for establishing the basis for annual stockpile assessments and future stockpile requirements. Development of a novel IHE class of materials has been tested in FY 2023. Novel chemical synthesis to produce identical materials and compounds have made the production of weapons safer to personnel with lower environmental impacts. These processes, proven in FY 2023, are used for a variety of functions in the weapon; they work as well as the original formulations and are safer for people and operations. Intense development efforts have led to new ways to ensure the security of the stockpile against denial of authorized use and to ensure denial of unauthorized use that leverage new security paradigms and could position the stockpile to respond to changing threats. New microelectronics components have been identified as viable for use in weapons systems, enabling the development of smaller, lighter microelectronics with a more robust supply chain. Impending operational needs for hard and deeply buried target and defended target defeat have been investigated and supported with experimental validation. New technologies for penetration have been manufactured and initial hypersonic testing has commenced. Large-scale demonstrator tests with military service partners are underway to advance technology and to define the changes to environments associated with non-ballistic delivery trajectories.

Production Modernization: In FY 2023, NNSA continued plutonium pit production activities at LANL and SRS to fulfill the requirement to restore the Nation's capability to produce a minimum of 80 pits per year. An issue resolution group resolved a technical design issue that is being implemented to accelerate production by LANL, Kansas City National Security Campus, and LLNL. Additionally, all three sites continued engineering evaluations of pit production processes to support process qualification and product certification, enabling War Reserve pit production. The Savannah River Plutonium Processing Facility (SRPPF) project continued to mature the facility design and has completed approximately 30 percent of the scope associated with Critical Decision-3A (CD-3A) Approval, Long Lead Procurement, and Site Preparation for the Main Process Building.

NNSA demonstrated the highest level of tritium production in FY 2023, while making value-added investments to maintain a reliable, resilient, flexible, and cost-effective supply chain to meet national security requirements for tritium. The supply chain leverages other Government assets and appropriate commercial supply chains.

In FY 2023, NNSA continued to make significant progress towards reestablishing synthesis and formulation of key IHE material components for use in future weapons modernization programs.

Additionally, NNSA has partnered with DoD for additional upgrades at Holston Army Ammunition Plant to reduce toluene emissions, enabling additional high explosive production for DoD and NNSA mission needs, completed development lot production for the W80-4 Life Extension Program (LEP), and successfully manufactured the first production of main charge material in over a decade.

In FY 2023, NNSA started construction on a prototype high explosives manufacturing capability at the Naval Surface Warfare Center, Indian Head Division. NNSA has also completed re-establishing blending capabilities at SNL to produce a material used for actuation/ignition.

NNSA continues to make significant progress on the High Explosive Science and Engineering Facility (HESEF) project at Pantex Plant with the completion of final design and initiation of construction activities.

The Uranium Processing Facility (UPF) advanced construction by setting 100 percent of gloveboxes for the Main Processing Building and testing the Low Equity Calciner furnace for the Salvage and Accountability Building.

Strategic Partnership Projects (SPP): DoD sponsors have sought out NNSA laboratories in advancing concepts and capabilities to support integrated deterrence and address emerging deterrence challenges in the development of net assessment of adversary capabilities. The multidisciplinary science and technology base is leveraged to develop models of cross-domain warfighting, including modeling the behavior of weapon systems and countermeasures in a framework that implements game theoretical approaches to assess adversary perceptions of escalation and stability. The broad science and technology base is used to quantitatively evaluate the efficacy of emerging technologies and their impact to conflict stability. For example, work is conducted on the assessment of nuclear and/or conventional weapons. This effort is critical in ensuring systems remain in a viable working state for future analysis and testing.

Forge and deliver cutting-edge solutions to shape and enable future arms control and nonproliferation regimes, increase strategic stability, counter nuclear terrorism, disrupt emerging threats, and advance the safe, secure, and peaceful use of nuclear energy

National Nuclear Security Administration (NNSA)

Global Material Security (GMS): In FY 2023, NNSA supported nuclear security upgrades at nine sites and regulatory capacity development for four nuclear newcomer countries, as well as expanded the nuclear power plant sabotage mitigation initiative for energy security to five new partners. NNSA eliminated 97 high-risk radioactive devices in the United States and abroad, including 61 under the Cesium Irradiator Replacement Project. NNSA also exceeded the FY 2023 objective of 77

percent of partner agencies, demonstrating operational capability of counter-nuclear smuggling systems.

Defense Nuclear Nonproliferation Research and Development (DNN R&D): In FY 2023, NNSA supported a successful launch and on-orbit testing of the Global Burst Detector III-6 as part of the national capability for global nuclear monitoring. NNSA conducted the REACT22 tracer experiment at the Low Yield Nuclear Monitoring (LYNM) testbed and completed mining, high explosives (HE) emplacement, instrumentation, and containment of LYNM Physics Experiment-1 (PE-1) for October 2023 execution. NNSA completed two field campaigns, in conjunction with interagency partners, at testbeds designed to test technologies developed to improve U.S. capabilities to detect and monitor foreign nuclear material production and weapons development, transitioned new radiation detection material to commercial partners in support of nuclear smuggling detection and deterrence, and began transition of 14 nuclear detonation detection technologies to mission partners.

Material Management and Minimization (M3): As of 2023, NNSA sustained work to minimize the use of highly enriched uranium (HEU) in civilian applications by removing HEU from sites around the world and converting research reactors from HEU to HALEU. NNSA advanced new and innovative work to prepare for the HEU/ plutonium minimization challenges of the future, including the qualification of new HALEU fuels, completed construction of the Mobile Melt-Consolidate system, and evolution of the Proliferation Resistance Optimization program. During FY 2023, 12 shipments of down-blended surplus plutonium were completed to the Waste Isolation Pilot Plant (WIPP) in support of removing material from South Carolina.

Nonproliferation and Arms Control (NPAC): During 2023, NNSA developed an innovative Fieldable Atomic Beam Isotopic Analyzer (FABIA) in partnership with DNN R&D and LANL that resulted in an R&D 100 Award. FABIA enables inspectors to determine enrichment of uranium samples in the field in less than 10 minutes without sample preparation or generation of chemical waste. The technology will be transferred to the International Atomic Energy Agency in 2024. NNSA successfully launched Arms Control Advancement Initiative (ACAI) activities in FY 2023. The ACAI will develop the needed NNSA facilities, technologies, projects, and personnel to bolster the expertise and technology critical to sustaining NNSA's arms control mission and accelerate the development of new technologies and approaches. NNSA also launched a first-of-its-kind Non-Proliferation and Climate Change Program to develop policy solutions for security and non-proliferation risks associated with the global expansion of nuclear energy to meet Net-Zero goals.

Counterterrorism and Counterproliferation (CTCP): NNSA's Nuclear Emergency Support Team (NEST) supported 62 national-level security events and 11 unscheduled radiological/nuclear emergencies, tested, and fielded new tools for the Federal Bureau of Investigation (FBI) counter-weapons of mass destruction (WMD) teams as part of the "Capability Forward" initiative, as well as provided continuous support to Ukraine in response to Russia's full-scale invasion. NNSA increased its assessment capabilities in support of the counter-WMD device mission. NNSA successfully executed a series of material characterization experiments, delivered specialized training to counter-WMD device response teams, and committed $34.7 million to recapitalize classified high-performance computers at LANL, LLNL, and SNL to support U.S. nuclear incident response capabilities. NNSA participated in eight nuclear forensics exercises, including five interagency and two international events. NNSA added a significant number of material specimens to the National Nuclear Material Archive and improved nuclear forensics infrastructure, equipment, technology, and capabilities through increased investments, including initiation of two capital asset infrastructure minor construction projects at two sites to enhance analytical capacity for assessing material. Finally, NNSA advanced U.S. emergency preparedness and response policy objectives through engagements with domestic and international partners, conducting over 70 virtual or in-person training events focused on nuclear security, nuclear incident response, bilateral and multilateral technical exchange, and capacity building.

Office of Nuclear Energy (NE)

In FY 2023, DOE (NE-6) negotiated the establishment of two regional Clean Energy Training Centers (CETC) in Poland and Ghana. The Centers will employ U.S. nuclear technology and expertise to support each host country and regional partner's pursuit of nuclear energy in a clean energy system, including hybrid energy systems combining nuclear and renewable technologies. DOE will initially develop the training, and the host countries will contribute physical space and staffing. The Centers are intended to serve as U.S.-affiliated resources for regional academic, industry, and Government communities pursuing the development of peaceful nuclear programs, as well as venues for international nuclear conferences and workshops.

Harness the atom to safely, reliably, and affordably power a global fleet that enables unrivaled responsiveness, endurance, stealth, and warfighting capability

National Nuclear Security Administration (NNSA)

S8G Prototype Refueling Overhaul: NNSA completed restoration and reassembly of the new design reactor head area; removed all temporary systems and shielding; started the initial fill and integrated testing of the reactor plant, steam plant, and associated support and safety systems; and completed all production work required to

support heat-up and initial criticality of the Technology Demonstration Core. The S8G Prototype continued to provide a cost-effective test and evaluation platform for new technologies, materials, and components before they are introduced to the fleet, in addition to a vital training platform for reactor plant operators.

Spent Fuel Handling Recapitalization Project (SFHP): The SFHP reached over 230,000 cubic yards of concrete placed for the Naval Spent Fuel Handling Facility's foundations and began erecting the steel structure for the main process building. The facility will deliver increased reliability, capability, and capacity of naval spent nuclear fuel handling activities, resulting in an increase to the Navy's responsiveness and agility to fulfill military missions worldwide.

Columbia-Class Reactor Systems Development (CCRSD): DISTRICT OF COLUMBIA (SSBN 826), the lead ship of the COLUMBIA class, is under construction with the reactor plant design more than 93 percent complete. The COLUMBIA Class remains the US Navy #1 Acquisition Program and on-time completion is necessary to ensure a smooth transition as the OHIO Class submarines are retired from the fleet.

Promote Equity and Energy Justice

Participating Programs	
• Arctic Energy • Chief Information Officer • Clean Energy Demonstrations • Economic Impact and Diversity • Electricity • Energy Efficiency and Renewable Energy • Energy Information Administration • Environmental Management • Federal Energy Management Program • Fossil Energy and Carbon Management • General Council • Grid Deployment • Human Capital	• Indian Energy • Legacy Management • Loan Programs • Management • Manufacturing and Energy Supply Chains • National Nuclear Security Administration • Nuclear Energy • Policy • Science • Small and Disadvantaged Business Utilization • Southeastern Power Administration • State and Community Energy Programs • Technology Transitions

DOE is committed to the successful implementation of initiatives that support underrepresented groups, disadvantaged communities, and the DOE Federal workforce to ensure that equity is enduringly embedded into the Department's policies and activities. The successful implementation of these priorities across the DOE enterprise requires embedding equity in the agency's hiring, procurement, financial assistance, RDD&D activities, as well as cross-agency investment in the foregoing workstreams. Implementation further requires the development of ample metrics to baseline the agency's current activities and create milestones for subsequent achievement. Examples of FY 2023 program accomplishments in these areas include:

Advance equity in DOE's procurement, funding, R&D and D&D processes and activities

Office of Management (MA)
To advance the goals of EO 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government, DOE developed provisions for use in assistance agreements that encourage companies, universities, and non-profit organizations receiving Federal funds to develop robust DEIA policies and to increase subawards to entities from underserved communities. The Department collaborated with the Office of Federal Procurement Policy to sponsor a crowdsourcing campaign on "Shaping Solutions to Address Barriers to Equity in Federal Procurement" to support the Government-wide effort to advance equity in Federal agency programs. The results of the crowdsourcing campaign are being used to inform Executive Branch agencies' initiatives related to EO 13985, including addressing barriers that restrict historically underserved groups from full and equal participation in the Federal marketplace.

Furthermore, to advance the goals of EO 13985 DOE's Government-wide Ability One Representative-led efforts to increase Federal contracting opportunities for Americans with Disabilities under the AbilityOne Program, which is one of the largest sources of employment in the U.S. for people who are blind or have significant disabilities, employing more than 45,000 individuals, including approximately 3,000 veterans. DOE has implemented a strategy with DOE Management and Operating and Major Site and Facility contractors designed to increase subcontracting opportunities from AbilityOne contractors who employ people who are blind or have significant disabilities.

DOE led a working group to explore the use of PIA authorities as a new external engagement mechanism and to develop an implementation plan to establish a DOE PIA pilot. PIAs are designed to foster joint activities between DOE and small business firms, other industry, Government, universities, non-profit organizations, and non-traditional partners intended to be used when traditional mechanisms may not provide adequate outreach and engagement with non-traditional partners or when traditional mechanisms are unsuitable. Based on the working group recommendations, the Secretary of Energy approved a five-year PIA pilot permitting DOE to enter into an agreement with a statutorily defined Partnership Intermediary (PI). Through a competitive solicitation and selection process, the Department selected DEFENSEWERX (DWX) as the PI and awarded a PIA for the DOE five-year pilot.

Office of Science (SC)
Launched in FY 2023, the Reaching a New Energy Sciences Workforce (RENEW) initiative supports traineeships at institutions historically underrepresented in the SC research portfolio to create new pathways and opportunities for STEM training for students from groups underrepresented in the U.S. S&T ecosystem. Through RENEW, SC provided $70 million in awards for internships, training programs, and mentor opportunities at 65 different institutions across 23 states and the District of Columbia, including 17 Historically Black Colleges and Universities (HBCU,), 11 Hispanic-Serving Institutions (HSI,), two Asian American and Native American Pacific Islander Serving-Institutions (AANAPISI,) and 10 institutions that are both HSIs and AANAPISIs. Awards focus on basic research in the physical sciences, including physics, chemistry, materials science, applied

mathematics, computer science, biology, and Earth and environmental sciences.

SC launched the Funding for Accelerated, Inclusive Research (FAIR) initiative in FY 2023. In this first year of the initiative, SC provided $37 million awards for 52 projects to 44 institutions. Forty-three of these 44 institutions are Emerging Research Institutions and 25 are identified as MSIs, including eight HSIs, six HBCUs, two AANAPISIs, one Tribal college and university, and eight HSI/AANAPISIs.

Office of Economic Impact and Diversity (ED)
ED hosted DOE's first annual Minority Business Enterprise Summit to educate stakeholders on DOE's programs and identify barriers to participation in DOE solicitations. The Department launched DOE STEM, a newly coordinated and collaborative effort to share, improve, and increase accessibility to all DOE has to offer for the training, education, and engagement of STEM students, educators, professionals, and skilled workers. ED designed and held six Workshops on "How to Prepare a Quality Funding Application" offered to MSI faculties to share the new DOE STEM resources.

Office of Nuclear Energy (NE)
On June 22, 2023, NE issued a Consolidated Innovative Nuclear Research (CINR) FOA, which includes the Grand Challenge Research and Development at Minority-serving Institutions (MSI) Integrated Research Project (IRP) scope. This opportunity is restricted to MSI-lead institutions, including HBCUs, tribally controlled colleges and universities (TCCU), AANAPISIs, and HSIs defined in Title III and Title V of the Higher Education Act of 1965. This scope solicits applications that address one or more NE mission-related technical areas that advance nuclear engineering R&D at MSIs.

NE's university programs awarded two Nuclear Energy University Program (NEUP) R&D, two IRPs, one Nuclear Science User Facilities (NSUF), two infrastructure support, and two Innovations in Nuclear Energy R&D Student Competition grants to MSIs. These projects support 14 MSI prime and sub-awardees, advancing equity in the Department's R&D processes and activities. Additionally, through NE's University Nuclear Leadership Program (UNLP), NE awarded three fellowship and 17 undergraduate scholarship grants to students attending MSIs pursuing degrees in educational areas associated with nuclear engineering and science. Awarding these grants supports NE's efforts to advance equity in the workforce and build a diverse talent pipeline necessary to meet future nuclear energy career needs in the U.S.

Office of Energy Efficiency and Renewable Energy (EERE)
EERE's involvement with the MSI STEM Research and Development Consortium (MSRDC) grew in FY 2023, resulting in further technology development, including using algal, food waste, and ethanol feedstocks to produce biofuels; a range of critical materials production processes (i.e., wide bandgap semiconductors, carbon fiber composites, smart manufacturing, and more); and proposed work on building technologies.

Office of Fossil Energy and Carbon Management (FECM)
FECM has included requirements in all FOAs that require applicants to develop and submit a community benefits plan (CBP) to address the societal considerations and impacts (SCI) anticipated from proposed projects, emphasizing DEIA and address environmental justice throughout the R&D effort. Moreover, applicants must also explain how projects are expected to deliver equitable access to, and distribution of, benefits produced from successful technology innovations, as well as understand the future workforce implications of the innovation. Lastly, projects selected under these FOAs are required to develop and implement strategies to advance equity and other priorities, in addition to document progress being made by reporting on these activities and their outcomes. CBPs are an important component to the technical merit review process and ultimately becomes part of the recipient's contractual obligations.

FECM's University Training and Research (UTR) program funds early-stage R&D and student development at U.S. colleges and universities. The UTR program supports the University Carbon Research program and the Historically Black Colleges and Universities and other Minority Serving Institutions (HBCU-MSI) program. In FY 2023, FECM released an FOA for the UTR program, anticipating funding projects with a combined value of $17.7 million. From 2010-2022, 57 awards were made through the HBCU–MSI program with 191 students benefiting from the program.

FECM also supports the Mickey Leland Energy Fellowship (MLEF), which provides students with a 10-week Summer research experience at the DOE's headquarters or National Labs. This year's program includes 56 undergraduate and graduate students representing 43 academic institutions with 37 percent of participants attending a MSI. Participants also represent 20 states, Washington, D.C., and Puerto Rico. This diverse group of fellows will bring a unique perspective and skillset to the MLEF Program.

Office of Policy (OP)
OP worked with ED to spearhead the Engagement Community of Practice, sharing experiences and best practices with other offices that are engaging disadvantaged communities and implementing new technical assistance programs. This forum addressed innovative financing mechanisms, how to reduce administrative burden for communities applying to DOE programs, how to implement more equitable merit reviews, and the best ways to engage communities. This has helped to improve program implementation throughout the Department and improve DOE's ability to increase access to affordable, sustainable, and reliable energy. OP also supported the Department of the Interior's 2023 Territorial Climate and Infrastructure Workshop, which offered an opportunity to hear directly from people in the territories about their energy and infrastructure needs and provide information regarding the availability of a variety of programs that could help.

Office of Technology Transitions (OTT)
OTT's FY 2023 Technology Commercialization Internship Program recruited its most diverse internship class, where 10 of 15 students attended an MSI. OTT's Energy Technology University Prize program increased its MSI participation from 21 percent in FY 2022 to 23 percent in FY 2023. OTT successfully established a formal engagement with DOE's Office of Economic Impact and Diversity for strategic integration in current programming activities to increase diversity and equity.

Office of the General Counsel (GC)
GC improved the FOA process by helping to develop Procurement Guidance on Consulting with Tribes and the criteria, terms, conditions relating to Community Benefit Plans for applications in financial assistance cooperative agreements. GC also took part in the leadership team developing and providing Puerto Rico Energy Resilience Fund FOAs for vulnerable communities, including low-income and disability households. GC was part of the Equity, Labor, and Economic Prosperity leadership team leading efforts to promote equity and Justice, including implementation of the Justice40 Initiative established by EO 14008, *Tackling the Climate Crisis at Home and Abroad*. Furthermore, GC co-hosted the Hispanics in Energy Legislative Summit in February 2023.

Office of Small and Disadvantaged Business Utilization (OSDBU)
OSDBU and the Office of Acquisition Management conducted market research for a small business to develop a new and improved public-facing, centralized web-based business forecasting platform that provides visibility and transparency into financial opportunities to do business with the DOE and its major industry partners. OSDBU also established a DOE enterprise-wide Mentor Protégé Program Working Group to improve and expand the incubator program diversifying the DOE partner base.

OSDBU coordinated on more than 15 major DOE and NNSA acquisition strategies to ensure maximum practicable opportunities were provided to small businesses, including small disadvantaged, woman-owned, veteran-owned, and historically underutilized business zone small businesses. OSDBU co-hosted or participated in 70 small business outreach events, providing information on how to do business with DOE, as well as participating in match-making sessions with industry stakeholders. In addition, OSDBU led more than 322 one-on-one small business consultations on doing business with the Department.

Increase access to affordable, sustainable, and reliable energy for disadvantaged communities

Office of Energy Efficiency and Renewable Energy (EERE)
In FY 2023, EERE invested $15 million into the Energy Transitions Initiative (ETI) and the ETI Partnership Projects. ETI facilitates self-reliant communities by addressing energy costs, reliability, and infrastructure challenges for remote and islanded communities. Partners and communities are equipped to transition off fossil fuels, establish community resources, create microgrids, and take other actions to access the benefits of clean energy development.

The DOE Inclusive Energy Innovation Prize, which supports clean energy innovation efforts in underserved communities, made $1.5 million in awards to winning teams in Alaska, Louisiana, New York, Oregon, Puerto Rico, and Washington. The award winners received $250,000 respectively for workforce development efforts, entrepreneurship, and relevant efforts to support the clean energy transition.

Office of Economic Impact and Diversity (ED)
ED organized and promoted DOE's Energy Justice to the People Roadshow in the Rio Grande Valley and in Cancer Alley to bring key stakeholders and Government officials together to learn about initiatives and funding that DOE has available to support disadvantaged frontline communities and advance U.S. energy security in a just and equitable way.

Office of Electricity (OE)
OE provided $19 million to emerging long-duration energy storage demonstration projects in remote communities and military housing. NOMAD Transportable Power Systems and Corvias Military Living will receive funding to show how storage can lower electricity bills and increase reliability for remote communities in Vermont and military housing in Kansas.

Loan Programs Office (LPO)
LPO closed a loan guarantee agreement with Sunnova Energy Corporation's Project Hestia for an up to $3 billion partial loan guarantee to make distributed energy resources, encompassing rooftop solar, battery storage, and virtual power plant-ready software available to more American homeowners, with a prioritized focus on households in disadvantaged communities across the United States (including Puerto Rico).

U.S. Energy Information Administration (EIA)
In FY 2023, EIA published state-level household energy consumption data from the Residential Energy Consumption Survey (RECS) for all 50 states for the first time, which included data on energy insecurity. EIA also conducted preliminary work toward a new data collection on household utility disconnect notices, which could potentially provide critical new insights on this topic. In addition, EIA established an ongoing dialogue with ED to discuss existing and potential data and analysis that could help inform the broader policy discussion around energy insecurity.

State and Community Energy Programs (SCEP)
WAP serves low-income households (eligible income limit is 200 percent of the Poverty Guidelines provided by the Department of Health and Human Services [HHS]) disproportionately impacted by energy costs. The program supports approximately 7,000 jobs, is implemented through 700 place-based local

weatherization providers, and averages $372 first-year energy savings and 32,000 home energy retrofits completions per year. In FY 2023, WAP continued advances in workforce training, quality standards, and worker certification.

Office of Fossil Energy and Carbon Management (FECM)
In April 2023, the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization (ECIWG), which is an interagency collaborated effort led by DOE's NETL, released a two-year report, "Revitalizing Energy Communities: Two-Year Report to the President," previewing the path forward to ensure the Nation sustains momentum in building a clean energy future made in America. In addition, the ECIWG team hosted a range of events to inform stakeholders and engage communities, from webinars (twenty-four) to in-person events (seven), from local community engagement to White House meetings. To improve communication of funding opportunities, the ECIWG—including FECM/NETL—worked on the development of tools to identify Federal investments in eligible energy communities and disadvantaged communities. To improve communication of funding opportunities, the ECIWG including FECM/NETL worked on the development of tools to identify Federal investments in eligible energy communities and disadvantaged communities. The tax credit eligibility maps are available for stakeholders to easily view on Energy Communities.

Arctic Energy Office (AE)
AE enabled disadvantaged communities to gain greater access to DOE programs through outreach, webinars, travel to rural villages, and information sessions in disadvantaged communities and at-large statewide events. These events included the Alaska Sustainable Energy Conference, Alaska Power Association Conference, and Alaska Federation of Natives Convention. AE is an active participant in the Alaska Rural Energy Federal Coordination group led by the Denali Commission to share Federal resources.

National Nuclear Security Administration (NNSA)
The NNSA Long Term Stewardship (LTS) Program ensures all legacy environmental cleanup remedies remain in compliance with environmental regulations to protect human health and the environment. The LTS Program benefits communities adjacent to NNSA LTS sites, including disadvantaged communities, by preventing inappropriate exposure to legacy pollution. For example, the LTS Program operates and maintains groundwater and surface water pump and treatment systems; maintains extensive groundwater monitoring networks (thousands of wells); operates and maintains soil corrective action systems; and conducts inspections, sampling, laboratory analysis, data validation, and regulatory reviews. Absent a viable LTS program, communities surrounding NNSA LTS sites, including disadvantaged communities, would be exposed to legacy pollution. As such, 100 percent of the funds allocated to the following four LTS sites near disadvantaged communities are included in Justice40 reporting: SNL near Albuquerque, New Mexico, and Isleta Pueblo; Y-12 Plant in Oak Ridge, Tennessee; Pantex Plant near Amarillo, Texas; and Kansas City Bannister Federal Complex in Missouri.

NNSA also included equity and energy justice as a key component at the Fusion Energy and Nonproliferation Workshop (January 2023) including a panel dedicated to Energy Justice and Social Acceptance.

Ensure 40 percent of the overall benefits of relevant Federal investments are delivered to disadvantaged communities

Office of Economic Impact and Diversity (ED)
ED launched the Energy and Environmental Justice Partners Framework, a network across DOE composed of Energy Justice experts and practitioners that support the implementation of Justice40 and equity efforts across the Department. These partners work on equitable program design and implementation throughout DOE. ED also coordinated with the BIL Investment Performance Tracking Working Group to embed the Justice40 metrics into BIL Justice40-covered programs.

ED, along with OP and the Equity, Labor, and Economic Prosperity team, created and implemented a Community Benefits Plans framework, which requires applicants applying for DOE funding opportunities to include commitments on four core policy priorities: 1) investing in America's workforce; 2) engaging communities and labor; 3) advancing DEIA; and 4) contributing to the Justice40 Initiative. ED integrated a standardized rubric to review and score Community Benefits Plans.

ED published the updated Justice40 Implementation Guidance to assist program managers with integrating the principles of Justice40 into program design. ED designed the guidance document to help states, municipal Governments, private sector funding recipients, and other interested parties plan to incorporate Justice40 Initiative goals into DOE-funded projects.

Office of Policy (OP)
OP helped design a request for funding recipients to create Community Benefit Plans, a first-of-its- kind tool to integrate good-quality jobs and community needs into DOE, IRA, and BIL funding. OP promoted the consistent use of Community Benefit Plans to encourage funding applicants to strategically invest in America's workforce; engage communities; and implement Justice40. OP, together with other DOE offices, has helped to develop the template language and ensure that it is included in relevant funding opportunities. Additionally, members of OP served as expert reviewers for good jobs and Community Benefit Plans for multiple project selection processes.

Loan Programs Office (LPO)
LPO released updated Program Guidance for the Title 17 Clean Energy Financing Program with new requirement for all applicants to submit a Community Benefits Plan as

part of their Part II application. The Community Benefits Plan must include applicant engagement (current and future) with stakeholders affected by the proposed project: community, labor, and union engagement; job quality and workforce continuity; DEIA; and contributing to the Justice40 initiative goal that 40 percent of the overall benefits from certain Federal investments flow to disadvantaged communities.

Office of the Chief Information Officer (OCIO)
The Chief Information Officer (CIO) maps award data each month to inform ED and the larger community—DOE and the public—about award relevance to Justice40 goals, place of performance mapping to disadvantaged and Tribal disadvantaged census tract communities, and mapping for which awards were made to MSIs. All data is presented graphically on an online map of the U.S. with filters where the user can drill down to award details.

Office of Environmental Management (EM)
In 2023, EM continued to interact with stakeholders on the Justice40 Initiative at various EM sites through presentations, listening sessions, conference calls, and in-person or virtual meetings. EM headquarters interacts with its field sites on newly issued Justice40-related information, including: 1) the Environmental Justice Scorecard issued by OMB to provide information about actions Federal agencies take to advance environmental justice in communities across the United States and 2) the Council on Environmental Quality's updated version of the Climate and Economic Justice Screening Tool to help Federal agencies identify disadvantaged communities that are marginalized, underserved, and overburdened by pollution.

In November 2022, EM's Minority Serving Institutions Partnership Program (EM MSIPP) provided $30 million in financial assistance grants to MSIs in South Carolina, Tennessee, and Washington, near various EM cleanup sites. These grants will help develop highly qualified STEM students and foster a well-trained, technically skilled, and inclusive workforce. On April 27, 2023, EM released a $24.5 million FOA for EM MSIPP financial assistance grants. EM is currently reviewing MSI grant applications.

Office of Management (MA)
DOE developed provisions for use in assistance agreements that encourage companies, universities, and non-profit organizations receiving Federal funds to develop robust DEIA policies and to increase subawards to entities from underserved communities. In addition, DOE Management and Operating and Major Site and Facility contractors awarded approximately $2.5 billion to small businesses. To leverage opportunities, DOE's guidance increases subcontracts to companies from underserved communities and to remove barriers for members of these communities.

In addition, MA provided monthly procurement data sets for a public-facing Energy Justice Dashboard tool in support of EO 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, and EO 14008, *Tackling the Climate Crisis at Home and Abroad*. This visualization tool displays DOE-specific investments in communities across the country experiencing disproportionately high and adverse economic, human health, climate-related, environmental, and other cumulative impacts. The dashboard data provides a better understanding of DOE's funding and investments distribution, while improving the visibility into how funds are being used to both internal and external audiences.

Office of Legacy Management (LM)
LM continues to conduct Long-Term Surveillance and Maintenance at sites on or adjacent to Native American and Alaskan Native Communities. In FY 2023, LM conducted 207 inventories, including 168 on public lands and 39 on Tribal lands. LM provided five grants to MSIs located within 250 miles of LM sites to conduct environmental justice activities.

Office of Indian Energy Policy and Programs (IE)
In May 2023, IE announced $34 million to advance clean energy technology in 18 American Indian and Alaska Native communities, 67 percent of which represent disadvantaged communities not previously funded. Additionally, in FY 2023, IE issued a $50 million funding opportunity to support clean energy technology deployment for underserved Native communities and a $15 million funding opportunity to transition Tribal colleges and universities to clean energy.

Arctic Energy Office (AE)
In FY 2023, AE staff attended the Justice 40rward Community Tour in Alaska, sponsored by environmental justice organizations, to continue to build relationships and connect disadvantaged communities to DOE resources and set up a trip for ARPA-E Director Wang to visit Nondalton, a remote Alaskan community, to see issues facing disadvantaged communities first-hand. More than 40 percent of AE's efforts in Alaska have been directed toward disadvantaged communities there through site visits and assisting disadvantaged communities to access DOE and other Federal funding.

Office of Electricity (OE)
The Energy Storage for Social Equity program completed its Technical Assistance Phase, where 14 communities received capacity-building support to model how energy storage and related technologies could help enhance the energy security, affordability, and resilience of their facilities. In June 2023, OE announced that four of these communities would receive additional support to proceed to project development and deployment.

Office of Science (SC)
Based on a BER FOA issued in FY 2023, five Climate Resilience Centers placed at HBCUs, MSIs, and HSIs have been established. The Centers have a unique focus on ecological, atmospheric, and/or modeling challenges, each with a risk analysis component. The Centers will establish demonstration research projects with multi-institutional collaborations to develop resilience science and capabilities with demonstration projects involving

communities and stakeholders engaged in climate solutions.

Southeastern Power Administration (SEPA)
In FY 2023, approximately 37 percent of the Federal hydropower generated in SEPA's marketing area was delivered to disadvantaged communities, supporting Department policies to decrease energy burden in disadvantaged communities and increase parity in clean energy technology access and adoption in disadvantaged communities.

Office of Federal Energy Management Program (FEMP)
FEMP released the DOE Energy Savings Performance Contract, Generation 4 IDIQ contract to increase the small business requirement to 45 percent of total subcontract awarded value with specific goals for socioeconomic activity.

Grid Deployment Office (GDO)
GDO launched the Puerto Rico Energy Resilience Fund (PR-ERF) to support Puerto Rico's grid resilience efforts with a focus on Puerto Rico's most vulnerable households and to achieve its goal to meet 100 percent of its electricity needs with renewable energy by 2050. As part of PR-ERF, GDO released an FOA for up to $450 million to support residential rooftop solar and battery storage installations and offer consumer protection and education resources. Qualified beneficiaries of the systems will include very low-income, single-family households that experience frequent and prolonged power outages or include a family member with an energy-dependent disability.

Office of Clean Energy Demonstrations (OCED)
In FY 2023, OCED instituted policies that required all of OCED's FOAs – worth over $18 billion in Federal funding – to include a requirement for applicants to create and, if awarded funding, implement a CBP based on a set of four core interdependent policy priorities: 1) engaging communities and labor; 2) investing in America's workforce; 3) advancing DEIA; and 4) implementing the Justice40 Initiative. OCED also developed criteria to ensure CBPs would be a consideration on who would be selected for awards. In addition, OCED partnered with the Environmental Protection Agency (EPA) to create, and fund, new Environmental Justice Thriving Communities Technical Assistance Centers (EJ TCTACs). Each EJ TCTAC is a "one-stop shop" for environmental- and energy-justice-related technical assistance needs, including support for managing Federal grant systems and applying for Federal funding. EJ TCTACs cover every region of the country, and each has many local community partners.

Office of Fossil Energy and Carbon Management (FECM)
In FY 2023, FECM has continued work to develop methodologies for tracking benefits of RD&D activities to disadvantaged communities. FECM initially calculated benefits by using recipient addresses and disadvantaged community locations to assess the amount of funding investments directly benefiting communities. FECM continues to improve this methodology with deployment forecasting models and chemical dispersion modeling to better quantify direct benefits and impacts from FECM technologies.

Office of Technology Transitions (OTT)
OTT's Justice40-covered programs were active in FY 2023. Round 1 of the Energy Program for Innovation Clusters (EPIC) continued to be actively managed; additionally, EPIC Round 2 awarded $650,000 out of $2.2 million as a multi-stage prize competition to incubators located in disadvantaged communities. In February 2023, 184 student teams from 124 schools representing 44 states, the District of Columbia, and two U.S. territories competed for over $370,000 in prizes by devising business plans for energy technologies developed at the National Laboratories in the FY 2023 EnergyTech University Prize. Twenty-six percent of the winning regional, national, or bonus prize teams were from universities either in a disadvantaged community or designated as an MSI. The Summer-long Technology Commercialization Internship Program selected 15 students to intern at the National Laboratories, 11 of which attended MSIs and/or had home addresses in disadvantaged communities.

Office of Manufacturing and Energy Supply Chains (MESC)
MESC successfully guided collaboration with Treasury and IRS to implement the $10 billion Qualifying Advanced Energy Project Credit (48C) Program. MESC serves as Treasury's lead agent. The first allocation round (Round 1) of the § 48C(e) program was launched on May 31, 2023 and committed $4 billion of § 48C credits, with $1.6 billion in § 48C credits to be allocated to projects located in certain disadvantaged energy communities.

In FY 2023, MESC invested $350 million for small- and medium-sized manufacturers to produce or recycle advanced energy property—property used to support clean energy supply chains—in communities where coal mines or coal power plants have closed through the Advanced Energy Manufacturing and Recycling Grant Program, funded by Section 40209 of the Bipartisan Infrastructure Law. To help small- and medium-sized manufacturing firms interested in the program but are not ready for the initial funding round, MESC also launched a competitive readiness technical assistance program.

Support economic development, including through clean economy opportunities for workers in communities and industries in transition

Office of Policy (OP)
OP released a report on Federal Support Opportunities to Remediate and Redevelop Energy Assets to outline how Federal resources can be utilized to drive redevelopment and reinvestment opportunities in fossil energy communities across America. OP developed this report, along with a coal power plant redevelopment mapping tool, as resources to support place-based efforts by the

Coal and Power Plant Communities Interagency Working Group.

Office of Fossil Energy and Carbon Management (FECM)
The Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization (Energy Communities IWG) launched the ECIWG Navigator function and finalized the Getting Started Guide to assist community stakeholders by providing a more personalized approach to answering questions and helping them find requested information.

Office of Indian Energy Policy and Programs (IE)
In FY 2023, IE entered an MOU with the Navajo Nation, which launched a multi-year, multi-agency effort to boost prosperity and improve quality of life on the Navajo Nation. The MOU is the cornerstone of a broader initiative, spearheaded by IE, aiming to give Tribes transitioning from coal-centric to clean energy economies a fair chance of benefiting from the Federal funding made available for a wide range of infrastructure and economic development projects.

Arctic Energy Office (AE)
AE supported economic development for transitioning industries and communities through multiple efforts in FY 2023, including leading the Alaska Hydrogen Working Group, hosting workshops in Alaska during 2023 on potential opportunities for converting legacy natural gas infrastructure into CO_2 storage, and hosting a workshop on enhancing safe recovery of critical minerals in the Alaska mining industry. AE also funded the Arctic Council Arctic Remote Energy Networks Academy program to develop community-based renewable energy programs to transition beyond diesel in remote communities, as well as funded a two-day event with the Wilson Center, RAND, and University of Alaska on critical minerals and workforce issues in the Arctic.

Loan Programs Office (LPO)
LPO successfully launched the new 1706 Energy Infrastructure Reinvestment Program, receiving approximately 10 applications for energy infrastructure reinvestment projects and conducting pre-application consultations for 30-40 additional projects, including across energy communities (e.g., Southwest, Appalachia, Gulf Coast, and Central Valley of California). LPO coordinated extensively across DOE and with the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization to design and implement the program, as well as conducted extensive stakeholder engagement with local communities, private sector entities, and state and local governments.

Enhance engagement and energy economic development opportunities in Tribal communities

Office of Indian Energy Policy and Programs (IE)
IE provided guidance and acted as an advisor to DOE to enhance engagement with Indian Tribes, including Alaska Native regional and village corporations. To strengthen Nation-to-Nation relationships, IE hosted a Tribal Clean Energy Summit in October 2022, during which Director Johns, U.S. Secretary of Energy Granholm, and other senior DOE officials joined 60 Tribal leaders for an historic Nation-to-Nation roundtable discussion of how Tribes can harness clean energy to enhance energy sovereignty, address climate resilience, and build stronger and safer communities. The Summit also offered 350 attendees the opportunity to learn more about key DOE programs and funding and engage with senior DOE leaders.

IE engaged with 1,391 Tribes and other interested parties through six webinars (average of 231 attendees) focused on funding and financing, workforce development, and clean energy development in FY 2023. Furthermore, IE had over 19,000 visitors to the website, over 21,000 subscribers to the e-mail newsletters, and saw increases to social media followings.

Arctic Energy Office (AE)
AE's FY 2023 Alaska activities benefited Tribal communities, including Alaska Native Village Corporations (ANVC) and Alaska Native Corporations (ANC). AE shared Tribal outreach efforts with IE, engaged ANCs and Tribal organizations, led tailored webinars to reach ANCs and ANVCs about programs such as the Grid Deployment Office's State/Tribal Formula Grants, and facilitated meetings in Alaska with DOE officials on Tribal issues.

Grid Deployment Office (GDO)
In FY 2023, GDO launched the Tribal Nation Technical Assistance Program for Offshore Wind Transmission. Through this program, GDO, in partnership with NREL, will offer technical assistance and trainings to help federally recognized Tribes and Alaska Native Villages successfully engage transmission planning and development for offshore wind in the U.S.

Office of Fossil Energy and Carbon Management (FECM)
FECM hosted a series of informational webinars for Tribal communities on FECM BIL opportunities.

Office of Economic Impact and Diversity (ED)
In FY 2023, over $752,000 was invested from DOE program offices to provide work experience for students from MSIs through the competitive Minority Educational Institutions Student Partnership Program, a stipend-based Summer internship program. Students came from 20 states, including the Virgin Islands and Puerto Rico. Student selections consisted of 43 Undergraduate Students, 13 Graduate Students, and seven American Indian or Alaskan Native Students. Out of 16 students who were offered extensions, 14 accepted.

Loan Programs Office (LPO)
LPO successfully built a pipeline of deals for the Tribal Energy Finance Program. Additionally, the team expanded its outreach to Tribes through a strong external

engagement plan and in-person meetings throughout 2023.

Office of Legacy Management (LM)
In addition to regular engagements, LM joined with the DOE State Tribal Government Working Group and the Tribal Energy Steering Committee (TESC) to further critical relationships with Tribal nations. LM senior leadership visited the Navajo Nation in March 2023 for a first meeting with newly elected President Buu Nygren to share an overview of LM's mission to protect human health and the environment, as well as to discuss current work on the Navajo Nation. LM established a new physical office presence in Shiprock, NM in the Navajo Engineering and Construction Authority complex to provide space for Shiprock community involvement and further DOE's commitment to in-person engagement with the Navajo Nation. Additionally, LM's Window Rock Outreach Office moved to a larger, more visible space for members of the public to visit and learn about LM's work on the Navajo Nation. STEM with LM continues to grow and expand connections with Tribes by participating in many Tribal events and expanding connections and access to STEM education. LM participated in six "STEM-sation" events on the Navajo Nation and attended the February STEM Fest on the Cherokee Nation. LM also established a relationship with Miss Navajo Nation, a champion of STEM education.

State and Community Energy Programs (SCEP)
SCEP continued implementing $225 million for Tribal Home Electrification and Appliance Rebates programs. These grants to Tribal governments and Alaska Native entities provides up to $14,000 per eligible Tribal household for energy efficiency and electrification home upgrades. SCEP also worked on processing up to $8.8 million in formula grants for Tribal communities under the Energy Efficiency and Conservation Block Grant Program. The program is designed to assist Tribes in implementing strategies to reduce energy use, to reduce fossil fuel emissions, and to improve energy efficiency.

Support diversity and equity among researchers, projects, entrepreneurs, and the National Laboratories

Office of Economic Impact and Diversity (ED)
ED initiated an agreement with Texas Southern University to promote greater community capacity to develop and participate in community benefits plans and community benefits agreements. ED also created a cooperative agreement with the Black Owners of Solar Services (BOSS) to improve minority-owned business participation in BIL/IRA opportunities.

ED also developed an informational workshop for MSIs to promote greater participation from underrepresented institutions in the applicant pool to DOE funding opportunities.

Office of the Chief Human Capital Officer (HC)
HC partnered with ED and other entities to improve candidate sourcing methods for underrepresented groups. HC attended or hosted 58 recruitment and outreach events targeting underrepresented populations, Veterans, and STEM-related positions. These efforts resulted in over 60 percent of our STEM positions being filled by members of underrepresented populations.

In addition, HC marketed DOE events and vacancy announcements to diverse populations utilizing job boards geared toward colleges and universities, Veterans and military spouses, diversity-focused professional associations, underserved communities, and disability employment partners.

Office of Science (SC)
In FY 2023, SC launched the requirement that applicants include a Promoting Inclusive and Equitable Research (PIER) Plan with all submitted proposals. PIER Plans describe the actions and strategies the applicant will incorporate to advance DEIA within the project.

SC also significantly expanded its outreach to students and faculty from backgrounds and institutions historically underrepresented in the SC research portfolio. These efforts included: hosting regular public webinars associated with each FOA to answer questions and connect interested applicants with relevant SC program staff; conducting application assistance webinars; and engaging in outreach at the major annual meetings of minority-serving scientific professional societies, such as the National Society of Black Physicists, National Association for the Professional Advancement of Black Chemists and Chemical Engineers, Out in STEM, and Society for the Advancement of Chicano/Hispanics and Native Americans in Science.

Office of Energy Efficiency and Renewable Energy (EERE)
In FY 2023, EERE invested $8.85 million for the HBCU Clean Energy Education Prize to inspire students to learn about clean energy through HBCU-hosted programs, initiate partnerships between HBCUs and other universities to build new cross-university curricula, and integrate programming between HBCUs and clean energy industry partners.

Office of Technology Transitions (OTT)
OTT awarded FY 2023 Technology Commercialization Fund Base funding to MSI Connect, a multi-laboratory project focused on building partnerships between the National Laboratories and MSIs. BNL leads the projects, partnering with LLNL, SNL, Princeton Plasma Physics Laboratory, SLAC National Accelerator Laboratory, and NETL.

The NNSA's MSIPP and Tribal Education Partnership Program (TEPP) create and support a sustainable career pathway to prepare a talented and diverse student workforce ready to make significant contributions to the Nuclear Security Enterprise (NSE). To achieve this, MSIPP/TEPP administer financial assistance awards to

support cutting-edge research and workforce development projects that advance the NSE mission, through consortium partnerships between MSIs and DOE/NNSA labs, plants, and sites. In FY 2023, MSIPP/TEPP supported 33 consortia to: strengthen capacity in STEM education; increase the number of MSI graduates in STEM disciplines; and broaden the pathway for a skilled workforce to be hired across the NSE.

Office of Policy (OP)
OP serves as DOE's Rural Desk Officer within the Rural Partners Network (RPN), which is overseen by the Rural Prosperity Interagency Policy Council. The San Carlos Apache Tribe's solar project was selected as one of RPN's "Signature Projects," for which DOE is the lead agency. The Office of Indian Energy awarded the Tribe a grant, which is expected to save nearly $4 million over the life of the microgrid. OP also led coordination across the General Services Administration (GSA), DoD, White House Council on Native American Affairs, and DOE offices on implementation of the Indian Energy Purchase Preference. OP facilitated Tribal listening sessions to leverage Federal procurement opportunities to support Tribal clean energy development.

OP has supported the implementation of Tribal formula grants, especially the Tribal Home Appliance and Electrification Rebate Program, ensuring program offices have the necessary input to make equitable decisions in formula development and program implementation. OP educated the program offices administering Tribal formula grants about the opportunity provided by a Public Law 102-477 program to reduce the administrative burden of Tribes receiving funding from DOE.

Office of Manufacturing and Energy Supply Chains (MESC)
In November 2022, MESC announced an expansion of the Industrial Assessment Centers (IAC) program from 32 to 37 university-based centers, each focused on enhancing cybersecurity, promoting resiliency planning, and supporting manufacturers in disadvantaged communities. Three of the five newly funded IACs are at MSIs. Overall, 11 of the centers are at MSIs and four IAC "satellites" (partner institutions of the main centers) are at MSIs.

Advance Clean-Up of Radioactive and Chemical Waste

Participating Programs	
• Environmental Management	• Legacy Management

The Department is responsible for one of the largest environmental remediation efforts in the world. Decades of nuclear weapons development and Government-sponsored nuclear energy research resulted in substantial environmental contamination at 107 sites across the country, mostly located in remote and rural areas of the United States. Examples of FY 2023 program accomplishments in these areas include:

Support environmental remediation

Office of Environmental Management (EM)
EM treated over 580,000 gallons of waste through the Tank Side Cesium Removal demonstration project at Hanford. EM is on track to treat over 800,000 gallons of tank waste before the treated waste is needed for Direct Feed Low Activity Waste (DFLAW) operations.

At the Savannah River Site (SRS), EM successfully treated over 7 million gallons of tank waste through the SRS Salt Waste Processing Facility (SWPF). SRS is overseeing initiatives to increase SWPF's processing rate, as well as implementation of a risk reduction strategy, wherein more curies than originally planned will be processed. The construction of the saltstone disposal unit (SDU) 8 was completed, with SDU 8 approved for operations in June.

On April 11, 2023, EM successfully completed start-up of radiological operations at the Idaho site. Over 68,000 gallons of sodium bearing waste have now been processed since start-up.

EM successfully completed 59 shipments of transuranic waste to the Waste Isolation Pilot Plan (WIPP) from EM Los Alamos.

At Paducah, EM completed disposition of 50 percent of R-114 refrigerant and remained on schedule to complete disposition by the end of FY 2026.

EM continued demolition of B251 at LLNL and commenced the Legacy Slab 377 and Legacy Slab 412 slab/soil removal projects. The United States Army Corps of Engineers (USACE) awarded a Task Order to commence B280 demolition activities.

At Oak Ridge, EM demolished the Criticality Experiment Laboratory and retrieved 6.5 tons of mercury from deactivation efforts at the Y-12 National Security Complex (Y-12). EM also completed demolition on Bulk Shielding Reactor and demolition of the Low Intensity Test Reactor is underway at Oak Ridge National Laboratory (ORNL). EM is actively addressing nearly 20 excess and contaminated facilities at ORNL and Y-12 to prepare them for near-term demolition.

At Moab, EM successfully completed excavation, transportation, and disposal of over 1 million tons of uranium mill tailings in FY 2023.

Office of Legacy Management (LM)
LM conducted Long-Term Surveillance and Maintenance (LTS&M) activities at 101 sites to monitor the environmental remedies in accordance with legal agreements. LM completed LTS&M activities by employing sound program and project management, engineering, and science-based solutions. The sites within LM's responsibility include those remediated under various regulatory frameworks, including the Formerly Utilized Sites Remedial Action Program; Defense Decontamination and Decommissioning Program; Comprehensive Environmental Response, Compensation, and Liability Act of 1978; Resource Conservation and Recovery Act of 1976; and Uranium Mill Tailings Radiation Control Act of 1978.

In 2023, LM's Defense-Related Uranium Mine (DRUM) Program continued inventorying, reclaiming, and safeguarding hazardous mine features on public and Tribal lands. In FY 2023, LM conducted 207 inventories, including 168 on public lands and 39 on Tribal lands. Cumulatively, LM has inventoried 2,266 mines, comprising 2,222 on public lands and 44 on Tribal lands. In addition, in FY 2023, LM safeguarded 106 hazardous mine features. These 106 safeguarding actions contributed to LM cumulatively safeguarding 613 hazard features since program inception at DRUM sites on public lands.

LM received the Annual Federal Facility Excellence in Site Reuse Award from the EPA. In addition, LM's Formally Utilized Sites Remedial Action Program (FUSRAP) Middlesex Sampling Plant site in Middlesex, NJ received the Superfund National Priorities List Award.

Operational Excellence

Participating Programs	
• Chief Financial Officer • Chief Human Capital Officer • Chief Information Officer	• Economic Impact and Diversity • Enterprise Assessments • Environment, Health, Safety, and Security

Attaining mission success requires a sustained commitment to performance-based management and expectations of excellence from DOE headquarters to every site office, service center, laboratory, and production facility. At the center of this goal is a highly qualified, capable, diverse, and flexible Federal workforce who can execute the mission in a safe, secure, efficient, and sustainable manner. With a focus on achieving an inclusive and engaged work culture where individual differences and perspectives are recognized and celebrated as critical inputs to innovation. DOE cultivates a performance-based system that links work to meeting agency and Administration goals and achieving results. Management of RDD&D activities involves prioritization of those activities with the greatest potential and likelihood for impact. Examples of FY 2023 program accomplishments in these areas include:

Attract, manage, train, and retain the best federal workforce to meet future mission needs

Office of the Chief Human Capital Officer (HC)
DOE has hired 3,139 applicants (24 percent increase from FY 2022) and an additional 1,603 recruitment actions in progress, with an average time-to-hire rate of 84.6 days. HC leveraged approved staffing plans for all Departmental Elements to codify position numbers, which has resulted in an increased accuracy of tracking and reporting personnel, position status, and remote worker status. HC has leveraged technology to provide actionable information spanning the entire employee life cycle, which is crucial to the Department's customers' success. Data dashboards were developed, in coordination with internal HC stakeholders, to compile robust information regarding key performance metrics, such as time-to-hire, selection rates, and vacancy rates. By providing up-to-date information on employee and position status, the new Position Management Dashboard has improved vacancy forecasting. DOE continues to utilize the DOE Applicant Portal, which focuses on the Clean Energy Corps (CEC) recruitment, marketing, and outreach efforts to attract a diverse applicant pool from outside the Federal Government. The DOE Applicant Portal uses the LEVER system to provide an easy way for hiring managers to search through résumés to find qualified candidates who are interested in Bipartisan Infrastructure Law and Inflation Reduction Act positions.

In FY 2023, the HC Office of Talent Management facilitated over 2,300 development courses and 300+ leadership courses to improve the knowledge, skills, and abilities of our workforce. As a result, DOE executed over $27 million in training. To assist employees in determining appropriate courses, HC developed career road maps and succession plans to clearly set the course of advancement for employees to follow. In addition to launching a Skillsoft Percipio platform promoting professional skills courses, HC is in the process of revising and relaunching the Internal Coaching Network and has developed several competency models and skills assessments to identify future targeted training and development opportunities.

Employee and Labor Relations implemented a robust customer training program to provide supervisors and managers with necessary skills to manage personnel and accomplish their mission more effectively. DOE's employee engagement score, as measured by the Federal Employee Viewpoint Survey (FEVS) Employee Engagement Index, increased 1 percent to 78 percent positive.

Office of Economic Impact and Diversity (ED)
ED established an Employee Handbook to onboard new employees more efficiently. ED ensured that at least 70 percent of Federal supervisors completed DEIA training for talent processes and mitigation of implicit bias. Furthermore, ED staff spoke at over 170 events to engage with the public, which included prospective employees from both higher education and industry.

Use taxpayer funds efficiently and improve visibility into how funds are being used

Office of the Chief Financial Officer (OCFO)
OCFO developed a dashboard to track lifecycle spending of appropriations and will continue to implement additional features and capabilities. OCFO also expanded budget execution reviews with DOE program offices through increased frequency and detail level of reporting. OCFO also optimized cloud infrastructure by purchasing a three-year reservation for compute, which will reduce the cost by approximately 40 percent per year.

Office of the Chief Information Officer (OCIO)
In compliance with the Federal Information Technology Acquisition Reform Act of 2014 (FITARA) regulation, the OCIO led the development and collection of self-assessments from all 13 Departmental CIOs (DE CIO). The assessment was based on their Department's contribution, under their leadership, towards meeting the DOE CIO's FY 2023 Agency-wide Critical Element, which, among other technical requirements, made them accountable for:

sharing data elements necessary to increase enterprise visibility of IT spending, assets, vulnerabilities, and network traffic to improve incident response and Federal reporting; expanded use of strategic sourcing and Enterprise-Wide Agreements (EWA); and decreasing administrative overhead, removing lines of demarcation to support seamless enterprise-wide collaboration and utilize economies of scale to drive down Total Cost of Ownership (TCO) by leveraging EITS for commodity IT. The DOE CIO provides input to the self-assessments for the rating official of each DE CIO, who determine the critical element's performance rating.

Monitor Departmental performance to ensure that program activities are executed in a safe and secure manner consistent with departmental direction

Office of Enterprise Assessments (EA)
EA has completed over 70 independent assessments in the areas of cybersecurity, safeguards and security, nuclear safety, worker safety and health, and emergency management. These assessments 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 also managed DOE's safety and security enforcement program to promote contractor compliance with the Department's nuclear safety, worker safety and health, and classified information security requirements, as well as issued 15 enforcement outcomes in FY 2023 to include seven Notices of Violation and five Enforcement Letters.

EA's National Training Center (NTC) has issued over 70,000 completion certificates, representing more than 200,000 student hours in the areas of security and safety-related training, as well as professional development programs for the DOE Federal and contractor workforce.

Office of Environment, Health, Safety, and Security (EHSS)
EHSS continues to refine the suite of machine learning tools that enable the Department to monitor and improve the visibility of secure and safe performance metrics. This extends to continued work developing advanced computer tools to identify classified information.

EHSS is working with the Office of Intelligence and Counterintelligence and partner Program Offices to strengthen DOE's Insider Threat Program to bring it into full compliance with the National Insider Threat Task Force Minimum Standards for Executive Branch Insider Threat Programs.

EHSS hosted numerous Department-wide workshops for subject matter experts, to include personnel security, classification, worker health and safety, analytical services, nuclear facilities safety, and human reliability performance, to share best practices, identify areas of policy improvement, and assist in implementation of policy.

Office of the Chief Financial Officer (OCFO)
OCFO implemented Robotic Process Automation (RPA) for purchase card contract closeout. This process automation closed 72,000+ accounts and resulted in 265 days in staff time-savings for DOE.

OCFO modernized numerous enterprise-wide business systems to improve customer experience system functionality, as well as enhance DOE's cybersecurity posture. OCFO also implemented Multi-Factor Authentication (MFA) on 20+ corporate business systems to enhance the security of applications and comply with Federal mandates, as well as to address security vulnerability concerns.

OCFO's lifecycle spending dashboard provided enhanced data and visualization management of funding opportunities, awards, and performance metrics for DOE leadership and stakeholders.

Management's Analysis, Assurances and Priorities
Analysis of Financial Statements

The financial statements are prepared to report the financial position, financial condition, and results of operations, consistent with the requirements of 31 United States Code (U.S.C.) 3515(b). The statements are prepared from records of Federal entities in accordance with Federal generally accepted accounting principles (GAAP) and the formats prescribed by OMB. Reports used to monitor and control budgetary resources are prepared from the same records. Users of the statements are advised that the statements are for a component of the U.S. Government.

Balance Sheet

The Department's total liabilities exceed total assets with the Unfunded Environmental Liabilities being the largest component of the liabilities.

Chart 1 provides a breakdown of the Department's liabilities showing funded and unfunded liabilities. Significant changes in Assets are detailed in **Chart 2**. Fund Balance with Treasury (FBWT) increased primarily due to increases in IIJA funding. General Property, Plant, and Equipment, Net increased primarily due to increases in Construction work in process. Non-Intragovernmental Accounts Receivable decreased as a result of the Strategic Petroleum Reserve (SPR) performing an oil sale at the end of FY 2022 that was collected in early FY 2023. All Other Assets increased primarily due to increases in Investments and Related Interest, Net and Direct Loans and Loan Guarantees, Net.

Significant changes in Liabilities are detailed in **Chart 3**. The increase in Environmental Cleanup and Disposal Liabilities is primarily due to modifications of liability estimates driven by changes in technical approach, scope of activities, regulatory and legal changes, and inflation adjustments. The increase in Non-Intragovernmental Advances from Others and Deferred Revenue is primarily due to NWF interest income on investments. All Other Liabilities increased primarily due to increases in Intragovernmental Debt, Intragovernmental Advances from Others and Deferred Revenue, Non-Intragovernmental Accounts Payable, and Non-Intragovernmental Other Liabilities.

Chart 4 provides a detailed trend analysis of the changes in the Department's environmental liabilities balances over the past five years. Most of DOE's environmental liabilities are managed by the Environmental Management (EM) program, which addresses the legacy of contamination from the nuclear weapons complex and includes managing thousands of contaminated facilities formerly used in the nuclear weapons program, overseeing the safe management of large quantities of radioactive waste and nuclear materials, and cleanup of large volumes of contaminated soil and water. The active facilities portion of the environmental liability includes anticipated remediation costs for active and surplus facilities managed by DOE's ongoing program operations which will ultimately require stabilization, deactivation, and decommissioning. Other legacy liabilities are divided between environmental liabilities for active sites, including estimated cleanup; and the Office of Legacy Management (LM) for post-closure responsibilities, including surveillance and monitoring activities; soil and groundwater remediation; and disposition of excess material from sites after the EM program activities have been completed. The other legacy liabilities also include the Department's share of the estimated future costs of dispositioning its inventory of high-level waste and spent nuclear fuel (SNF). The Department's FY 2023 net costs and unfunded liability estimates decreased by $2.1 billion for contractor pension plans and decreased by $0.4 billion for contractor Postretirement Benefits (PRB) other than pension plans.

The major components of these estimate changes are shown in **Chart 5**. The most significant component of the change in the contractor pension plan net costs and liabilities resulted from an increase to the rate used to discount liabilities. The 50 basis point increase in the discount rate decreased the unfunded liability by approximately $2.6 billion. The most significant components of the change in contractor PRB net costs and liabilities resulted from an increase in the rate used to discount the liability to present value. The 50 basis point increase in the discount rate decreased the unfunded liability by approximately $0.4 billion. There was also a significant change in the PRB net costs and liabilities due to assumption changes for per capita claims and medical trends, totaling a decrease of $0.2 billion. However, this change was offset by a $0.2 increase due to actual demographic experience. The discount rate is based on the yields of high-quality fixed income securities as of September 30, 2023 and 2022.

Chart 1: FY 2023 Total Liabilities Breakdown by Funded/Unfunded

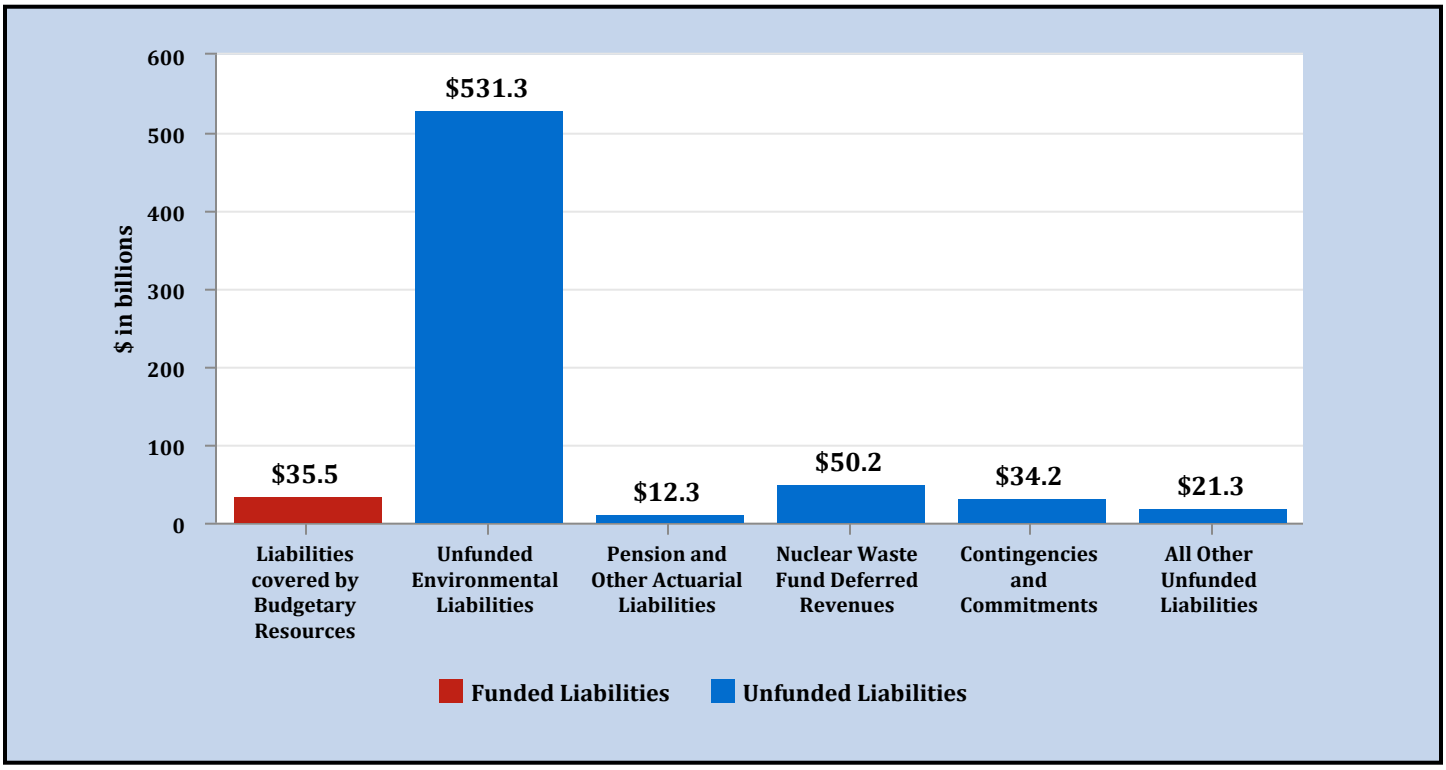


Chart 2: FY 2023 Significant Changes in Assets

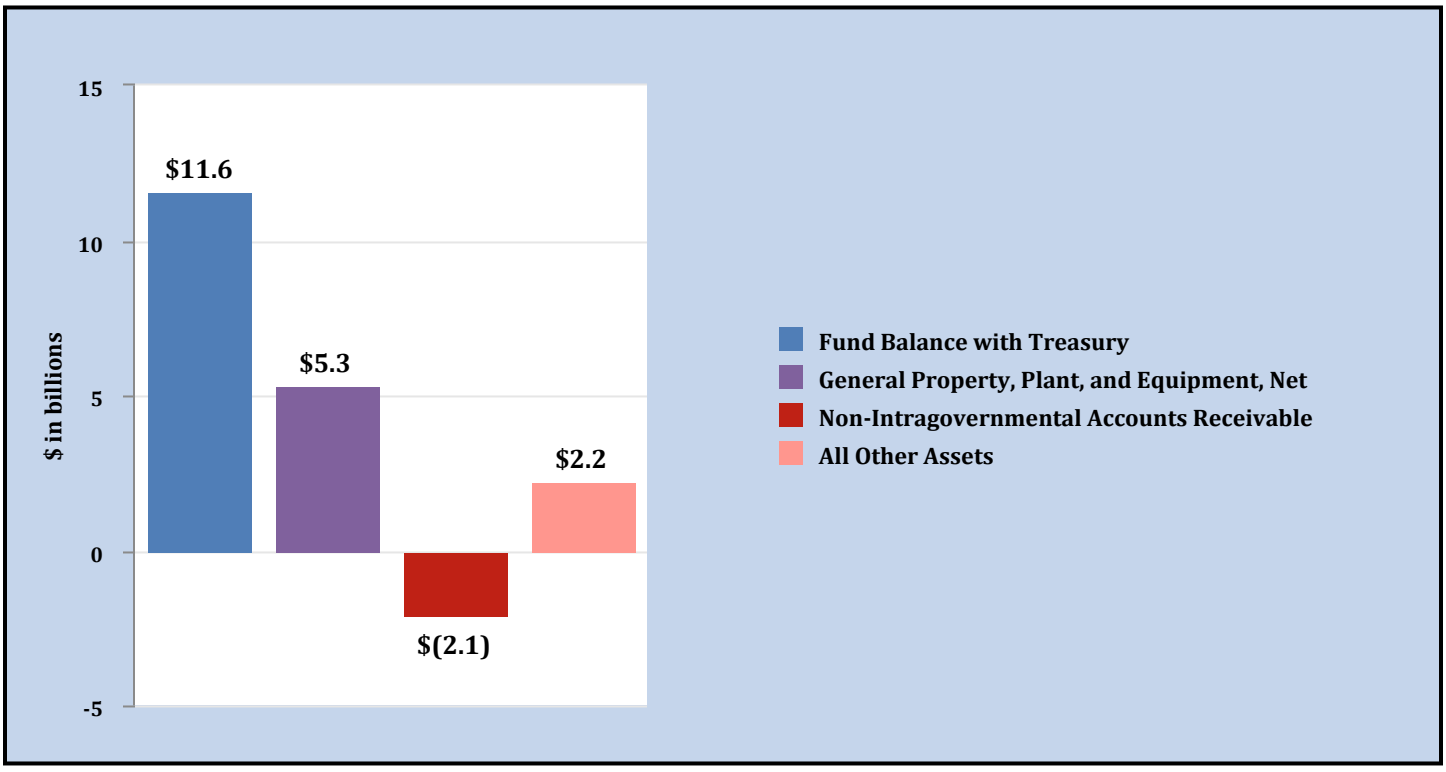


Chart 3: FY 2023 Significant Changes in Liabilities

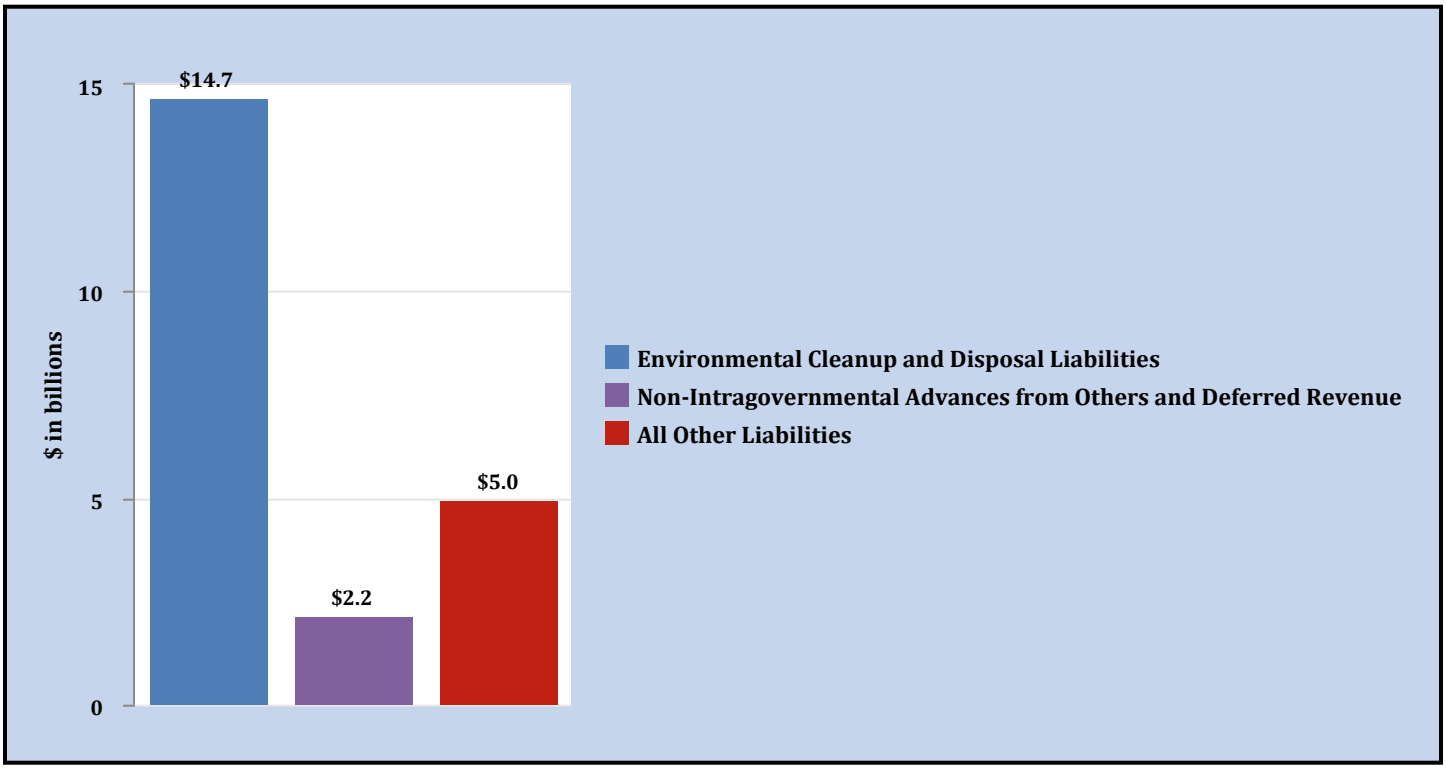


Chart 4: Composition of Environmental Cleanup and Disposal Liability

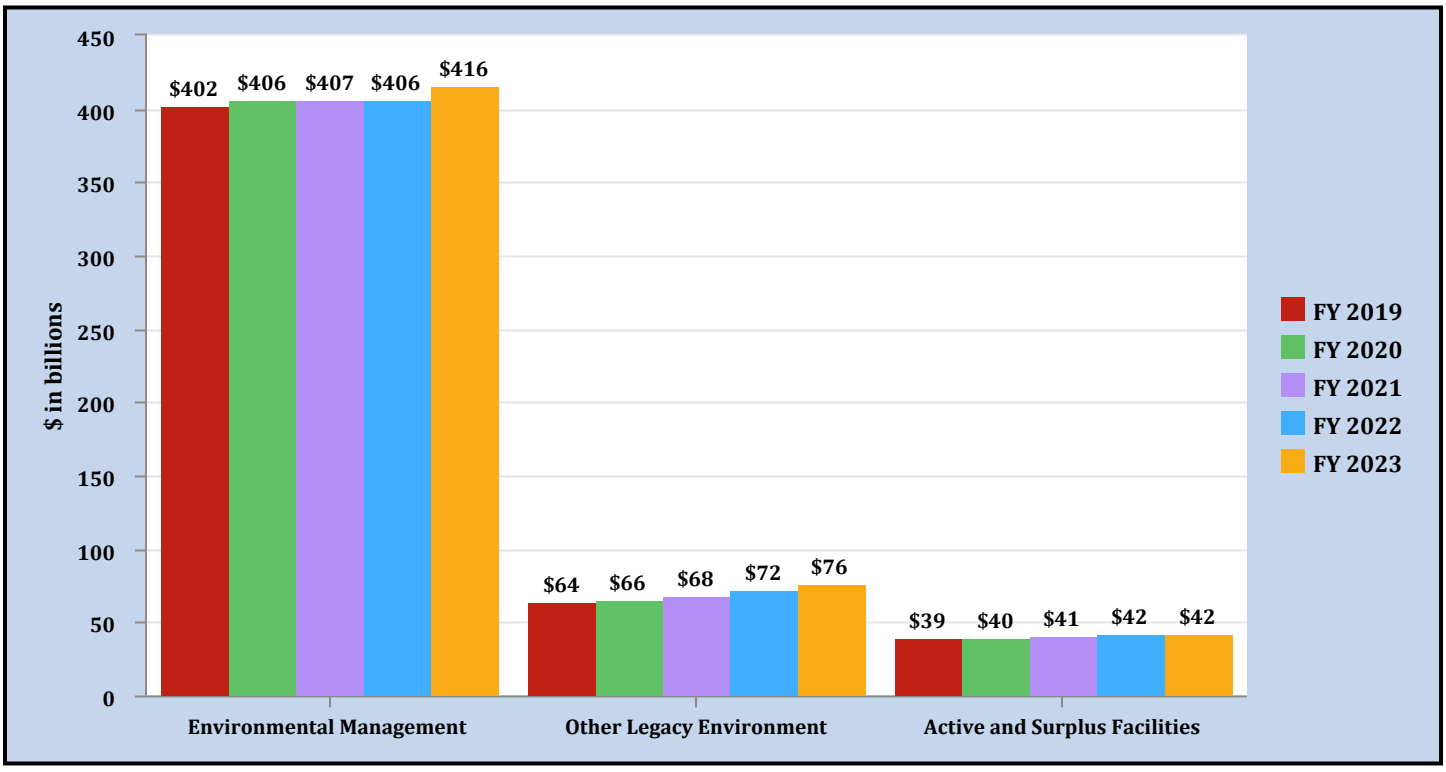
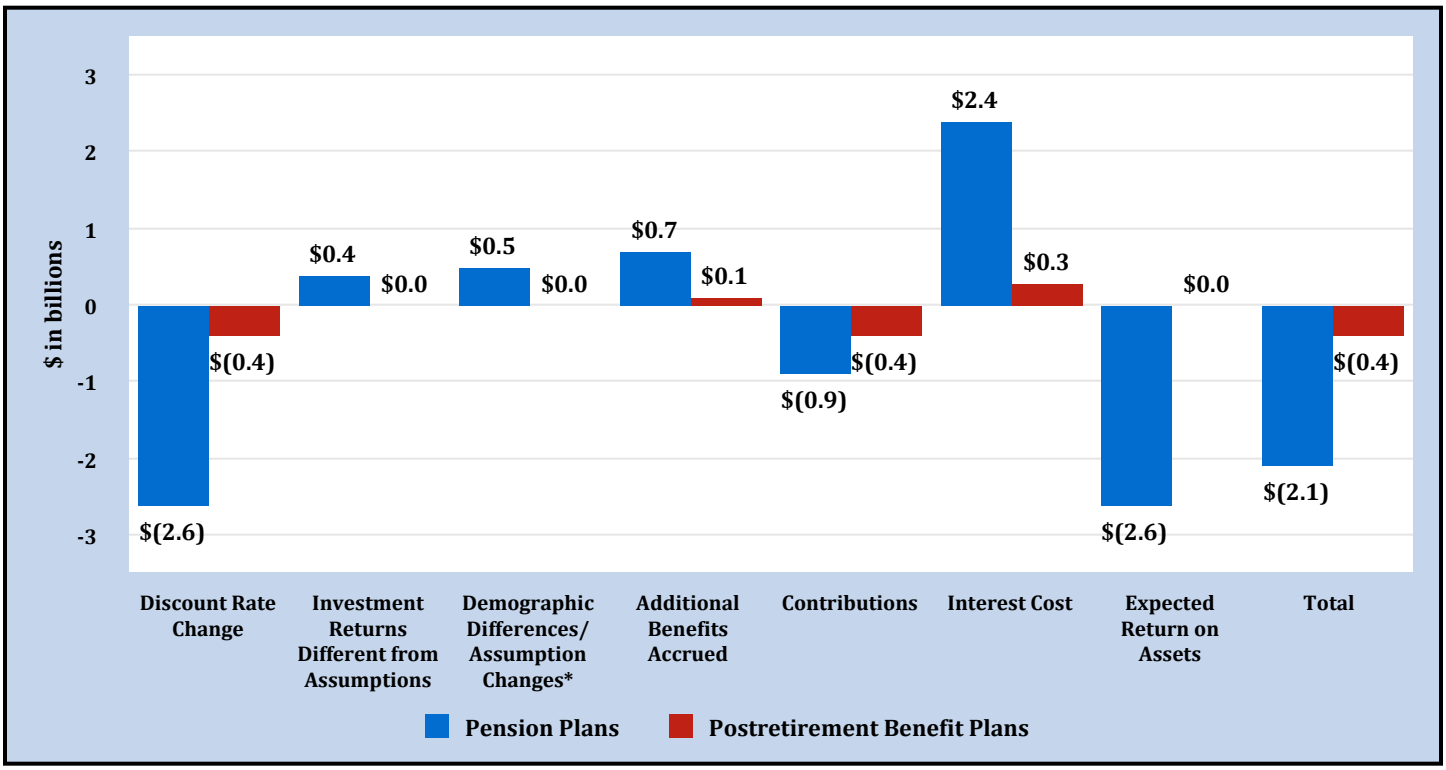


Chart 5: FY 2023 Changes in Contractor Employee Pension and Other Postretirement Benefit Plans



*Includes impact from the repeal of the excise tax for Postretirement Benefit Plans

Net Cost of Operations

The major elements of net cost are shown in **Chart 6**. A breakdown of program costs (gross) by the Department's three programmatic goals, reimbursable work, and other programs is provided in **Chart 7**.

The largest changes within Costs Not Assigned is attributable primarily to the change in the Occupational Illness Program in **Chart 8**.

The Department's R&D expenses are shown in **Chart 9**. These R&D expenses facilitate the creation, advancement, and deployment of new technologies and support the Department's mission to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions. Overall, R&D expenses increased by $1.3 billion in FY 2023.

Chart 6: Elements of Net Cost

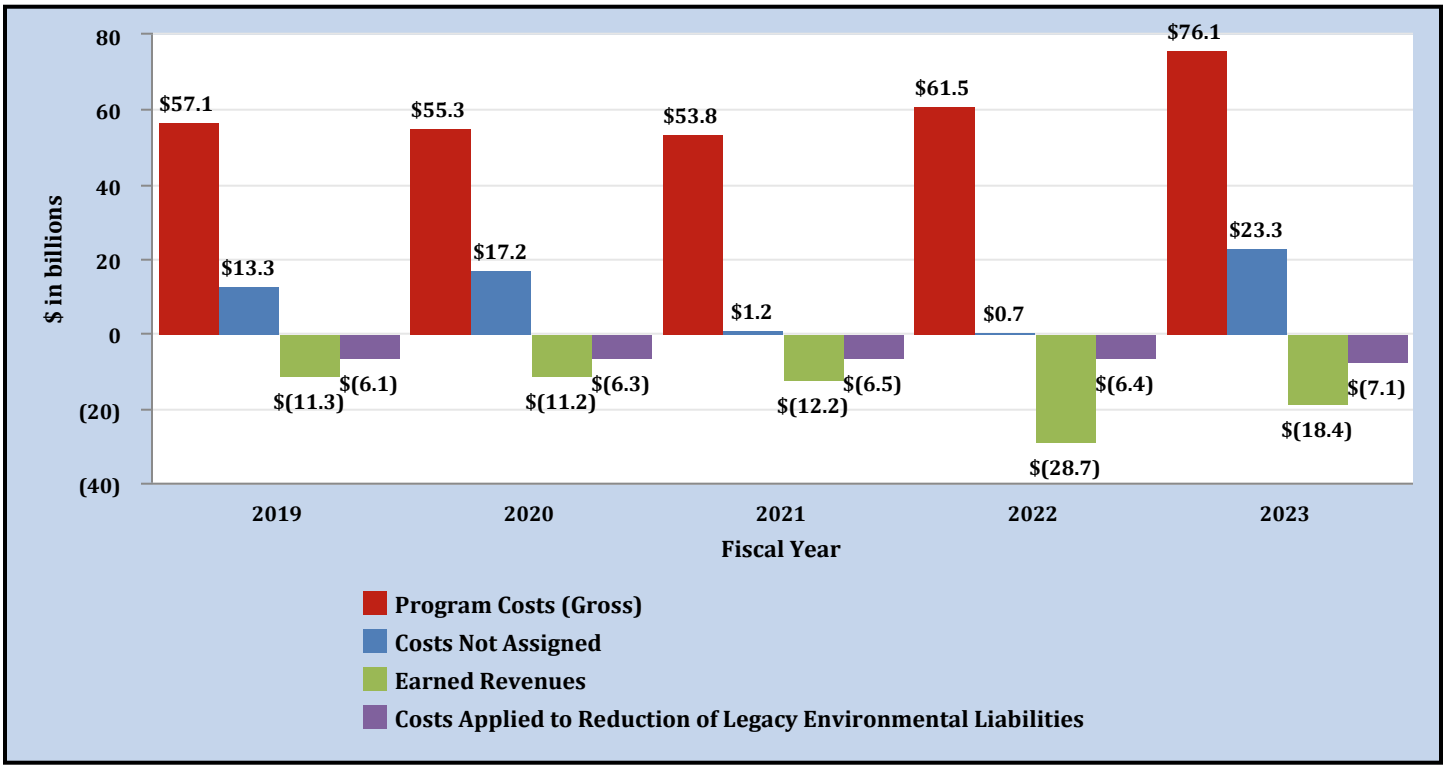


Chart 7: FY 2023 Program Costs (Gross)

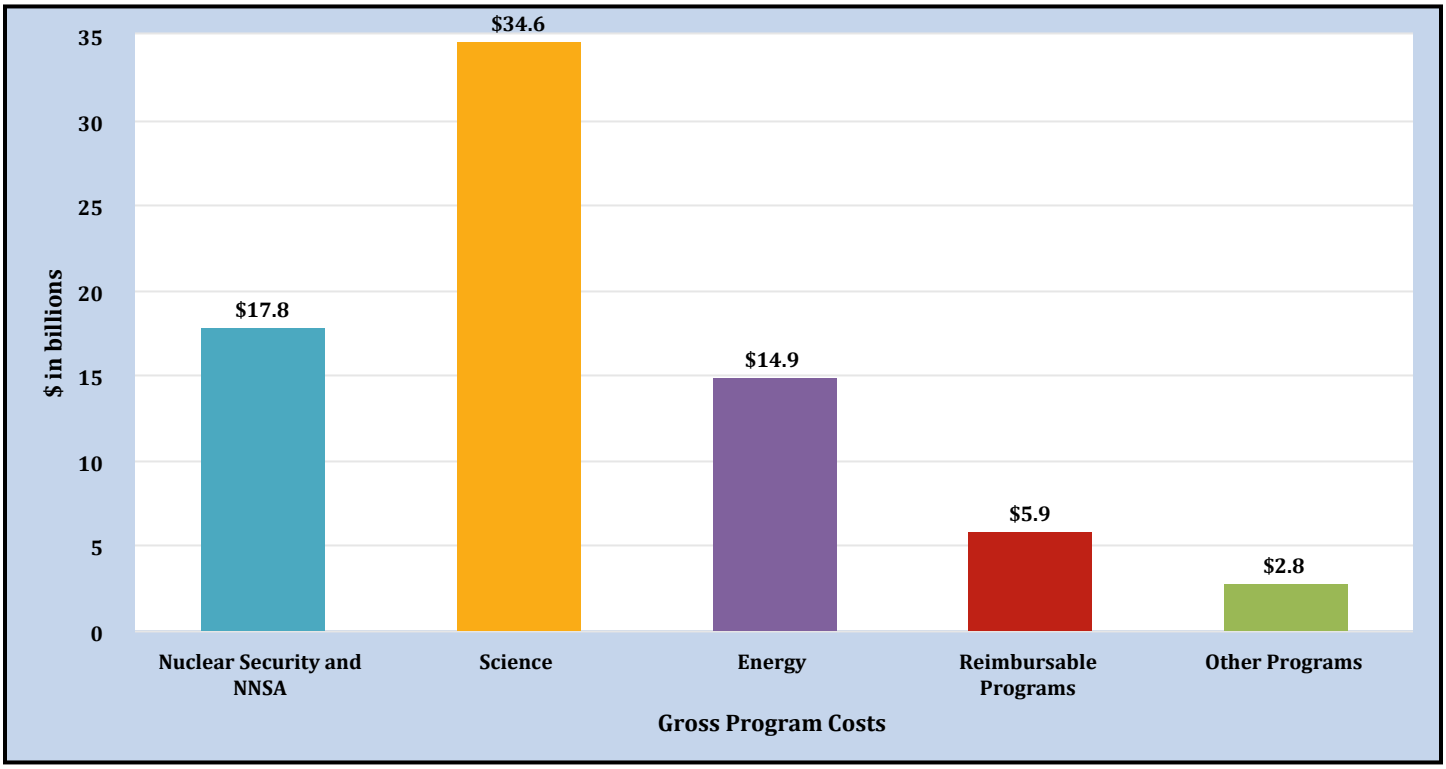


Chart 8: **FY 2023 Major Elements of Costs Not Assigned**

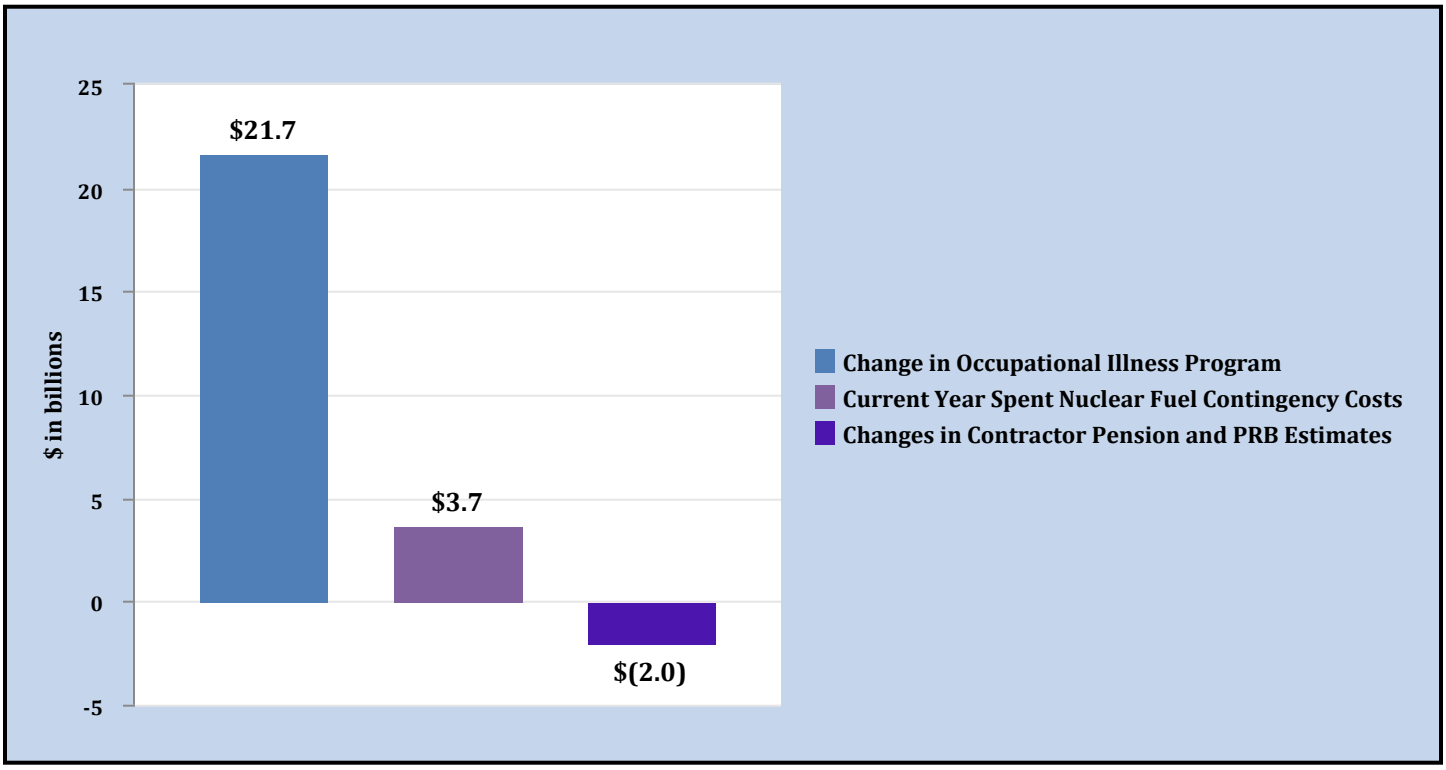
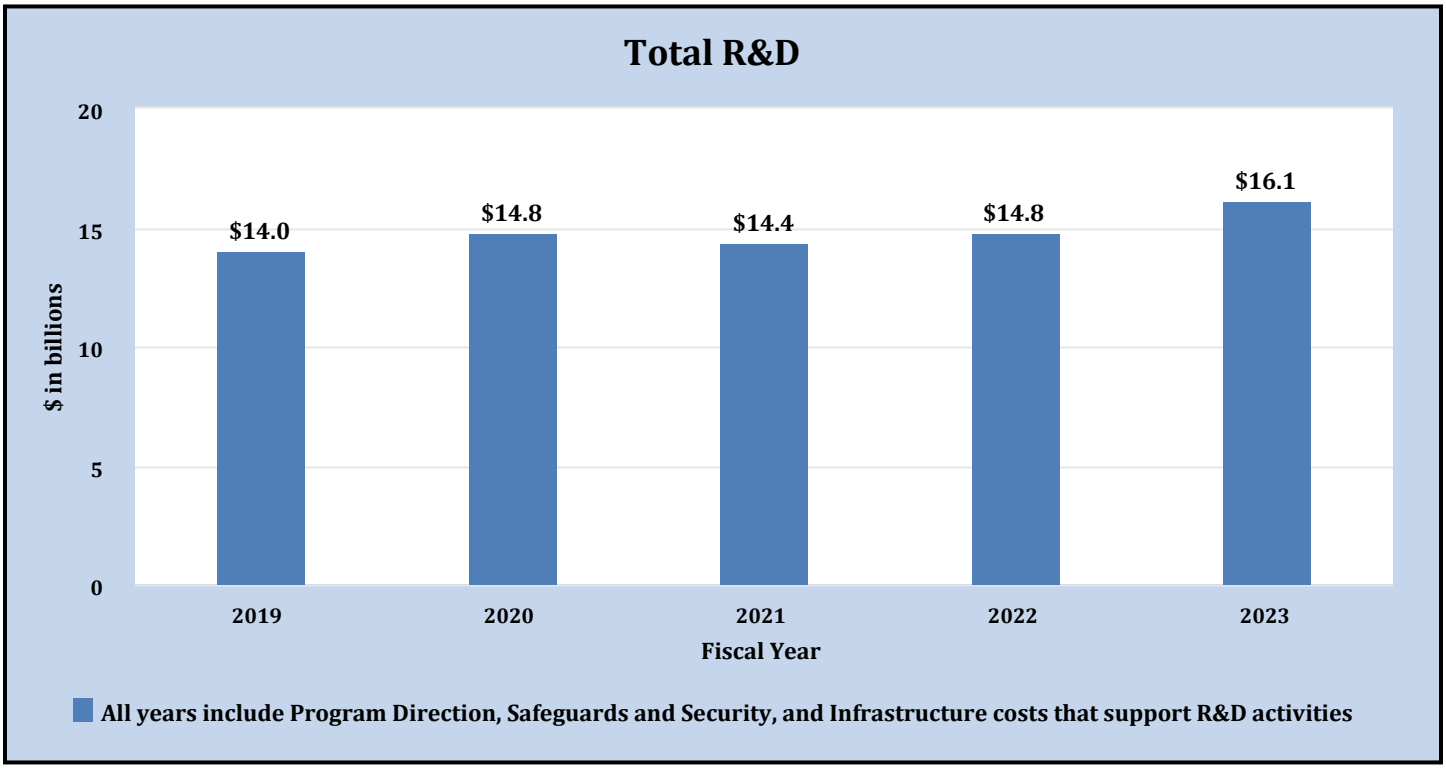


Chart 9: **Research and Development**



Budgetary Resources

The *Combined Statements of Budgetary Resources* provide information on the budgetary resources available to the Department for the year and the status of those resources at the end of the FY. The Department receives most of its funding from general Government funds administered by the Department of the Treasury (Treasury) and appropriated for DOE's use by Congress. Since budgetary accounting rules and financial accounting rules recognize certain transactions at different points in time, Appropriations Used on the *Consolidated Statements of Changes in Net Position* will not match costs for that period. The primary difference results from recognition of costs related to changes in unfunded liability estimates. Budget authority from appropriations on the *Combined Statements of Budgetary Resources* decreased in FY 2023 by $48.2 billion.

As shown in **Chart 10**, the Department's New Obligations and Upward Adjustments increased in FY 2023 by $23.8 billion.

The Department's Infrastructure Investment and Jobs Act (IIJA) Resources, Obligations, and Outlays are detailed in **Chart 11** by Reporting Category.

The Department's Inflation Reduction Act (IRA) Resources, Obligations, and Outlays are detailed in **Chart 12** by Reporting Category.

Chart 10: New Obligations and Upward Adjustments (Total)

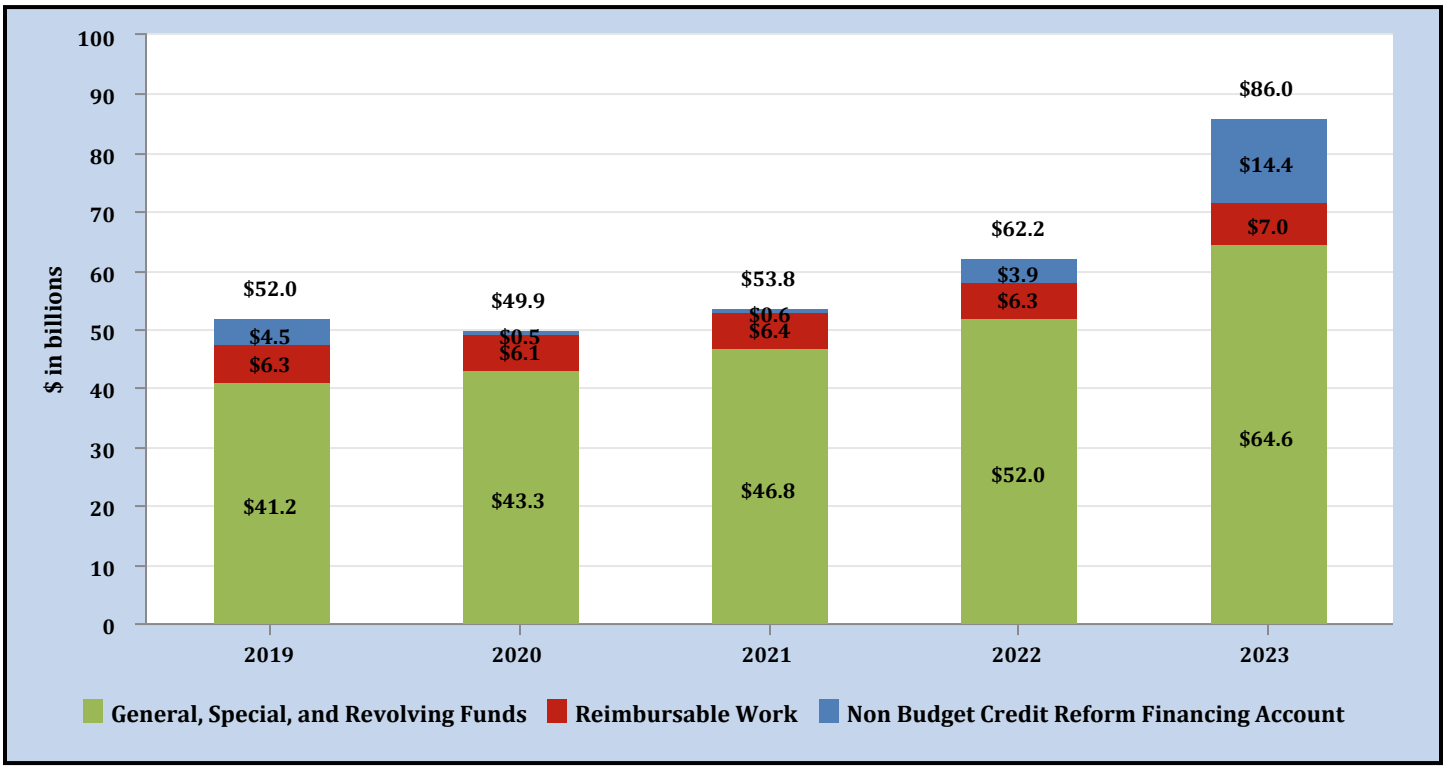


Chart 11: IIJA Resources, Obligations, and Outlays

($ IN MILLIONS)	CURRENT YEAR (FY 2023)					CUMULATIVE (FY 2022 - FY 2023)				
	APPROP-RIATION	BORROWING AUTHORITY	TRANSFERS	NET OBLIGATIONS	OUTLAYS	APPROP-RIATION	BORROWING AUTHORITY	TRANSFERS	NET OBLIGATIONS	OUTLAYS
Energy Efficiency and Renewable Energy	$ 2,222	$ —	$ (16)	$ 3,480	$ 205	$ 10,429	$ —	$ (61)	$ 4,009	$ 211
Cybersecurity, Energy Security, and Emergency Response	100	—	(1)	91	16	250	—	(1)	102	18
Electricity	1,610	—	(3)	784	28	3,270	—	(7)	806	31
Nuclear Energy	1,200	—	(2)	3	4	2,400	—	(5)	6	4
Fossil Energy and Carbon Management	1,445	—	(3)	185	45	3,283	—	(10)	213	49
Carbon Dioxide Transportation Infrastructure Finance and Innovation Program Account	2,097	—	(4)	2	1	2,100	—	(4)	3	2
Office of Clean Energy Demonstrations	4,426	—	(9)	2,681	95	9,554	—	(19)	2,731	99
Construction, Rehabilitation, Operation and Maintenance - Western Area Power Administration	—	—	—	71	154	500	—	(86)	414	414
Transfers to Colorado River Basin Power Marketing Fund account	—	—	—	47	53	—	—	85	85	74
Departmental Administration	—	—	13	11	8	—	—	32	13	9
Office of the Inspector General	—	—	13	1	1	—	—	32	1	1
Small Business Innovation Research/Small Business Technology Transfer	—	—	12	20	1	—	—	44	20	1
Transmission Facilitation Fund	—	1,750	—	—	—	—	1,750	—	—	—
TOTALS	**$ 13,100**	**$ 1,750**	**$ —**	**$ 7,376**	**$ 611**	**$ 31,786**	**$ 1,750**	**$ —**	**$ 8,403**	**$ 913**

Chart 12: IRA Resources, Obligations, and Outlays

($ IN MILLIONS)	CURRENT YEAR (FY 2023)					CUMULATIVE (FY 2022 - FY 2023)				
	APPROP-RIATIONS	SPENDING AUTHORITY FROM OFFSETTING COLLECTIONS	BORROWING AUTHORITY	NET OBLIGATIONS	NET OUTLAYS	APPROP-RIATIONS	SPENDING AUTHORITY FROM OFFSETTING COLLECTIONS	BORROWING AUTHORITY	NET OBLIGATIONS	NET OUTLAYS
Enhanced Use of Defense Production Act	$ —	$ —	$ —	$ 2	$ 1	$ 250	$ —	$ —	$ 2	$ 1
Residential Efficiency and Electrification Rebates	—	—	—	25	2	4,300	—	—	25	2
High-Efficiency Electric Home Rebate Program	—	—	—	23	1	4,500	—	—	23	1
State-Based Home Energy Efficiency Contractor Training Grants	—	—	—	—	—	200	—	—	—	—
Assistance for Latest and Zero Building Energy Code Adoption	—	—	—	4	3	1,000	—	—	4	3
Department of Energy Loan Program (Title XVII Program)	—	19	374	420	14	3,600	19	374	420	14
Advanced Technology Vehicle Manufacturing	—	—	—	457	3	3,000	—	—	457	3
Domestic Manufacturing Conversion Grants	—	—	—	1	—	2,000	—	—	1	—
Energy Infrastructure Reinvestment Financing	—	—	—	4	2	5,000	—	—	4	2
Tribal Energy Loan Guarantee Program	—	—	—	1	1	75	—	—	1	1
Transmission Facility Financing	—	—	—	1	1	2,000	—	—	1	1
Grants to Facilitate the Siting of Interstate Electricity Transmission Lines	—	—	—	1	—	760	—	—	1	—
Interregional and Offshore Wind Electricity Transmission Planning, Modeling, and Analysis	—	—	—	10	2	100	—	—	10	2
Advanced Industrial Facilities Deployment Program	—	—	—	13	1	5,812	—	—	13	1
Department of Energy Office of Inspector General Oversight	—	—	—	—	—	20	—	—	—	—
National Laboratory Infrastructure	—	158	—	685	510	2,000	158	—	1,990	510
Availability of High-Assay Low-Enriched Uranium	—	—	—	22	—	700	—	—	22	—
Environmental Reviews - Department of Energy	—	—	—	1	1	115	—	—	1	1
Environmental Reviews - Federal Energy Regulatory Commission	—	—	—	2	1	100	—	—	2	1
TOTALS	**$ —**	**$ 177**	**$ 374**	**$ 1,672**	**$ 543**	**$ 35,532**	**$ 177**	**$ 374**	**$ 2,977**	**$ 543**

Analysis of Systems, Controls, and Legal Compliance

Management Assurances

The Department of Energy (Department) leadership and management is responsible for establishing and maintaining an effective system of internal controls to meet the objectives of the Federal Managers' Financial Integrity Act of 1982 (FMFIA). To support the Department's management's responsibilities, an annual evaluation of management and financial system internal controls is required by Sections II and IV of FMFIA, and the Office of Management and Budget (OMB) Circular No. A-123, *Management's Responsibility for Enterprise Risk Management and Internal Control*. The annual assurances are made based on the results of these evaluations, which are reflected in reports and representations completed by senior accountable managers within the Department.

The Department completed an evaluation of management and financial system internal controls, and as of September 30, 2023, the Department provides reasonable assurance internal controls for the effectiveness and efficiency of operations, reliability of reporting for internal and external use, and compliance with applicable laws and regulations are operating effectively in design and operation. The evaluation of internal controls for reporting included processes supporting the Digital Accountability and Transparency Act of 2014 and overall data quality contained in agency reports, as required by Appendix A of OMB Circular No. A-123 and Departmental requirements. The evaluation is an assessment of entity and process controls and considered risks associated with the Infrastructure Investment and Jobs Act, Inflation Reduction Act, and Creating Helpful Incentives to Produce Semiconductors and Science Act. The Department has reasonable assurance that processes are in place to identify risks and establish controls to mitigate identified risks. Evaluation results indicate the Department's financial systems generally conform to governmental financial systems requirements, and substantially comply with requirements of the Federal Financial Management Improvement Act of 1996.

The Department has no material weaknesses to report as a result of the internal control evaluations. The Department continues work to address Management Priorities, which represent important strategic management issues the Department has in fulfilling responsibilities and initiatives to support the Administration in securing a better future for the Nation.

Jennifer M. Granholm
Secretary of Energy
November 15, 2023

Federal Managers' Financial Integrity Act

The Federal Managers' Financial Integrity Act of 1982 (FMFIA) requires agencies to establish internal controls and financial systems to provide reasonable assurance that the integrity of Federal programs and operations remains protected. This Act mandates that the head of the agency provide an annual assurance statement detailing if the agency met this requirement and if material weaknesses exist.

In response to FMFIA, the Department has an internal control program that holds managers accountable for the performance, productivity, operations, and integrity of programs through the use of internal controls. Each year, senior Department managers evaluate the adequacy of the internal controls surrounding activities and determine whether the controls conform to the principles and standards established by the Office of Management and Budget (OMB) and the Government Accountability Office (GAO). The results of these evaluations and other senior management information determine if there are internal control matters resulting in material weaknesses. The Departmental Internal Control and Assessment Review Council (DICARC) provides review and oversight of the internal control program and advises the Secretary on the Statement of Assurance.

OMB Circular No. A-123, Appendix A

OMB Circular No. A-123, Appendix A, requires agencies to conduct management assessment and evaluation of internal controls over reporting, which includes processes supporting the Digital Accountability and Transparency Act of 2014 (DATA Act), and overall data quality contained in agency reports. The evaluation requires an annual assessment of entity and process controls.

The Department's evaluation for Fiscal Year (FY) 2023 provides reasonable assurance that processes are in place to identify risks and establish controls to manage these risks.

Federal Financial Management Improvement Act

The Federal Financial Management Improvement Act of 1996 (FFMIA) improves Federal financial management and reporting by requiring financial management systems to comply substantially with three requirements:

1. Federal financial management system requirements;
2. Applicable Federal accounting standards; and
3. The United States Standard General Ledger (USSGL) at the transaction level.

This Act requires independent auditors to report on agency compliance with the three stated requirements as part of financial statement audit reports.

The Department evaluated agency financial management systems and determined they substantially comply with Federal financial management systems requirements, applicable Federal accounting standards, and the USSGL at the transaction level.

Management Priorities

The Department of Energy (DOE or Department) conducts multiple complex and highly diverse missions. Although the Department is continually striving to improve the efficiency and effectiveness of programs and operations, there are specific areas meriting a higher level of focus and attention. These areas often require short- and long-term strategies for stable operations and represent the most daunting management priorities the Department faces in accomplishing the missions.

The Reports Consolidation Act of 2000 requires the Office of Inspector General (IG) to prepare an annual statement summarizing the most serious management and performance challenges facing the Department. These challenges are included in the Other Information section of this report. In Fiscal Year (FY) 2023, the Government Accountability Office (GAO) issued the biennial High Risk Series update, which includes DOE management of contracts and major projects with costs of $750 million or greater, and the U.S. Government's environmental liability, for which DOE shares responsibility with other Federal agencies.

After considering critical activities within the agency and areas found by GAO and the IG, the Department identified 10 management priorities representing the most important strategic management issues the Department has now and in the coming years. **Tables 1a-c** identify the GAO high-risk list issues, DOE management priorities, and IG challenge areas. In accordance with the Government Performance and Results Act Modernization Act of 2010 (GPRAMA), DOE includes performance measures related to the Management Priorities in the Department's Annual Performance Report/Annual Performance Plan.

Table 1a

GAO HIGH RISK LIST – GAO-23-106203 (as of April 2023; updated every two years)
• Acquisition and Program Management for DOE's National Nuclear Security Administration and Office of Environmental Management • U.S. Government's Environmental Liability

Table 1b

DOE MANAGEMENT PRIORITIES
• Contract and Major Project Management • Safety and Security • Cybersecurity • Environmental Cleanup • Nuclear Waste Disposal • Infrastructure • Human Capital Management and Diversity, Equity, Inclusion, and Accessibility • Climate Change • Energy Justice • Nuclear Stockpile Stewardship

Table 1c

IG CHALLENGE AREAS FY 2024
• Key Mission Element Challenges: ◦ Establishing the Department as a Federal Enterprise Leader in Developing and Deploying Artificial Intelligence ◦ Restoring Plutonium Pit Production Capability ◦ Managing High-Level Radioactive Waste • Cross-Cutting Challenges – Reducing Fraud, Waste, and Abuse: ◦ Management and Oversight for the Department of Energy's Expanded Mission - Infrastructure Investment and Jobs Act, the CHIPS and Science Act, the Inflation Reduction Act, and the Puerto Rico Energy Resilience Fund ◦ Modernizing Oversight by Continuing to Access Systems and Data for the Purposes of Running Data Analytics ◦ Using All Available Tools to Combat the Theft of Intellectual Property - Research Security ◦ Cybersecurity ◦ Building a Stronger Suspension and Debarment Program

CONTRACT AND MAJOR PROJECT MANAGEMENT

Key Challenges:

The Department is historically in the top three of all agencies in terms of contract obligations in the Federal Government and spends approximately 90 percent of the annual budget on contracts to operate scientific laboratories, engineering and production facilities, and environmental restoration sites, as well as to acquire capital assets. Contractors at DOE sites and laboratories perform critical missions, including maintaining nuclear weapons stockpiles, cleaning up radioactive and hazardous waste resulting from the legacy of the Manhattan Project, and conducting the world's most sophisticated basic and applied energy and scientific research activities. To conduct these missions, the Department manages large, complex capital asset projects.

In 1990, GAO designated DOE's Contract Management, which includes contract administration and project management, as a high-risk area because of historical challenges with contracts and project execution. Since then, DOE has made significant improvements in project management. For example, for the FY 2021 to FY 2023 reporting period, DOE is projected to complete 100 percent of its construction projects, with no more than a 10 percent increase over the original cost baseline.

GAO published the most recent High-Risk List Update in April 2023. GAO continues to focus on DOE contracts and major projects—those with an estimated cost of $750 million or greater—under the purview of the NNSA and EM. GAO acknowledged that NNSA and EM have both instituted leadership changes that have resulted in this criteria moving to "Met" from "Partially Met." In addition, GAO recognized both NNSA's and EM's continuing efforts to identify and correct root causes and other roadblocks so they can achieve "Met" in all categories. This includes their work to address such areas as monitoring and correcting contract performance below expectations, establishing/improving processes for reviewing the effectiveness of field offices' contractor oversight, workforce and staffing challenges, and managing contract documentation in a central recordkeeping system.

The DOE IG continues to conduct annual audits and investigations of contractor performance. The Department evaluates issues and recommendations identified by the IG and takes appropriate action to mitigate risks for specific contractor performance findings. DOE is taking steps to validate that contractors are implementing agreed-upon corrective actions.

Departmental Initiatives: In FY 2023, DOE continued to make progress in addressing contract and major project management.

DOE efforts to address GAO criteria to improve contract and major project management included:

- Sustained leadership commitment to address contract and project management challenges;
- Improved acquisition planning for Management and Operating (M&O) and other major contracts to verify DOE has maintained a firm understanding of contract requirements and the ability to hold contractors accountable for contract objectives;
- Improved the quality of enterprise-wide cost information available to DOE managers and key partners; and
- Applied DOE's contract and project management practices to the Department's major legacy projects.

DOE's ongoing efforts to improve include:

- Implement requirements of the Program Management Improvement Accountability Act of 2016 (PMIAA) and the OMB supplemental guidance, including appointment of a Program Management Improvement Officer (PMIO) and participation in the Program Management Policy Council (PMPC);
- Sustained focus on Category Management (CM) principles and initiatives. DOE continues to conduct training, correct data to ensure small business utilization is properly reflected in Spend Under Management, and continuous monitoring of the interaction of DOE CM and DOE small business policy;
- Develop workforce by providing staffing with requisite skills and resources to perform acquisition-related duties and responsibilities;
- Adopt the best commercial practices using technological innovations and obtain best-value goods and services to achieve efficiencies and avoid unnecessary spending;
- Define requirements in measurable outcomes;
- Make use of single or multiple-award Indefinite Delivery, Indefinite Quantity (IDIQ) contracting vehicles to define and task the contractor to perform discrete scopes of work at the point in time when actual requirements arise;
- Use firm fixed-price contracts to define specific requirements and provide industry with information for realistic price requirements;
- Identify and align applicable contract incentives to appropriate performance measures;
- Use objective performance measures focusing on outcomes to balance considerations of cost control, schedule achievement, and technical performance;
- Provide prompt, accurate, and objective contractor performance assessment information in the Government-wide Contractor Performance Assessment Reporting System to hold poor-performing contractors accountable for performance failures and reward high-performing contractors for successful performance;
- Implement a Risk Assessment Tool for Contracting Officers to oversee and assess the effectiveness of a contractor's purchasing system at NNSA Laboratories and Facilities, in accordance with Federal Acquisition Regulation Subpart 44.3; and
- Request, analyze, and tabulate best contract management practices across DOE via Procurement Management Reviews and make that information available via the Office of Acquisition Management's (OAM) Acquisition Answers Knowledge Management Portal, "Brown Bag" training sessions, and other dissemination mechanisms.

SAFETY and SECURITY

Key Challenges:

Safety

Challenges exist with maintaining the safety and health of the DOE Federal and contractor workforce and protecting the public and the environment during departmental operations, while striving to enhance the Department's productivity to achieve mission objectives.

Security

Challenges exist with safeguarding and protecting national assets entrusted to DOE in an effective and efficient manner to support the Department's mission success.

Departmental Initiatives: The Department continues ongoing efforts to maintain enterprise safety and health and to improve the safeguarding and protection of national assets.

Safety

- ***Per-and Polyfluoroalkyl Substances (PFAS):*** DOE is responding to concerns about the emerging environmental contaminants known as PFAS, a group of synthesized chemicals that have been manufactured and used in a variety of industries since the 1940s. These chemicals are persistent in the environment and in the human body, and PFAS exposure can lead to adverse human health effects. Multiple DOE sites have discharged PFAS as a chemical agent in a fire suppression product, Aqueous Film Forming Foam, and other DOE operations and processes have released quantities of PFAS into the environment. The Department is supporting research on past PFAS operations, participating in policymaking and regulatory processes, and tracking and contributing to the emerging scientific and technical approaches to measuring and remediating PFAS contamination.

  In FY 2023, the Office of Environment, Health, Safety, and Security (EHSS) continued to lead DOE's efforts to understand and address the impacts of PFAS, including addressing deliverables identified in the DOE PFAS Strategic Roadmap. Key accomplishments include:
  - The Initial Assessment of PFAS at DOE Sites, a summary of the Department's knowledge to date about uses and releases of PFAS at DOE sites. This report will inform next steps in addressing PFAS at sites and support continued coordination with other Federal agencies and communications with the public.
  - The Guide for Investigating Historical and Current Uses of PFAS at DOE Sites, which is designed to help the Department better understand its past and present uses of PFAS, identify areas of potential releases into the environment, and develop information to characterize and assess PFAS risks.
  - The PFAS Environmental Sampling Guidance, which provides a framework for sampling and analysis of PFAS by identifying the nature and extent of contamination, including sources and the areas impacted by PFAS migration from those sources.
  - The PFAS Storage and Disposal Guidance, which supports DOE sites' storage and disposal of materials containing PFAS, whether generated through routine operational processes or from recovery of emergency use discharges or spills of PFAS-containing materials.

  The Department's ongoing efforts include actively tracking 3M's December 2022 announcement that it plans to exit PFAS manufacturing and work to discontinue use of PFAS in its product portfolio by the end of 2025. DOE, including NNSA, is working with 3M, the Department of Defense (DoD), National Aeronautics and Space Administration (NASA), and other Federal partners to determine the impact of this announcement on mission-critical components and systems.

  In response to the FY 2023 Energy & Water Appropriations bill, June 30, 2022, DOE started a comparative life-cycle assessment (LCA) of fluoropolymers that quantifies resilience properties, cost-benefit, and greenhouse gas emission versus competing technologies. The LCA includes an analysis of the use of fluoropolymers in the aerospace, automotive, battery, building construction, chemical processing, electronics, infrastructure, semiconductor, solar panel, and wind energy industries. The Department is also developing a report on the impact to potential lifespans of infrastructure materials, including steel, plastics, glass, and wood, as well as potential lifespan impacts to renewable energy generation components and energy storage components, if fluoropolymers were no longer permitted to continue in commerce.

- ***Safety Culture and Integrated Safety Management (ISM):*** Through the Department's leadership support of the Department's Safety Culture Improvement Panel (SCIP), DOE continues to focus on improving safety culture across the complex. Providing protections for DOE Federal and contractor whistleblowers and fostering a safety-conscious work environment by encouraging workers to raise concerns without fear of reprisal are key examples of efforts to mitigate this risk and will continue. In addition, as part of ISM's feedback and improvement, it is imperative that leaders focus on the safe execution of work in furtherance of a positive safety culture.

  In FY 2023, EHSS led 10 SCIP monthly meetings and shared over 14 best practices from DOE sites to promote organizational learning. Six SCIP working groups supported the completion of the SCIP FY 2023 Annual Plan goals and objectives to promote long-term sustainability of safety culture and safety-conscious work environment concepts. This includes improving communications, developing a common contract clause for safety culture, supporting training development and delivery, identifying ways to monitor and measure safety culture, and providing safety

culture assistance to DOE sites. Key accomplishments and ongoing actions include:

- In collaboration with the SCIP and the DOE National Training Center (NTC), EHSS has supported development and delivery of over 35 safety culture courses to senior executives, first-line supervisors, and employees across the complex, reaching over 750 participants. These courses provide leaders and employees with tools to successfully implement desired behaviors to measurably improve the safety culture and Safety Culture Work Environment (SCWE) consistently across the Department.
- EHSS continues to support the NTC instructor qualification process by training, coaching, and evaluating future instructors so site offices can conduct courses.
- EHSS collaborated with EM's Idaho Cleanup Project and Idaho Environmental Coalition to plan for the FY 2023 SCIP Annual Meeting and Safety Culture Workshop. The workshop included presentations on best safety culture practices from DOE, DOE contractors, other Federal agencies such as the Federal Aviation Administration (FAA), NASA, and the Nuclear Regulatory Commission (NRC), as well as international presenters (e.g., International Atomic Energy Agency and Nuclear Waste Management Organization of Japan).
- EHSS has supported effective safety and organizational culture efforts across the complex, including providing key support to the Weapons Directorate of the Los Alamos National Laboratory (LANL). EHSS helped LANL deploy an organizational assessment tool and then develop organization-specific strategies that enabled the Directorate to measurably improve its teamwork, communication, productivity, and culture.
- In FY 2023, EHSS conducted an ISM benchmarking study against external standards to identify best practices and opportunities to improve the Department's ISM system and implementation practices.

- ***Departmental Regulatory Framework:*** The Department operates under a robust standards-based worker protection and safety regulatory framework composed of rules, policies, orders, and technical standards providing for adequate protection of the public workers, and environment. As a self-regulated entity, it is incumbent upon DOE to continually review and improve its framework by identifying and integrating lessons learned from industry best practices, updates to national consensus standards, and the Department's own implementation experience.

  In FY 2023, EHSS initiated updates to the Department's worker safety and health program rules, radiation protection regulation, nuclear safety requirements, and quality assurance requirements, as well as numerous technical standards and implementation guides used by DOE program offices and contractors to support safe performance of work.

Security

- ***Trusted Workforce (TW) Implementation:*** In FY 2023, DOE accomplished the following in association with TW milestones:
  - Enrollment of the national security sensitive workforce into the Report of Arrest and Prosecution Background (Rap Back) service. This enabled DOE to meet requirements for TW 1.5, while preparing to enroll the non-sensitive public trust and low-risk workforce into Rap Back and continuous vetting (CV) in FY 2024 through FY 2025.
  - Enrollment into the pilot for the TW 1.5 CV Shared Service in the National Background Investigations Service (NBIS). This will enable DOE to meet the December 31, 2023 milestone of receiving CV services from its investigation service provider.

- ***Counter Unmanned Aircraft System (CUAS) Design Reference:*** In FY 2023, DOE published a CUAS Design Reference for use complex-wide to educate programs and sites on the regulations, threats, risk assessment methodology, and implementation process for employing a CUAS capability.

- ***Design Basis Threat (DBT)*:** DOE continuously updates the DBT based on emerging threats identified by the Intelligence Community. These updates provide performance metrics for sites and programs to assess and mitigate vulnerabilities posed by new threats in the protection of special nuclear material, personnel, and property.

- ***Security Risk and Vulnerability Analyses:*** The Department continuously updates risk analysis and vulnerability assessment tools and processes to assist in the identification of unacceptable risks and vulnerabilities in security postures and better enable sites and programs to focus resources on priority mitigation concerns. DOE works to evaluate physical technologies for effectiveness and affordability to enable informed procurement decisions across the complex when addressing threat mitigation options.
  - DOE collaborates with NRC, the Defense Threat Reduction Agency (DTRA), and other DoD elements to develop a common basis for protection of nuclear weapons and special nuclear material at the national level and to improve communication and transparency with decision-makers in Congress and the Executive Branch. The Department emphasizes the importance of developing security risk assessment processes for non-nuclear sites to address protection of critical infrastructure, high-value assets, and personnel.

- ***Personnel Security:*** DOE continuously works with other U.S. departments and agencies (D/A) to develop, implement, and evaluate improvements and efficiencies in personnel security as personnel vetting transitions to CV under TW 2.0. Through continuous

benchmarking and collaborating with other D/As, DOE can implement TW 2.0 milestones and manage risk in real-time, while protecting DOE's mission, information, and resources. Additionally, DOE and the Defense Counterintelligence and Security Agency are exploring potential automated connections between DOE personnel vetting systems and NBIS that will exchange and update clearance and access information between DOE systems and the national clearance and access repositories.

- ***Unmanned Aircraft Systems:*** DOE is also developing a searchable database of commercial CUAS systems and identifying system performance validated by U.S. Government-sponsored testing. The CUAS Selection Tool will perform a best-fit systems analysis based on operational requirements, performance, collateral effects, environmental considerations, safety, and cost.

- ***Classification and Protection of Information and Material:*** DOE is responsible for implementation of the U.S. Government-wide program to classify and declassify nuclear weapons-related matter (i.e., information and material supporting the Nation's nuclear nonproliferation programs). The Department continuously improves training, communication, and computerized tools to advance the accuracy and productivity of classification determinations. DOE supports the National Declassification Center at the National Archives in safely releasing historical Government documents of other agencies no longer meeting criteria for classification, for the benefit of an informed public, and in concert with other open Government initiatives. The DOE effort prevents the inadvertent release of classified nuclear weapons-related information at the National Archives.

- ***Insider Threat Program (ITP):*** Under the auspices of the Office of Intelligence and Counterintelligence (IN), DOE is continuing to expand and refine its physical and technical capabilities for User Activity Monitoring (UAM) on classified networks. This work is resident within the IN-managed ITP Analysis and Referral Center (ARC). The ARC is also working to expand its UAM capability to unclassified networks within IN. Additionally, the Department is developing insider threat training for all employees, including ITP for supervisors; both training courses are published on "Learning Nucleus," DOE's internal online-based learning system. The Department is continuously working with elements across the enterprise to establish compliance with national-level ITP minimum requirements. DOE has developed a near-term strategy for the ITP based on guidance from the Secretary and is beginning its revision to DOE Order 470.5, *Insider Threat Program*, during the fourth quarter to reflect program changes and lessons learned.

- ***Human Reliability Program (HRP)****:* The Department's HRP improvement efforts continue to progress with the Networked Employee Assurance Tool to streamline, automate, and standardize the HRP supervisory review process being piloted at Pantex Plant and Y-12 National Security Complex (PX/Y-12). The Department continuously monitors HRP personnel under 10 Code of Regulations (CFR) § 712.11 and is evaluating the need for an internal Department directive on HRP or a technical standard to preclude relying on 10 C.F.R. Part 712, *Human Reliability Program*.

ENVIRONMENTAL CLEANUP

Key Challenges:

For more than 30 years, EM has cleaned up the environmental legacy of decades of nuclear weapons production and Government-sponsored energy research. While EM continues to make progress, the remaining work is technically complex, with associated high risks.

Technical and programmatic risks and uncertainties are inherent in DOE's cleanup projects. The legacy of the Manhattan Project, Cold War, and other nuclear fuels programs includes thousands of remaining excess contaminated facilities within the EM Program portfolio and in other DOE programs. The duration and diversity of past nuclear weapons research and development, testing, and production create a level of uncertainty regarding the amount and composition of waste, as well as the nature and extent of environmental contamination. As a result, characterization of legacy waste sites is performed in conjunction with planning and execution of cleanup activities, such as deactivating and decommissioning facilities, removing hazardous materials, stabilizing waste streams to prevent the release of such material into the environment, and remediating sites in accordance with cleanup objectives and applicable legal agreements and regulations. Available disposal pathways for waste streams and nuclear materials are essential to fulfill many cleanup requirements and effectively manage environmental liabilities. Cleanup activities can continue for decades, often requiring first-of-a-kind solutions and/or facilities. The development and deployment of new technologies can strengthen EM's ability to characterize and treat waste, manage costs, and fulfill schedules.

Statutes, laws, and regulatory agreements or court orders govern EM's site cleanup work by establishing the scope of the work and the timeline for completing the work. DOE developed initial regulatory milestones based on the best information available for a site, with the understanding that further characterization would be needed. As the scope of the potential cleanup work is better defined, EM shares updated characterization data with the U.S. Environmental Protection Agency (EPA), state regulators, and other interested parties.

Departmental Initiatives: In FY 2023, EM continued pursuing numerous initiatives that address key challenges and improve performance. The ongoing initiatives supporting EM's mission include the implementation and development of various strategies, operations, technologies, and partnerships to advance the EM cleanup mission. In FY 2023, EM accomplishments spanned the complex.

- At the Hanford site, EM's Office of River Protection made demonstrable progress towards the implementation of the Direct-Feed Low-Activity Waste (DFLAW) program, which will require integrated, around-the-clock operation of over 25 separate nuclear facilities and continued operation of the Tank Side Cesium Removal (TSCR) system:
  - Processed over 580,000 gallons of low-activity tank waste through TSCR;
  - Prepared other key facilities, such as the Effluent Treatment Facility and the Integrated Disposal Facility, to support 24/7 DFLAW operations; and
  - Began the initial heat-up of the Waste Treatment Plant Melter 1.
- At the Savannah River Site, continued treating tank waste for final disposition, and other cleanup activities:
  - Completed construction of the Saltstone Disposal Unit (SDU) 8 on May 4, 2023 and received approval to begin operations on June 2, 2023;
  - Continued construction of SDU 9;
  - Completed site preparation for construction of SDUs 10, 11, and 12;
  - Commenced construction of SDU 10;
  - Continued operation of the Salt Waste Processing Facility (SWPF), treating over seven million gallons of salt solution since the start of hot operations in October 2020;
  - Continued initiatives at SWPF and Defense Waste Processing Facility (DWPF) to enable an increase to the salt processing rate to nine million gallons per year following the implementation of Next Generation Solvent (NGS);
  - Continued execution of a risk reduction strategy to process high curie salt batches through SWPF. In FY 2023, EM processed more than 9.9 million curies, including curies disposed through the DWPF;
  - Completed deactivation on 235-F Plutonium Fuel Form Facility in March 2023;
  - Completed 25 transuranic (TRU) waste shipments to Waste Isolation Pilot Plan (WIPP) in FY 2023;
  - Completed final remediation of the Lower Three Runs Integrator Operable Unit on July 17, 2023; and
  - Completed R (Area)-Discharge Canal radiologically-contaminated sediment cleanup in May 2023.
- At the Idaho National Laboratory (INL), initiated tank waste treatment:
  - Completed startup of operations at the Integrated Waste Treatment Unit (IWTU) in April 2023;
  - Completed the transition to 100 percent Sodium Bearing Waste (SBW) processing at the IWTU in May 2023; and
  - Since startup, over 68,000 gallons of SBW have been processed.
- At the Paducah and Portsmouth Gaseous Diffusion Plants, continued processing the inventory of depleted uranium hexafluoride (DUF6) to a more stable oxide form and completed disposition of 50 percent of the R-114 refrigerant at the Paducah site.
- At Los Alamos, EM continued the transfer of TRU waste to the WIPP to reduce the waste footprint at Los Alamos and fulfill annual regulatory drivers. In FY 2023, 59 shipments of TRU waste to WIPP were completed.
- At the Moab site, EM disposed over one million tons of uranium mill tailings by end of FY 2023.
- At the Lawrence Berkeley National Laboratory (LBNL), completed the Old Town Demolition (OTD) Phase VI Project:
  - OTD Phase VI Project was completed April 2023; and
  - Project completion was approved June 2023.

DOE's ongoing efforts to advance cleanup activities include significant decommissioning and demolition activities:

- At the West Valley Demonstration project, continued controlled demolition of the Main Plant Process Building (MPPB) and dispositioned over 9,000 tons of MPPB waste.
- At the Lawrence Livermore National Laboratory (LLNL), continued partnering with NNSA to complete facility stabilization activities:
  - Obtained demolition contract award from U.S. Army Corps of Engineers (USACE) for Building 280;
  - Commenced LS412 and LS377 Slab/Soil Removal; and
  - Commenced deactivation, decommissioning, and removal and Waste Support Services at Building 251.
- At Oak Ridge, EM demolished the Criticality Experiment Laboratory and retrieved 6.5 tons of mercury from deactivation efforts at the Y-12 National Security Complex (Y-12).
  - EM completed demolition on Bulk Shielding Reactor and demolition of the Low Intensity Test Reactor is underway at Oak Ridge National Laboratory (ORNL).
  - EM addressed nearly 20 excess and contaminated facilities at ORNL and Y-12 to prepare for near-term demolition.
- At the Nevada National Security Site (NNSS), the EM Nevada Program continued to support cleanup activities across the DOE complex by providing disposal capacity and services for low-level waste, mixed low-level waste, and classified waste.
  - EM Nevada Program continued characterization and hazard reduction activities to prepare for upcoming demolition and closure work at two large, unique, and complex legacy nuclear facilities.

Given the scope and magnitude of the cleanup work to be tackled over the coming decades, it is essential for EM to be best-in-class when it comes to project management. In recent years, EM has made significant strides in strengthening its project management capabilities.

- Across the complex, EM strengthened the effectiveness of program management and continues to incorporate the concept of end-state contracting in major contracts and procurement to reinvigorate the sense of urgency and completion mindset.

- EM issued the *EM Strategic Vision 2023-2033* (EM Vision) in FY 2023. The EM Vision outlines the planned complex-wide and site-specific goals over the next decade, within EM's framework of regulatory compliance commitments and best business practices. The EM Vision focuses on maintaining and strengthening the constructive relationships EM has with regulators across the country and continuing meaningful discussion and ongoing engagement between Federal and state decision-makers and other external stakeholders. Other areas of focus for the EM Vision include:
  - Conducting infrastructure upgrades;
  - Building the next-generation workforce; and
  - Developing new and innovative approaches to performing cleanup activities so EM can safely complete work in a more efficient and more cost-effective manner.
- EM partnered with the National Laboratories, industry, academia, and USACE to integrate the best scientific and engineering resources into decision-making, so the selected technologies, design, and construction approaches accelerate project completion.
- EM continued the integration of acquisition, budget, and project management processes so contract Statements of Work and deliverables are based on clear project requirements, front-end planning, end-state contract objectives, and risk prioritization. Modifications to the contract and project baselines are managed through strict change-control processes.

NUCLEAR WASTE DISPOSAL

Key Challenges:

The amended Nuclear Waste Policy Act of 1982 (NWPA) makes DOE responsible for the management and disposal of High-Level Waste (HLW) and Spent Nuclear Fuel (SNF) to protect public health, safety, and the environment.

The NWPA authorizes the Secretary to enter into contracts with individuals who hold title to or generate SNF or HLW of domestic origin. In return for the payment by contract holders of fees established by the NWPA into the Nuclear Waste Fund, the Government was to begin disposing of SNF and HLW starting in 1998.

- Contract holders filed breach of contract suits, and the Department was found to be in partial breach of the contracts and to be liable for damages resulting from the delay.
- As of September 30, 2023, the Judgment Fund paid approximately $10.6 billion in settlements and judgments to contract holders:
  - Contract holders will continue to provide annual claims for added costs under the settlement agreements; and
  - Annual payments pursuant to those agreements will continue until the Government has fulfilled SNF and HLW acceptance obligations.
- DOE reviews the claims and provides recommendations for approval to the Department of Justice (DOJ). DOE staff continues as the lead Government witness for the remaining unsettled cases as they are tried and continues to manage the Nuclear Waste Fund balance of approximately $47.7 billion.
- In *National Association of Regulatory Utility Commissioners (NARUC) v. DOE*, the U.S. Court of Appeals for the D.C. Circuit ruled the Department's 2010 fee adequacy determination was legally inadequate and ordered the Department to issue a new fee adequacy evaluation in compliance with the court's opinion by January 18, 2013. The Department issued and provided the court with an updated fee adequacy report by the deadline.
- NARUC and the Nuclear Energy Institute moved to reopen the appeal to challenge the report.
  - On November 19, 2013, the court issued a decision finding that the Department's 2013 fee adequacy report was "arbitrary and capricious" and ordered the Secretary to provide "to Congress a proposal to change the fee to zero until such time as either the Secretary chooses to comply with the NWPA as it is written, or until Congress enacts an alternative waste management plan."
  - On December 20, 2013, the court issued a mandate directing the Department to comply with the court's decision to reduce the fee to zero.
  - On January 3, 2014, the Department provided the court-mandated proposal to Congress to adjust the 1 mill per kilowatt-hour fee to zero.

Departmental Initiatives: In the Consolidated Appropriations Acts of 2021, 2022, and 2023, Congress appropriated funds to the Department for nuclear waste disposal activities, including interim storage activities. The accompanying congressional reports requested the Department move forward under existing authority to identify potential sites for Federal interim storage facilities using a consent-based siting process.

- In September 2022, the Office of Nuclear Energy (NE) issued a Community Engagement on Consent-Based Siting funding opportunity announcement, providing $16 million for communities interested in learning more about consent-based siting, management of SNF, and interim storage facility siting considerations. In December 2022, following receipt of FY 2023 appropriations, NE increased the available funding amount to $26 million. Awardees were announced in early June 2023.
- In Fall of 2022, NE established an integrated project team (IPT) to begin evaluating proposed advanced reactor SNF and considerations for storage, transportation, and disposal in an integrated waste management system. The Back-End Management of Advanced Reactors IPT has completed a preliminary report for one advanced reactor design.
- In April 2023, NE issued an updated DOE *Consent-Based Siting Process for Federal Consolidated Interim Storage of Spent Nuclear Fuel (Process)*. The updated process document builds on DOE's 2017 draft process and incorporated public input from the prior year's request for information and other venues, reflects the current focus on one or more Federal interim storage capabilities, and emphasizes equity and environmental justice considerations.

- In Spring of 2023, NE established a mission validation independent review team to perform peer review of technical documentation necessary to meet the requirements of DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. The review team completed its work on August 14, 2023 and found that the Consolidated Interim Storage Facility (CISF) satisfies the requirements for the review as established by DOE G 413.3-9, *U.S. Department of Energy Project Review Guide for Capital Asset Projects*. The Office of Project Management (PM) reviewed the CISF Mission Need Statement (MNS) and concluded that the mission need aligns with the Department's mission, strategic plan, the priorities of the Secretary. It addresses a credible capability gap.
- Throughout 2022 and 2023, NE prepared to engage with consent-based siting funding opportunity awardees by completing an overhaul and upgrade of the CURIE Resource Portal for DOE Nuclear Waste Management Information, providing access to public information and documents about NE's waste management activities and related topics. Additionally, a capability was added to CURIE to provide collaboration space for consent-based siting funding opportunity awardees, along with access to information resources, requests for subject matter expertise, and other anticipated needs of the awardees.
- In June 2023, NE welcomed four Summer interns who supported activities related to consent-based siting and environmental justice, along with activities supporting geospatial analysis capabilities for SNF transportation considerations and a refresh of NE's energy.gov website content.
- In July 2023, NE held a kick-off meeting for the funding opportunity awardees — known as the Consent-Based Siting Consortia — and began working with them as partners through cooperative agreements.
- Throughout FY 2023, NE focused on sharing information about consent-based siting, interim storage for commercial SNF, preparations for transportation of SNF, and other program topics through public webinars, professional conferences, outreach to municipal and non-governmental organizations, briefings to stakeholder groups, meetings with congressional staff, public meetings, and other venues.
- DOE's ongoing efforts include continued work with multidisciplinary teams of social and behavioral scientists, communicators, environmental scientists, technical experts, and others to advance consent-based siting, storage design, transportation preparations, and other program areas, with specific tasks including:
  - Developing a knowledge management information repository;
  - Nearing completion of multiple-car testing of the Atlas 12-axle railcar, buffer railcar, and rail escort vehicle;
  - Continuing development of an integrated safety and security monitoring system for rail shipments;
  - Beginning fabrication and testing of the Fortis eight-axle railcar;
  - Maintaining current detailed data on the national SNF inventory and facilitating more efficient data collection with a new web-based data portal;
  - Resuming of nuclear power plant site infrastructure evaluations to identify options for transporting SNF from each location, completing one site visit in FY 2023 with two more scheduled;
  - Developing and validating of software tools to support environmental analysis; and
  - Performing research to support continued safe storage and eventual disposal of SNF and high-level radioactive waste.
- NE continued engagement with state and Tribal government representatives to prepare for future large-scale SNF transportation via cooperative agreements to facilitate information exchange and coordination among states and Tribes, including:
  - Presenting technical information through DOE's National Transportation Stakeholders Forum Annual Meeting;
  - Performing ongoing development of a railcar safety inspection protocol for future DOE SNF shipments by rail;
  - Resuming a working group to consider how DOE will provide training and technical resources to states and Tribes where SNF is transported; and
  - Participating in multiple in-person and virtual meetings with state and Tribal representatives to share updates to Federal policy and program plans.

CYBERSECURITY

Key Challenges:

Today's rapidly evolving cyber threat landscape presents unprecedented opportunities and challenges. Achieving a safe, secure, and resilient cyber environment requires DOE to take a risk-based approach through cost-effective investments and activities to reduce cyber risk. Cybersecurity is an enterprise-wide responsibility and demands an expanded view to encompass the broad scope of information-sharing and information-safeguarding. The Office of the Chief Information Officer (OCIO) leads the Information Technology (IT) and cyber governance for DOE, which provides a forum for collaboration and coordination of key cyber policies and DOE enterprise-wide activities. The Cyber Council, chaired by the Deputy Secretary, reviews and evaluates significant enterprise IT and cyber-related policy issues before final decision by the Secretary.

In June 2018, OMB released a Government reform plan to address the Federal cybersecurity workforce shortage. DOE recognizes the importance of attracting, developing, and retaining a highly skilled cybersecurity workforce. The Cybersecurity Workforce Working Group was established in coordination with the Office of the Chief Human Capital Officer (HC) to develop a DOE response and strategy to the OMB workforce initiative, which includes providing a cyber workforce gap analysis, streamlining the hiring of cyber talent, and standardizing training for cybersecurity employees. DOE is leveraging existing tools,

such as Department of Homeland Security's (DHS) Cybersecurity Workforce Toolkit and National Institute of Standards and Technology's (NIST) National Initiative for Cybersecurity Education (NICE) Capability Maturity Model. The Department continues to implement workforce improvements to develop and maintain crucial skillsets in employees and attract talent to build a sustainable and diverse workforce.

In May 2021, the President of the United States released Executive Order (EO) 14028, *Improving the Nation's Cybersecurity*, to harden the Nation's digital assets and infrastructure against cyberattacks. Following the release of EO 14028, OMB issued five memorandums to provide the Federal Government with additional guidance and requirements to meet specific cybersecurity standards and objectives. In alignment with EO 14028 and the OMB memorandums, DOE recognizes the need for increased transparency between the government and private sector, increased software supply chain security, and more rigorous processes and requirements for cyber incident response, to include Zero Trust Architecture (ZTA), Cloud Adoption, Endpoint Detection and Response (EDR), and event log requirements.

Departmental Initiatives: In FY 2023, the OCIO continued pursuing numerous initiatives to improve cybersecurity risk management, including:

- The OCIO-led Executive Order/Cyber Program Management Office (PMO) assisted Departmental Elements (DE) with their ZTA Implementation and Cloud Adoption Plans and Maturity Assessments, covering 67 DEs.
  - The Cyber PMO, Cyber Delivery, Enterprise Architecture, and Cloud Management teams assessed the ZTA Implementation Plans and are currently assessing the Cloud Adoption Plans for security best practices, areas of improvement, gaps, and opportunities.
  - The detailed findings for the ZTA Implementation Plans were briefed out to DEs at the enterprise-wide ZTA and Cloud Adoption Groups; the findings for the Cloud Adoption Plans were briefed in September 2023.
- In support of National Security Memorandum-10 and OMB Memo 23-02, the Cyber PMO team developed a strategic path for DOE's transition to a post-quantum future, including standing up an Encryption and Post-Quantum Cryptography Working Group and beginning the process of evaluating potential solution providers related to both inventory and cryptography.
- The Cyber PMO manages a portfolio of $45 million of FY 2022 Solar Winds modernization projects and $55 million of FY 2023 Cyber Modernization projects across the enterprise in support of EO 14028 and other Federal mandates. The team is ensuring timely delivery of potential cyber solutions and assessing knowledge transfer and scalability opportunities.
- OCIO is finalizing its development of an enterprise-wide cybersecurity strategy and implementation plan to align the mission and cybersecurity goals across the Department and provide a crucial roadmap for how to translate its priorities into action.
- OCIO signed an enterprise agreement with Login.gov, which supports the Zero Trust initiative by providing multi-factor authentication (MFA) for external users with the option for phishing resistant credentials.
- OCIO matured the crowdsourced penetration testing and Vulnerability Disclosure Program (VDP) to enhance enterprise operational visibility and discover and mitigate vulnerabilities. Providing external, internal, and targeted penetration testing for the enterprise helped identify 413 vulnerabilities, including 110 critical vulnerabilities and 63 high vulnerabilities in FY 2023. VDP completed the onboarding of DOE internet-accessible systems and services and is now focused on operations. VDP enabled the identification and mitigation of 20 public-facing vulnerabilities in FY 2023 and 48 total vulnerabilities since the beginning of the program.
- OCIO improved the integration and use of the Threat Intelligence Platform solution, enabling Automated Indicator Sharing (AIS) between the Integrated Joint Cybersecurity Coordination Center (iJC3), DHS Cybersecurity and Infrastructure Security Agency (CISA), DOE National Laboratories, and various governmental partners. This platform provides DOE with the ability to share indicators of compromise (IOC) and allows Cyber Threat Intelligence (CTI) analysts to enrich and contextualize IOCs from a variety of sources. Thousands of IOCs have been identified, millions of IOCs have been automatically published, and 73 percent of DOE organizations have connected to the interface, through this platform.
- The Cybersecurity Supply Chain Risk Management (C-SCRM) team operated and enhanced the DOE OCIO Information Communications Technology C-SCRM (ICT-C-SCRM) program in alignment with OMB, NIST Special Publication (SP) 800-53, Revision (Rev.) 5 and NIST SP 800-161, Rev. 1, the North American Energy Reliability Corporation (NERC), Critical Infrastructure Protection (CIP) standards, and EO 14028. The program provides risk assessments, report findings, and continuous monitoring of suppliers, products, and services. The ICT-C-SCRM program has continuously evolved to meet updated regulations and added capabilities as part of its ongoing and iterative enhancement program. Enhancements to the program include, but are not limited to, adding new automated prescreen assessments, including supplier resiliency information and an automated 24-page assessment report, implementing over 200 technology enhancements to the DOE C-SCRM technology tool, and updating the tool to align with Federal guidelines. The program undertook a significant re-engineering of the assessment process and reporting in August 2023. Impending enhancements to be delivered in the Fall of 2023 include the DOE Attestation Portal, a central repository to collect, store, and report on CISA-compliant Secure Software Development Framework (SSDF) attestations submitted by commercial software vendors as part of DOE procurements. Since July 2019, the DOE OCIO C-SCRM program has delivered over 6,300 assessments, evaluating over 2,400 suppliers for over 53 entities across DOE and an external entity, the Bureau of Reclamation (BOR).

Assessments use validated open-source information, impact information from the entities, and responses from suppliers so executives can make informed risk-based decisions.

- OCIO's Enterprise Cybersecurity Risk Management (ECRM) program completed the transition to a new Cyber Risk Quantification (CRQ) platform, including stakeholder training and working sessions facilitated through the ECRM Community of Practice (CoP). ECRM completed a pilot on-site assessment with a DOE National Laboratory and is planning outreach for future engagements. Additionally, ECRM completed migration of the quarterly risk register data call to the Data Call Application (DCA) to enhance process efficiencies.
- The Cybersecurity Awareness and Training (CSAT) team provided role-based trainings targeting Authorizing Official Designated Representatives (AODR) and Information System Security Officers (ISSO) focusing on DOE-related policies and procedures to safeguard information and information systems. Authorizing Official (AO) CoP meetings, Federal Risk and Authorization Management Program (FedRAMP) trainings, and Executive Lunch and Learns are also hosted for the cyber workforce. These sessions provide guidance, assistance, and support with managing, preventing, and responding to cyber risks. The resources are shared on Energy Hub to increase departmental collaboration and knowledge exchange. FY 2023 reported a total of 2,342 attendees for all training deliveries.
- The CSAT team planned and executed Cyber Fire Foundry, the biannual cybersecurity incident investigation training in collaboration with DOE National Laboratories. Cyber Fire Foundry is one of DOE's premier cybersecurity workforce engagements and offers lab-based courses, case study discussions, and collaborative exercises for all skill levels. The training aims to foster cybersecurity incident response knowledge, skills, and abilities with participants from DOE DEs, Federal agencies, U.S. military, industry, academia, and international partners. FY 2023 reported a total of 512 attendees for Cyber Fire Foundry 2022-2 (November 2022) and 2023-1 (April 2023) deliveries.
- The DOE Control Systems Working Group (CSWG) led efforts to identify and execute high-priority initiatives as determined by the CSWG Steering Committee in accordance with the Department's overall priority initiatives:
  - Operational Technology (OT) asset management discovery effort to identify and improve DOE's asset visibility and vulnerability enumeration capabilities;
  - NNSA OT Assurance (OTA) AO training program; and
  - National Renewable Energy Laboratory (NREL) Cloud Zero pilot effort to test the feasibility of leveraging cloud solutions for power distribution monitoring and control functions.
- OCIO fully incorporated Big Data Platform (BDP) into the iJC3 operations environment. It ingests and stores large data sets from across the DOE Enterprise, from which cyber analytics are derived that can enhance rapid analysis and response to anomalies or suspected cybersecurity events. OCIO continues to optimize BDP to provide faster search capabilities, while reducing costs and supporting reporting requirements for Federal Information Security Modernization Act of 2014 (FISMA). BDP hosts and presents Corelight network sensor data collected as part of the Cooperative Protection Program (CPP).

DOE's ongoing efforts to improve include:

- OCIO continues to make significant progress towards fully implementing asset management goals for DHS's Continuous Diagnostics and Mitigation (CDM) program.
  - DOE's CDM Agency Dashboard is fully accredited and actively sending data to CISA's CDM Federal Dashboard.
  - 64 percent (32 of 59) DEs are routinely sending asset management data to the DOE Agency Dashboard.
  - Seventy nine percent (11 of 14) Internet Protocol security (IPsec) tunnels have connected Office of Science (SC) and EM DEs not on DOE Net, enabling them to send CDM data to the DOE Agency Dashboard.
- OCIO, in meeting EO 14028 and M-22-01 goals and through the CDM program, is assisting 76 percent of DEs (44 of 58) by either, implementing, supplementing an existing implementation, or fully switching to a standard EDR tool which provides proactive detection of cybersecurity incidents within the Federal Government infrastructure, active cyber hunting, containment and remediation, and incident response. 22 percent of DEs (13 of 58) continue to operate and maintain an existing EDR solution.
- OCIO continued growing and maturing the Ongoing Authorization (OA) program. The program addresses the needs of constantly changing environments, which involves shifting from periodic to ongoing assessments that facilitate a continual state of awareness. The plan to fully implement OA aims to integrate with existing and future Assessment and Authorization (A&A) support and meet OCIO objectives. Implementing OA at DOE will provide ongoing risk awareness, streamlined continuous monitoring processes, strategy improvement, and effective resource allocation.

INFRASTRUCTURE

Key Challenges:

DOE is responsible for a large portfolio of world-leading scientific and production assets and the general-purpose infrastructure needed to operate and use these assets. While DOE made investments in world-class mission facilities, much of the supporting infrastructure, including office space, general laboratory spaces, maintenance shops, and utilities contributing to the mission and forming the backbone of the laboratory and production plant sites, is beyond design life and needs attention. Based on Department-wide facility assessments and data analyses, DOE is facing a systemic challenge of degrading infrastructure and high levels of deferred maintenance. To

address these challenges, DOE focuses infrastructure management priorities on halting further increases in the level of deferred maintenance and reducing levels over time, improving facility condition and functionality, and reducing the number of excess facilities in the Department's real property inventory.

A degrading infrastructure and excess contaminated facilities pose a risk to safety, security, and programmatic objectives. DOE faces challenges with the number of excess facilities throughout the complex and the need to deactivate, decontaminate, decommission, and demolish facilities in the near term. EM is the primary office responsible for performing necessary decontamination and final Deactivation and Decommissioning (D&D) of process-contaminated facilities.

Departmental Initiatives: In FY 2023, the Department continued to make progress in addressing infrastructure challenges through the following actions:

- Took active leadership roles in developing interagency infrastructure management initiatives via the Federal Real Property Council (FRPC).
  - As chair of the FRPC Data Quality Working Group, DOE led an interagency effort to establish real property data quality program that applies to all Federal agencies. DOE also developed its own Real Property Data Quality Plan in accordance with this new requirement.
- Developed and deployed a new mobile app tool to help sites conduct infrastructure condition assessments, estimate the costs to make repairs, and integrate the results into DOE's Facilities Information Management System.
- Developed and deployed a Life-Cycle Cost Estimating tool. This tool helps facility managers plan for preventive maintenance, routine maintenance and repair, and facility replacement costs over the life-cycle of a building.
- Coordinated with the DOE Laboratory Operations Board in developing an infrastructure report to provide insight into where laboratory facilities, as an aggregate, stand in terms of various real property and sustainability metrics.
- Participated in several GAO engagements to understand and improve infrastructure management, including:
  - GAO Engagement 105485, *Addressing Critical Maintenance for Federal Infrastructure;*
  - GAO Engagement 105105, *Post Coronavirus Disease 2019 (COVID-19) Fed Space Planning;*
  - GAO Engagement 105673, *Federal Energy and Water Management; and*
  - GAO Engagement 106200, *Building Utilization*.
- Supported Program Office infrastructure planning and evaluations efforts. Program Office plans include reduction of deferred maintenance, removal of excess facilities, and proposals for potential construction of facilities.
  - The NNSA Asset Management Program uses supply chain management economies-of-scale to provide a centralized and efficient procurement approach to replacing mission-critical deteriorating infrastructure systems common throughout the enterprise. NNSA completed development of a 10-year plan to revitalize the deteriorating security technology and infrastructure across the enterprise.
  - The Office of Science via its Science Laboratories Infrastructure program has initiated utility renewal projects at many of its laboratories to ensure reliability and reduce deferred maintenance.
  - EM is making significant changes to improve its infrastructure by holding deep dive reviews to facilitate understanding and agreement of the future direction of each site's infrastructure and how it supports the EM mission, priorities, and goals.

In addition to these initiatives, DOE continues to:

- Improve its infrastructure planning efforts by issuing a Departmental Real Property Capital Plan to outline DOE's processes for infrastructure budgeting, performing needs assessments, conducting alternative analysis and life-cycle cost estimates, prioritizing real property projects, and establishing metrics for success.
- Manage its new Bridge and Tunnel Management program by ensuring all DOE bridges, tunnels, and culverts are inspected and evaluated in accordance with the requirements identified in DOE Order 437.1, *Bridge and Tunnel Management*.
- Track five-year infrastructure trends via the State of Facilities Annual Report.
- Maintain a close partnership between its Real Property Office and its Budget Office to improve the way the Department integrates more detailed real property information into its budgeting process.

HUMAN CAPITAL MANAGEMENT AND DIVERSITY, EQUITY, INCLUSION, AND ACCESSIBILITY

Key Challenges:

Human Capital Management

DOE requires an empowered and high-performing Federal workforce to accomplish the mission. Key human capital challenges include:

- Competition for highly skilled talent;
- Risk to institutional knowledge due to retirement eligibility of the workforce;
- Vulnerability due to unplanned attrition;
- Workforce and leadership development gaps; and
- Employee engagement.

The Office of the Chief Human Capital Officer (HC), working with DOE Program and functional offices, identified five strategic human capital priority areas relating to leadership, people, and Human Resources (HR):

- Strategic Human Capital Planning;
- Talent Management;
- HR Service Delivery;
- Execute Bipartisan Infrastructure Law (BIL) Hiring; and
- Ensure HC Capacity.

Diversity, Equity, Inclusion, and Accessibility

On June 25, 2021, President Biden issued EO 14035, *Diversity*, *Equity*, *Inclusion*, *and Accessibility in the Federal Workforce*, which applies the concept of "underserved communities" to the context of the Federal workforce. In so doing, the EO greatly expands the scope of individuals identified as underrepresented in the Federal workforce and recognizes individuals may belong to more than one underserved community and face intersecting barriers. The EO outlines a historic effort to assess the status of Federal agency Diversity, Equity, Inclusion, and Accessibility (DEIA) efforts, as well as a data-driven approach to the identification of barriers to equal opportunity, with the goal of strengthening the Federal Government's ability to recruit, hire, develop, promote, and retain our Nation's top talent and remove barriers to equal opportunity. This historic cross-cutting effort will allow the Department an opportunity to bring together subject matter experts from DOE Program and Staff Offices, NNSA, and Power Marketing Administration (PMA) offices to assess the status of DOE's DEIA efforts and to identify barriers to equal opportunity. Key challenges for the DEIA EO include:

- Assessing the status of DOE's DEIA efforts through a comprehensive survey and Department-wide multi-year strategic plan to address DEIA in general, recruitment, hiring, promotion, retention, outreach and engagement, professional development, pay and compensation policies, reasonable accommodation, training and development, safe workplaces and sexual harassment, and culture.
- Conducting a comprehensive data-driven assessment of equity in DOE's employment practices and culture, which includes the identification of promising practices, potential barriers, potential root causes, potential solutions, and resource capacity in the areas of recruitment, hiring, promotion, retention, outreach and engagement, professional development, performance evaluations, pay and compensation practices, reasonable accommodation access, safe workplaces and sexual harassment, inclusive workplace culture; and equity.
- Implementing the DOE-wide DEIA Strategic Plan that requires leadership support to advance DEIA strategy, on-going analysis of workforce demographics, training and development, and outreach and engagement.
- Establishing collaborative working groups that include Program Office, PMA leaders, DEIA practitioners, DOE DEIA senior leadership, and Alliance Councils to advance the DEIA Strategic Plan and Goals, which aligns with the Government-wide DEIA Strategic Plan and establishing quarterly goals for strengthening DEIA initiatives and programs across the Department.

Departmental Initiatives:

Human Capital Management

DOE aligned actions with the Administration's goal to make Government lean, accountable, and efficient. HC drove human capital innovations to recruit, develop, engage, and retain a high-quality, diverse, and inclusive workforce capable of meeting the Department's mission needs through the following strategic priorities.

Strategic Human Capital Planning: Implemented the Department's new five-year Strategic Human Capital Plan to set the direction for innovative human capital management across the Department and promoted strategies to enable and empower the DOE workforce to meet mission requirements. Priorities included:

- Expanded access to human capital data through a dynamic dashboard, enabling data-informed decision-making.
- Partnered with the Office of Economic Impact and Diversity (ED) and agency leadership to implement the DOE DEIA Strategic Plan to provide an environment that enables and empowers employees through purposeful commitment to core DEIA principles to promote organizational performance.
- Managed operational staffing plans for DOE program offices, ensuring staffing allocations were properly aligned to support mission priorities, created opportunities for early career and career pathing, and streamlined the hiring process.
- Integrated staffing plans into the Corporate HR Information System (CHRIS). The objective was to ensure a 1:1 ratio of positions comparing staffing plans to system information.
- Used the Human Capital Framework (HCF) as the set of strategic criteria for internal audits and evaluations of human capital programs and processes, focusing on three human capital management systems: Talent Management, Performance Culture, and Strategic Planning and Alignment.
- Initiated the Human Capital Management Accountability Program (HCMAP) review for the Office of HR Operations and Compensation (OHROC).
- Closely managed executive allocations, focused on filling existing Senior Executive Service (SES) positions with onboard talent, and managed SES allocations to operate in an efficient and accountable manner.
- Provided executive performance management guidance by releasing comprehensive opening and closing guidance, as well as provide updated training sessions to reaffirm effective practices and share lessons learned.

Talent Management: Support organizational performance through the development and delivery of innovative strategies that effectively develop, engage, and retain a high-performing, diverse, and inclusive workforce.

- Develop and delivered strategies to strengthen workplace culture and employee engagement through improved data analysis, promotion of best practices, and strategies targeting key engagement drivers.
- Expanded awareness of and access to quality learning and workforce development opportunities through expanded outreach with the DOE workforce, Employee Resource Groups (ERG), and the Department's training community.
- Developed the functionality of the DOE Learning Management System (LMS) to promote the continuous upskilling and reskilling of the DOE workforce through the release of competency-based curriculums.
- Designed and delivered informational sessions for DOE Federal employees who aspire to become a member of the SES to include the SES hiring process,

DOE's recruitment methods, and strategies for developing and writing strong Executive Core Qualification (ECQ) narratives.
- Developed Pathways cohorts to engage and create opportunities for expanded learning environments for interns, recent graduates, and Presidential Management Fellows (PMF) employees.
- HC launched a Departmental Leadership Development Initiative, *Let's Lead!* TRACKing a Climate for Change, focusing on strengthening foundational leadership behaviors proven to strengthen workplace culture and improve organizational performance.

HR Service Delivery: HC drove investment in needed upgrades to DOE's HR IT solutions to better support the employee lifecycle and facilitated more effective and efficient HR service delivery for all DOE employees.
- Examined existing Standard Operating Procedures (SOPs) and Policies for continuous improvement opportunities to improve the effectiveness and efficiency of the hiring process and reduced DOE's time-to-hire.
  - Partnered with the EHSS, HC streamlined and implemented a security and suitability onboarding process for new DOE headquarters employees who do not require a security clearance.
- Expanded outreach and collaboration with customers to ensure HC programs and services remained customer-centric and responsive to organizational needs.
  - Launched the classification initiative in Bonneville Power Administration's (BPA) Human Resource Center (HRSC) to ensure managers understand classification guidance and principles, as well as to support a collaborative process when consulting on position descriptions.
- Promoted the use of a résumé-based method to recruit for SES positions to considerably shorten the hiring timeframe. The résumé-based method requires the least amount of up-front work for applicants, allowing for a larger, more diverse applicant pool.
- Focused on targeted outreach, expanded the outreach of employment opportunities to diverse institutions and organizations to promote workforce diversity, upheld Merit System Principles, and ensured equal access to DOE employment opportunities, including positions in the SES.
- Expanded USA Staffing capabilities with implementation of USA Hire assessments into early FY 2023. USA Hire not only assisted DOE with meeting the requirements of EO 13932, but also resulted in higher-quality candidates on selection certificates.
- Established a new Entry on Duty (EOD) Branch within OHROC to speed the processes for bringing new employees into DOE.

Execute BIL Hiring: Implemented of the BIL Hiring effort to fill 750 Clean Energy Corps (CEC) jobs.
- Received and promote a diversified applicant pool.
- Ensured timely hiring of the CEC workforce.

Ensure HC Capacity: Examinee internal organizational structures and work process while focusing on workforce culture and engagement initiatives to maximize employee performance.
- Deployed targeted engagement strategies to support HC leaders in developing and fostering a diverse, inclusive, and engaged HC workforce.
- Executed HC's strategic staffing plan to ensure priorities are properly resourced and supported.
- Focused on improving its work culture using technology and innovation to improve the process.

Other DOE completed efforts included:
- Completed and deployed HC's five-year Strategic Plan and subsequent three-year HC Operating Plan (HCOP). All milestones were tracked/monitored utilizing internal automated technology.
- Processed improvement activity through the new HC Organizational Effectiveness Division. Time to hire (T2H) was 71 days compared to 98 days at the end of FY 2022 for all hiring types, to include Merit Promotion, Delegated Examining, and Direct Hire.
- Integrated departmental staffing plans into the Corporate HR Information System (CHRIS) to ensure all positions (vacant/encumbered) were tracked/ managed.
- Developed and deployed a Reasonable Accommodation (RA) video to expand understanding and access to DOE's RA program.
- Launched the Labor Management Council to engage stakeholders representing both labor and management in identifying solutions to support the DOE workforce and promote mission achievement.
- Deployed the CEC and Candidate Status Tracker (CST) recruitment dashboards to support the Strategic HC Planning effort. These Microsoft Power BI Dashboards provided customers and staff real-time information regarding current recruitment efforts.
- Revised SOP and streamlined processing of hiring actions by shifting resources within OHROC.
- Managed a recruitment pipeline of over 100,000 applicants for the DOE CEC, including hiring 700 employees.
- Authorized direct hire authority for Inflation Reduction Act of 2022 (IRA) positions based on a critical mission need to fill CEC jobs.
- Expanded utilization of the applicant tracking system (LEVER) to reach targeted groups for positions with Government-wide direct hire authority.
- Developed and implemented a streamlined BIL hiring incentives process for advance in hire, service credit for leave, and recruitment bonus incentives.
- Developed and launched the HC Resource Manager (RM) CEC SharePoint site.
- Partnered with the Office of Personnel Management (OPM) to execute 10 Hiring Manager Focus Groups to evaluate customer satisfaction with the classification and hiring processes.
- Established a Recruitment and Outreach CoP to support DEs in their efforts to attract and recruit a diverse, inclusive, highly skilled workforce and serve as a platform to help advance DEIA across the Department.

- Updated Staffing Plan protocols and oversaw the FY 2023 Staffing Plan Annual Review, ensuring alignment with FY 2023 funding levels and informing recruitment strategies.
- Established an Office of Recruitment and Advisory Services (ORAS) Position Management Team tasked with maintaining Position Allocation Reports (PAR), replacing manual Staffing Plans, and allowing for additional automation and dashboarding of position management data.
- Staffed an ORAS Talent team, expanding the use of skills-based assessments and adding multi-hurdle approaches to our competitive service hiring efforts.
- Developed customized Strategic Hiring Plans for each DE based on FY 2023 hiring priorities. These plans included customized recruitment and outreach strategies aligned with the recommended hiring strategies, emphasizing that targeted recruitment improves the overall hiring result.
- Launched a Recruitment and Outreach CoP made up of program managers, recruitment and outreach specialists, event coordinators, hiring managers, and other professionals across the Department to share opportunities, best practices, and lessons learned.
  - Convened and led training on a variety of topics in Recruitment and Outreach CoP Meetings:
    - USAJOBS Agency Talent Portal;
    - DOL Workforce Recruitment Program;
    - DoD Operation Warfighter Program and DoD SkillBridge Program;
    - Peace Corps and AmeriCorps;
    - DOE Hiring Goals;
    - Recruitment and Outreach 101;
    - LEVER Applicant Portal for Event and Job Marketing; and
    - Pathways program overview.
- Spearheaded DOE-wide information sessions with expanded outreach to diverse potential candidates
  - DOE Careers in Contracting – 1,110 registered.
  - DOE Careers in Engineering – 2,047 registered.
- Convened information session for DEs to include:
  - CEC Women's Recruitment Forum – 4,000 registered.
  - Secure Energy with the Office of Cybersecurity, Energy Security, and Emergency Response Center (CESER) Information Session – 1,713 registered.
  - Hanford Site EK Information Session - 315 registered.
  - EM EK Recruitment Fair – 358 registered.
  - The State and Community Energy Programs (SCEP) Information Session – 570 registered.
  - Grid Deployment Office (GDO) Virtual Fair – 1,006 registered.
  - DOE PMF Finalists Information Session – 38 registered.
- Hosted and/or attended 59 recruitment and outreach events:
  - Veterans/Military Spouses – 17 events.
  - Persons with Disabilities – four events.
  - Diversity and science, technology, engineering, and math (STEM) events – 38 events.
    - Hispanic-Serving Institutions.
    - Historically Black Colleges and Universities.
    - Minority-Serving Institutions Tribal Colleges and Universities.
    - STEM.
- Developed a Recruiter's Toolbox on HCnet containing templates, event checklists, trainings, resume mining databases, and employment programs to consider.
- Identified tools/strategies for engaging a virtual/ hybrid workforce to foster a culture of open and reciprocal communication and actively promoted training resources to increase effectiveness, while working in a hybrid environment.
- Launched a new eLearning platform, creating a more engaging learning experience for our employees. The new platform leverages machine learning to support employee upskilling and reskilling, introducing recommended learning based on employee role and previous learning activity, which resulted in a three percent increase in non-mandatory course completions as compared to the prior FY.
- Developed a competency model to support career progression across the Department, spanning career levels, to support our employees' career development goals.
- Developed and launched the "Aspiring to the SES" sessions, focused on providing information on the SES application process and tips for writing strong Executive Core Qualifications (ECQ) narratives.
- Updated Executive Performance Management Toolkit to include standalone training modules and created custom performance management trainings for DEs, as requested.

Diversity, Equity, Inclusion, and Accessibility

As the Nation's largest employer, the Federal Government must serve as the model for excellence for DEIA. DOE is committed to advancing the Administration's whole-of-Government integration of DEIA through Department-wide DEIA strategic goals. During FY 2023, ED led the development of action plans on behalf of DOE for EO 14050, *White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity for Black Americans*, and EO 14075, *Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex (LGBTQI+) equity*. ED also led the submission of intermittent deliverables for EO 14045, *White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity for Hispanics*. ED continues to serve as the lead for progress updates related to the following EOs: EO 14035 (DEIA); EO 13985, *Advancing Racial Equity and Support for Undeserved Communities Through the Federal Government* (Equity 1.0); EO 14091, *Further Advancing Racial Equity and Support for Undeserved Communities Through the Federal Government* (Equity 2.0); EO 14020 (gender equity); and EO 14031, *Advancing Equity, Justice, and Opportunity for Asian Americans, Native Hawaiians, and Pacific Islanders*, or AA and NHPI. ED launched the Department's cross-agency EO teams, composed of diverse senior leaders and employees, to identify and develop DOE goals in alignment with Government-wide priorities. ED is also taking the lead in coordinating participation in Interagency Working Groups (IWG) that include DEIA.

In FY 2023, the Department continued to make progress in advancing DEIA efforts:

- ***Building Capacity:*** A key goal in FY 2023 was to strategically hire and grow staff to advance DEIA initiatives across the Department. During FY 2023, ED's standalone Office of Diversity, Equity, Inclusion, and Accessibility (ODEIA) was able to grow from four full-time equivalents (FTE) to 16. ODEIA has three Division Chiefs: DEIA Strategic Planning, DEIA Training and Organizational Development, and DEIA Workforce Engagement. Team members were hired to support ODEIA's strategic plan implementation, training development and deployment, ERGs and internal engagement, targeted outreach and external engagement, and DEIA communications.

- ***Clean Energy Corps:*** Due to the unprecedented investment of $62 billion from the BIL and $35 billion from the IRA in FY 2022, DOE has been managing its talent surge and applicant flow in FY 2023, with hundreds of new jobs, both filled and unfilled, to deploy the next generation of clean energy technology. As a result of ED's demographic data briefers comparing CEC hires with labor market availability, CEC hiring managers have been able to consult with HC and ED to identify outreach opportunities and cast a wider net of diverse applicants. In FY 2023, HC and ED hosted briefings on outreach plan development, followed by an announcement of a hiring sprint by the Office of the Under Secretary for Infrastructure (S3). As a result, hiring managers are taking the following actions: refresh on business rules and applicant tracking system support, attend HC trainings, join Outreach CoP, develop third quarter and fourth quarter staffing plans, and leverage other hiring managers for ideas and support. To date, DOE has seen some improvement in the diversity of its applicant pool and talent mobility but will continue to monitor progress.

- ***EO 14035, Diversity, Equity, Inclusion, and Accessibility in the Federal Workplace:*** DOE's DEIA Strategic Plan was released at the end of FY 2022, with an announcement to DOE staff and a press release to the public. Under the leadership of the Chief of DEIA Strategic Planning Division, ODEIA hired a program manager, two strategy specialists for goal-tracking and project management, and three DEIA business partners for program office-level consultation. To date, the Year 1 reporting period begins in April 2022, with the end date of September 2023.

- ***EO 13985 and EO 14091 (Equity 1.0 and 2.0):*** DOE released its first Equity Action Plan (EAP) in April 2022, designed to ensure that the Department eliminates barriers to access, transforms programs and policies to open even broader pathways for underrepresented groups to access DOE resources, and stands up new programs to better serve communities. Pursuant to EO 14091, *Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government,* released February 2023, DOE has the continuing responsibility to evaluate its programs and policies to reduce barriers to access and annually submit an EAP which will be made public.

- ***EO 14020, Establishment of the White House Gender Policy Council:*** The National Strategy on Gender Equity and Equality was released in October 2021, outlining 10 priorities for Federal agencies. The DOE Gender Equity Team developed and submitted an Action Plan to the Gender Policy Council in April 2021 and August 2023. The plan included goals to improve gender equity related to DOE's talent processes, grants and funding opportunity awards, boosting participation in clean energy careers and job creation, responding to the climate crisis with a gender equity lens, and including the non-binary community within the larger framework of gender equity.

- ***EO 14031, White House Initiative on Asian Americans, Native Hawaiians, and Pacific Islanders (WHIAANHPI):*** In May 2023, DOE sponsored the Federal Asian Pacific American Council's (FAPAC) annual National Leadership Training Program in Long Beach, CA and attended the Office of Personnel Management's (OPM) AA and NHPI Federal Employee Leadership Development Conference. DOE co-sponsored the WHIAANHPI Economic Summit in Hawaii in July 2023. The Department is partnering with its Asian American Pacific Islander Network (AAPIN) ERGs to sponsor ERG members in the Federal workforce for professional development, capacity-building, and enhancing leadership skills. In FY 2023, DOE participated in two WHIAANHPI Regional Economic Summits in Seattle, WA and New York City, NY to share Federal and DOE opportunities related to careers, internships, grants, and financial assistance. DOE also actively partnered with Asian Americans in Energy, the Environment, and Commerce on two external engagement events (August 2022 in Washington, D.C., and October 2022 in Boston, MA) to inform the community about employment, contracting, and business opportunities resulting from investments via the BIL and IRA.

- ***EO 14045, White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity for Hispanics:*** In FY 2023, DOE co-sponsored the Hispanic Regional Economic Summit in San Bernardino, CA to share Federal and DOE opportunities related to careers, internships, grants, and financial assistance. In April 2023, DOE submitted its accomplishments (with input from program offices) related to the Hispanic community between January 2021 and March 2023, as well as content for White House Hispanic Initiative's Federal Resource Opportunity Bank for public distribution.

- ***EO 14050, White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity for Black Americans:*** In FY 2023, DOE sponsored two annual conferences to share Federal and DOE opportunities related to careers, internships, grants, and financial assistance: National Society of

Black Engineers and the American Association of Blacks in Energy. DOE professionals also served on panels to discuss the Department's initiatives, particularly in clean energy. In October 2022, DOE submitted its White House Initiative for Black Americans Action Plan with input from DOE program offices.

- ***EO 14075, Advancing Equality for Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex Individuals:*** Following the publication of the Federal Evidence Agenda on LGBTQI+ Equity, DOE submitted its Action Plan related to Sexual Orientation and Gender Identity (SOGI) data in April 2023, with input from program offices related to employee and program-specific data collection and use. In FY 2023, DOE sponsored the Capital Pride Festival, Lesbians Who Tech conference, and attended Out in STEM conference to engage with the LGBTQI+ community on employment and Federal and DOE opportunities. DOE also works in close partnership with its Energy PRIDE ERGs for Pride Month, including raising the Progress Pride Flag for the third year in a row with the Energy Secretary.

- ***ERGs:*** DOE continued to partner with ERGs this year on heritage month celebrations and outreach events, and invested in ERG success by hiring its first ERG Program Manager. Discussions are underway to grow and support ERG leaders and members through its ERG policy and upcoming ERG summit (more details below).

- ***Office of DEIA – Strategic Planning Division:*** In addition to EO 14035, accomplishments include the following:
  - DOE's DEIA Strategic Plan goals are 85 percent completed.
  - Established a DOE-wide DEIA Alliance as a CoP for DEIA practitioners to collaborate on DEIA goals, projects, and strategic planning.
  - Developed resources, tools, and webinars (e.g., DEIA toolkits, Strategic Tips for Success, launched a DEIA SharePoint site and hosted three DEIA strategy sessions) to upskill DOE program offices in alignment with Department-wide goals and development of local office-level DEIA plans.

- ***Office of DEIA – Training and Organizational Development Division:*** Accomplishments include the following:
  - More than 72 percent of all DOE supervisors completed DEIA Fundamentals for Supervisors training. Conducted five DEIA Back-to-Basic courses upon request. Conducted one course for the DOE enterprise. Launched the DEIA Practitioners' course for more than 50 practitioners across DOE. Created a DEIA Terms and Definition document and video that is available to all DOE personnel.
  - Updated the DEIA Training and Development SharePoint, to include a DEIA training topic suggestion box, training needs assessment link, and list of all available training courses. Partnered with HC to co-host the first Accessibility Summit.
  - Co-led the OPM Chief Diversity Officer Executive Council (CDOEC) training subcommittee development of a DEIA training competency model that will be adopted by OPM for Federal-wide DEIA training.

- ***Office of DEIA – Workforce Engagement Division:*** Accomplishments include:
  - Coordinated DOE sponsorships with other program offices and DOE National Laboratories for diverse professional association conferences.
  - Launched DEIA monthly newsletters to share updates on DOE DEIA initiatives and progress.
  - Supported DOE's paid internship programs by hosting student interns.

DOE's ongoing efforts include:

- ***Building Capacity:*** Under ED's FY 2023 organizational chart, ODEIA became fully staffed as of May 2023. At this stage, capacity-building will focus on professional development, execution of performance goals, coaching and mentoring, and collaboration and partnerships for strategy implementation.

- ***Clean Energy Corps:*** ED and HC will continue supporting CEC hiring managers in developing and executing their staffing and outreach plans, providing trainings and consultations, connecting them to outreach opportunities for engagement, and monitoring progress to attract, hire, and retain qualified and diverse top talent to accomplish DOE's mission.

- ***EO 14035, DEIA:*** A Year 1 progress report will be submitted to OPM in the Fall of 2023, with the objective of improving DOE's "scores" under OPM's DEIA maturity model scorecard. While an internal project management tracking sheet was developed to monitor progress on DOE's DEIA goals, ED is exploring possible opportunities for an improved internal dashboard. DOE is also continuing to leverage its DEIA Senior Leadership Council (composed of SES-level champions representing various offices) to advance and amplify DEIA efforts across the Department.

- ***EO 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government or Equity 1.0:*** DOE will include its accomplishments under the April 2022 EAP's five priority actions related to data collection, increasing entrants for DOE funding opportunities, increasing participation in financial assistance programs, expanding Tribal and stakeholder engagement, and improving access and equity in DOE's Weatherization Assistance Program (WAP) in its new EAP.

- ***EO 14031, White House Initiative on Asian Americans, Native Hawaiians, and Pacific Islanders or WHIAANHPI:*** DOE co-sponsored the WHIAANHPI Regional Economic Summit in July 2023 to share

Federal and DOE employment and contracting opportunities with AA and NHPI communities and connect with stakeholders on energy justice. In FY 2023, ED met with the Small Business Diversity Network focused on AA and NHPI business owners to share opportunities. DOE will continue attending regular meetings for WHIAANHPI's senior designees, IWG, and IWG subcommittee on anti-Asian hate. The subcommittee is working on creating and releasing a resource document to be shared across the Federal Government addressing anti-Asian hate. DOE will also determine upcoming conference sponsorships for attracting diverse talent and engaging the AA and NHPI community, including potential interns from Asian-American, Native American, and Pacific Islander-Serving Institutions (AANAPISI).

- ***EO 14045, White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity for Hispanics:*** DOE attended regular meetings for White House Hispanic Initiative's IWG and identified DOE representatives to join IWG subcommittees (e.g., focused on supporting the Hispanic Federal workforce). DOE sponsored the League of United Latin American Citizens (LULAC) conference in August 2023 to engage with potential applicants and share opportunities. The Department will determine upcoming conference sponsorships for attracting diverse talent and engaging the Hispanic community, including potential interns from Hispanic-Serving Institutions (HSI).

- ***EO 14050, White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity for Black Americans:*** DOE attended regular meetings for White House Initiative for Black Americans' IWG and determined upcoming conference sponsorships for attracting diverse talent and engaging the Black community, including potential interns from Historically Black Colleges and Universities (HBCU). DOE co-sponsored the annual National HBCU Week Conference in September 2023 in connection with the White House HBCU Initiative.

- ***EO 14075, Advancing Equality for Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex, Individuals:*** The Department sponsored conferences, such as Lesbians who Tech, to attract diverse talent and engage the LGBTQI+ community. DOE General Counsel (GC) and HC completed the review of the Department's Workplace Gender Transition Guidelines. These guidelines were drafted from industry best practices and provide guidance to supervisors and support to employees seeking to affirm their gender identity and/or support their gender transition while working at DOE.

- ***ERGs:*** DOE hosted its first-ever ERG Summit in September 2023, bringing together DOE's ERG for leadership development, network growth, and best practice sharing. The annual summit titled One Energy Community engaged the Federal workforce, 14 National Laboratories, and PMAs. In FY 2023, DOE unveiled the ERGs' Energy Hub, delivering an online collaborative space for ERGs to launch membership campaigns, network across the complex, and to share information. DOE continues to support workforce development of its first ERG policy, with guidance from DOE GC.

- ***Office of DEIA – Strategic Planning Division:*** Future efforts include: 1) expanding DOE's DEIA Strategic Plan and goals to a multi-year plan, including a workstream for supplier diversity and procurement; 2) developing a template for a DEIA Action Plan for DOE program offices to align their DEIA efforts and initiatives with Department-wide goals; and 3) hosting a DEIA Roundtable of DEIA Practitioners across agencies.

- ***Office of DEIA – Training and Organizational Development Division:*** Future efforts include launching the five-year DEIA training plan with multi-media training content in October 2023 for all DOE employees to increase their DEIA awareness and competencies. Third Thursdays Training for all employees will continue. Each event focuses on a specific DEIA topic. The FY 2024 DEIA Fundamentals for Supervisors course will be launched in November 2023. First Wednesday Collaboration Events focused on Accessibility will be launched in November 2023. The DEIA Practitioners course will continue through September 2024 culminating in a graduation and recognition for participants.

- ***Office of DEIA – Workforce Engagement Division:*** Ongoing or future efforts include: 1) increase the number of collaborations for outreach and engagements; and 2) continue expanding efforts to strengthen DEIA communications for both internal and external audiences.

CLIMATE CHANGE

Key Challenges:

The United States and the world face a profound climate crisis. The Fourth National Climate Assessment (NCA) reports the U.S. will increasingly experience more frequent, intense, and longer-duration extreme weather events across all regions of the country, including extreme temperature and precipitation events, stronger hurricanes and storm surge, and droughts and wildfires.

- The National Oceanic and Atmospheric Administration (NOAA) reports damage costs to the U.S. as already significant. The year 2022 tied 2017 and 2011 for the third-highest number of billion-dollar disasters, with a cumulative cost exceeding $165 billion dollars.
- The impact of climate change on DOE and its operations and infrastructure is also significant and projected to increase with a changing climate.

EO 14008, *Tackling the Climate Crisis at Home and Abroad*; EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability;* and related EOs establish requirements for Federal agencies to pursue action at home and abroad to avoid the most catastrophic impacts of this climate crisis and to seize the opportunity tackling

climate change presents. Ambitious performance goals include putting the Federal Government on a path to achieve carbon pollution-free electricity (CFE) by 2030, a zero-emission vehicles (ZEV) fleet by 2035, and a net-zero building portfolio by 2045.

Departmental Initiatives: In response to the climate crisis and recent Administration climate requirements, such as those contained in EO 14008, DOE developed and released the *2021 Climate Adaptation and Resilience Plan (CARP)* and subsequent annual updates. The CARP contains five priority strategies that outline DOE's plan to manage the impacts of climate change to its mission and operations and has been the driving force behind many of the Department's climate initiatives. The CARP includes many new initiatives, as well as enhancements of ongoing activities.

Assess Vulnerabilities and Implement Resilience Solutions at DOE Sites: Taking a proactive approach to climate change adaptation and resilience in the 2021 CARP, DOE committed to develop a new vulnerability assessment process, conduct site-level vulnerability assessments, and implement resilience plans. In this effort, DOE sites identified vulnerabilities by utilizing the latest climate science information and developed resilience solutions to inform resource allocation and decision-making.

In FY 2023, DOE continued to make progress on this action by:

- Reviewing Vulnerability Assessments and Resilience Plans (VARP) from 36 sites across the Department. Many sites used a Risk Assessment Tool to help quantify hazards and inform site planning for resilience solutions. This tool helped sites identify current hazards and assess future impacts of climate change.
- The Sustainability Performance Office (SPO) began collecting site resilience solution information in the Sustainability Dashboard, DOE's web-based reporting platform. Tracking resilience solutions will allow DOE to better understand how DOE sites are responding and adapting to climate change and identify opportunities for improvement.
- DOE is developing a Vulnerability Assessment Summary Report that includes detailed analyses on DOE's hazards, critical assets, and resilience solutions. The goal is twofold: identify top DOE climate risks nationwide and recommend mitigation strategies.
- As an example of resilience action to reduce wildfire hazards, NNSS conducted a study to evaluate how herbicides and seeding treatments affect a major wildlife fuel source, native plants, and cheatgrass control. The study identified two herbicides that greatly reduced cheatgrass spread and reduced fire risk.

Although progress has been made on many climate change initiatives, greater effort and focus are needed for DOE to:

- Implement resilience plans. Across the DOE complex, resilience investments have been made to reduce vulnerabilities to a range of climate threats. A total of 36 sites developed VARPs that identified additional key site-level resilience solutions, as well as the potential costs and benefits of resilience investments.
- Support Federal/DOE sustainable acquisition and procurement that reduces greenhouse gas (GHG) emissions, promotes environmental stewardship, and supports resilient supply chains. DOE will build upon existing approaches and evaluate purchases to give preference to vendors, products, and services that enable DOE to be climate-ready.
- Support supply chain development, including advanced materials, and critical materials.

Enhance Climate Mitigation Actions: The Administration's climate goals include net-zero GHG emissions by 2050, with power sector GHG emissions attaining the net-zero goal by 2035. Renewable energy, fossil energy with carbon capture and storage, nuclear energy, energy storage, and transmission and distribution technologies must all work together seamlessly to provide secure, reliable, resilient, and affordable CFE. Fossil fuel use in the buildings, industry, and transportation sectors must be transitioned to electric power wherever possible. End-uses of electricity must also be made supportive of the grid, such as by enabling flexible, integrated support of the grid through mechanisms such as vehicle to grid systems. DOE will support this by improving the cost and performance of electric end-use technologies for building space and water heating, electric vehicles, and industrial processes and integrating them with the grid with dynamic controls. DOE will continue to develop solar and geothermal sourced energy for heating building space and water. DOE will also pursue the transportation sector that is now the largest emitter of GHG in the U.S. Technologies that address GHG emissions from transportation include electric vehicles, more efficient engines and vehicles, hydrogen transportation systems, and biofuels.

In FY 2023, DOE continued to make progress:

- DOE sites have been collaborating with their electricity provider to ensure the availability of CFE. For example, NREL, in collaboration with other Federal agencies in Colorado, signed the first-ever CFE Memorandum of Agreement (MOU) between DOE and Xcel Energy, committing to the delivery of 100 percent CFE by 2030 to Federal agencies served by the utility. ORNL is partnering with the Tennessee Valley Authority (TVA) to continue to work with its service utility to establish similar CFE commitments. While other DOE sites, such as the National Energy Technology Laboratory (NETL), have arranged to purchase additional CFE to meet the 100 percent CFE goal before 2030. This will result in significant site reductions in GHG emissions.
- DOE is providing sites with training and technical support to engage their utilities to procure CFE, as well as to develop on-site CFE sources.
- Several DOE sites are electrifying buildings by replacing fossil fuel fired boilers with heat pumps. Additionally, many new buildings are designed and constructed to rely solely on electricity and not natural gas for heating and other needs.

- In October 2022, DOE launched the Sustainable Climate-Ready Sites (SCRS) program with 12 DOE sites participating in the inaugural year. The SCRS recognizes site achievements in categories, including natural and cultural resource stewardship, sustainability, climate resilience, and environmental justice. SCRS responds to DOE's commitments in 2021 CARP to weave land use planning and ecosystem health into DOE's approach to climate change resilience and mitigation. SCRS enables DOE to highlight innovations in climate resilience planning and assess how these activities are integrated with the broader environmental and sustainability efforts at each site. Throughout FY 2023, DOE hosted monthly trainings, analyzed site self-assessments and practices, and will prepare analyses to support sites' achievements. At the close of FY 2023, DOE will recognize top-performing sites.
- NNSA established the Energy Resilient Infrastructure and Climate Adaptation Initiative (ERICA) in FY 2023 to improve delivery of resilient and sustainable infrastructure projects. The initiative is a critical element of NNSA's multi-faceted strategy to identify, prioritize, and implement infrastructure investments that increase energy resilience, energy security, and sustainability in support of the agency's national security missions. Examples of the types of projects ERICA considers for funding include renewable energy generation, microgrid with energy storage system, Smart Lab upgrades, electric vehicle infrastructure, geothermal installations, and utility system upgrades and conservation projects.

DOE's ongoing efforts to improve include:

- DOE is positioning itself to meet aggressive goals in EO 14057 for a net-zero portfolio of facilities, infrastructure, and sites by 2045 and a 50 percent reduction in GHG emissions from 2008 levels from its sites by 2032. Net-zero efforts require DOE to integrate several simultaneous efforts: 1) improving the condition of real property portfolios to meet mission needs; 2) operating in an environmentally and socially sustainable manner; 3) improving conditions for disadvantaged communities; 4) becoming energy and water secure, mitigating climate risks to mission-essential facilities; and 5) reducing GHG emissions to avoid further climate threats. DOE has expanded requirements that focus specifically on GHG emissions from its buildings and campuses into its annual site sustainability planning process. DOE issued the 2023 Site Sustainability Plans with expanded guidance in September 2022 and will continue for the 2024 plans.
- DOE is assessing the potential to deploy Small Modular Reactors (SMR) and microreactors to decarbonize DOE's electricity supply and partner with private industry to deploy these technologies at remote locations.
- DOE is increasing on-site renewable energy projects. For example, one DOE site is in discussions with its utility provider to determine the feasibility of installing a 10-megawatt solar field to mitigate GHG emissions, reduce operating costs, and increase resilience.
- DOE collaborated with industry to decarbonize buildings through a Better Buildings Low Carbon Pilot.
- DOE worked with interested partners to demonstrate real-world pathways to achieve low-carbon emissions from building and manufacturing operations and share these solutions with the market. This pilot helped inform and establish the Better Climate Challenge. Through the Better Climate Challenge, organizations can partner with DOE to reduce portfolio-wide GHG emissions by at least 50 percent within 10 years. DOE will provide technical assistance and opportunities to learn and share actionable best practices for carbon reduction.
- DOE is in the process of electrifying its fleet. As of May 2023, DOE ordered more than 500 electric vehicles to replace older gas-fueled light-duty vehicles in accordance with EO 14057. DOE continues to install a network of electric charging stations across the sites. One site, NREL, is on track to be the first Federal site to achieve a 100 percent zero-emission motor vehicle fleet within the next two years. To help further advance ZEV acquisitions and charging infrastructure, DOE established the Green Fleet Award program and awarded the first-ever awards to three NNSA sites for leading the Department in replacing fossil fuel vehicles with ZEVs.
- DOE and the National Laboratories are serving in a lead role in support of the U.S. Global Change Research Program's development of the congressionally mandated Fifth NCA, which will be issued in the Fall of 2023. The NCA represents an assessment of the science of climate change and variability and its impacts across the United States, including the energy system, now and throughout this century. DOE has played a key role in the development of the energy chapter.

Institutionalize Climate Considerations Across DOE Policies, Directives, and Processes: To ensure the Department operates in a consistent and efficient manner, DOE orders, directives, and policies must be examined and updated to institutionalize climate mitigation and adaptation/resilience actions across the complex, while also addressing potential energy, environment, and environmental justice impacts. DOE commits to integrate climate information that reflects the current understanding of global climate change into its mission, programs, and management functions and decision points for managing its procurement, real property, public lands and waters, and financial programs, including, where appropriate.

In FY 2023, DOE continued to make progress:

- In April 2023, DOE issued an updated Order 436.1A, *Departmental Sustainability*. The updated Order institutionalizes sustainability and climate adaptation and resilience planning at DOE, as well as integrates new sustainability requirements.
- Historically, DOE sets requirements for Federal facilities to be constructed using the latest versions of the energy codes and sets a goal to achieve efficiency levels at least 30 percent better than those codes. The Department announced that starting April 2023, all

new buildings and major retrofits of Federal government buildings must comply with the 2021 International Energy Conservation Code and the 2019 American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 90.1 building energy codes. DOE estimates that this measure will save the Federal government $4.2 million dollars in operating costs within the first year of implementation.

- On December 7, 2022, two complementary announcements were released that pertain to federal building decarbonization. First, the Biden-Harris Administration released its Federal Building Performance Standard, with a stated goal of electrifying 30 percent of the existing Federal building portfolio space by 2030. The second announcement from DOE was directed towards new construction and major renovations; a proposed rule establishing fossil fuel reductions in new or significantly renovated Federal facilities, targeting reductions in on-site emissions by 90 percent compared to a 2003 baseline beginning in 2025 and by 100 percent beginning in 2030. DOE plans to finalize this rule in the coming months. Together, these two initiatives can drastically reduce emissions from both the existing Federal building stock and any newly constructed Federal buildings, empowering the Federal building stock to continue leading by example.
- In April 2022, DOE issued a policy memorandum which sets requirements for DEs to meet the latest ASHRAE Energy Standard in new building design, to design new buildings as net-zero emissions buildings, to consider local climate risks in building design, and more. In November 2022, DOE initiated a revision to Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, to incorporate these requirements which were approved for publication before the end of FY 2023.
- As a part of the Department's celebration of Earth Day, DOE sponsored a range of activities to bring greater awareness and support for responsible climate and sustainability action. These activities included photo and haiku contests, a sustainability tour of the Forrestal building, a flyer on DOE's goals to achieve net-zero building emissions, CFE, a ZEV fleet, and a guidebook to help people live more sustainably. This guidebook includes resources and activities to lower individuals' carbon footprints and encourages employees to incorporate sustainable climate-friendly habits at home, in their commute, while making purchases, and in other everyday activities.

DOE has made progress in these areas, but greater efforts are needed to:

- Use procurement mechanisms to purchase products and services that are resilient and have a low-carbon footprint;
- Map out entry points of climate information into management functions and responsibilities that effect funding or contracts; and
- Identify opportunities to incorporate climate criteria in grant and loan program solicitations.

Provide Climate Tools, Technical Support, and Climate Science Information: DOE recognizes that climate-ready organization requires a workforce that can safely and successfully adapt to climate change-related challenges, identify and take advantage of new opportunities, and foster a culture of innovation. Employees should be aware of climate tools, technology, and guidance available to address those risks. This will help employees develop the skills and climate knowledge necessary to manage and protect the Department's physical assets, operations, and its workforce in a changing climate.

In FY 2023, DOE continued to make progress:

- In collaboration with EHSS-21 and Office of Federal Energy Management Programs (FEMP), the SPO created a one-hour Introduction to Climate Change course for DOE employees. The course contains an overview of climate change and its impacts, as well as DOE efforts to mitigate GHG emissions to minimize additional climate change and adapt to climate threats that are unavoidable. It will also be available to DOE contractors and other agencies.
- The Department launched the Center for Climate Resilience and Decision Science. This Center serves as a focal point for DOE, other Federal agencies, industry, and communities in accessing the data, information, and tools necessary to pursue effective climate resilience planning. This includes a climate data portal that provides communities, industry, and other stakeholders with broad access to local-scale projections of future climate impacts, which they can use to inform vulnerability assessments and the development of resilience plans.
- DOE National Laboratories have created many tools to advance climate planning. For example, DOE's Energy Exascale Earth System Model (E3SM) links Earth system and energy models into simulation projects to investigate energy-relevant science using code optimized for DOE's advanced computers.

DOE's ongoing efforts to improve include:

- DOE plans to create a Climate Resource Hub for employees and contractors to access climate change resources. This includes tools, technical resources, climate science information, and on-demand climate awareness training.
- DOE ensures funding opportunities benefit environmental justice communities by requiring applicants to include Community Benefit Plans (CBP) in their proposals. The Department is exploring additional ways to engage these communities. For example, the Environmental Justice Thriving Communities Technical Assistance Centers Programs in partnership with the EPA.
- DOE is participating in the Climate Smart Infrastructure (CSI) IWG Subcommittee on Climate Science, Data, and Information, led by the Office of Science and Technology Policy (OSTP) and NOAA. The subcommittee is established to provide more advanced, accessible, climate-related risk information and data by informing/shaping a Climate Mapping for Resilience and Adaptation (CMRA) website that can

support infrastructure climate reviews for agencies and grantees.

Advance Deployment of Emerging Climate Technologies: To address the climate crisis, 100 percent clean energy technologies must be deployed at large scale, meeting all energy supply and end uses by 2050. This requires an increase in domestic production and deployment of sustainable and resilient clean energy supply and end-use technologies. Approaches are needed that will accelerate the deployment of technologies. In addition, approaches are required to develop a more resilient, sustainable, secure, and diverse supply chains, such as implementing approaches to encompass greater domestic production, as well as identifying and diversifying supply chain sources, while simultaneously supporting small businesses and encouraging economic growth in neighboring environmental justice communities.

In FY 2023, DOE continued to make progress:

- SPO began developing a supply chain vulnerability assessment guidance for sites to analyze critical supply chains. This guidance will provide a framework for sites to assess critical goods, products, services, and minerals that are at risk to climate change and procurement hazards.
- DOE is supporting several nuclear demonstration testbed projects to generate data required to support the design and licensing of innovative advanced reactor concepts that could contribute to enhanced supply of clean electricity. The Demonstration of Microreactor Experiments (DOME) testbed will be capable of hosting fueled microreactor experiments and is expected to be available for use at the INL as soon as 2026. In November 2022, DOE issued a Request for Proposals for construction of DOME. The Laboratory for Operations and Testing in the United States (LOTUS) testbed will be capable of hosting innovative experimental reactors that utilize high-security materials. In June 2023, DOE approved the Alternative Selection and Cost Range (critical decision-1) for the LOTUS testbed and initiated preliminary design in the Summer of 2023.
- DOE is establishing the Microreactor Applications, Research Validation, and Evaluation (MARVEL) microreactor, which will serve as a unique nuclear test platform to demonstrate microreactor operations and end-use applications. Most recently, the MARVEL team completed the final design review for the project and successfully built a full-scale prototype to support the project. MARVEL is planned to be operational at INL as soon as 2024.

DOE has made progress in these areas, but greater efforts are needed to:

- Develop and deploy innovative climate technologies, materials, manufacturing processes, and advanced technologies at DOE sites;
- Support purchasing preference for Made in America Climate-Ready Products and Services;
- Advance manufacturing process technology development;
- Foster technology transfer to U.S. companies;
- Advance Manufacturing Consortia and strengthen Technical Partnerships; and
- Provide technical assistance to state and local Government/communities.

DOE's ongoing efforts to improve include:

- The Office of ED has a cooperative agreement with Black Owners of Solar Services (BOSS). The Equitable Clean Energy Advancement Initiative and Pilot Triad cooperative agreement is a pilot program in which BOSS is working with women-owned and minority-owned businesses in North Carolina. BOSS provides technical assistance, capacity-building, and outreach to minority-owned businesses. They host workshops to train businesses in the solar and clean energy sectors, on how to prepare and submit applications for Federal funding opportunities. BOSS assists businesses in becoming Certified Minority Business Enterprises (MBE), completing their Cleantech Disadvantaged Business Enterprise (DBE) Certifications, and obtaining Renewable Energy Certificates. BOSS facilitates networking events and mentoring programs to connect minority business owners in the clean energy sector. Upon successful completion, this project will be expanded to two additional states.
- DOE continues to partner with the Council on Environmental Quality, General Services Administration (GSA), DoD, Department of State (DOS), and National Laboratories to pilot an aggregated Federal procurement initiative for CFE to demonstrate new and novel approaches to U.S. Government (USG) CFE procurement. The pilots will help illustrate how the USG can overcome existing technological, organizational, and market barriers to USG CFE procurement and meet the dual USG goals of 100 percent annual CFE procurement and 50 percent hourly CFE match by 2030.

ENERGY JUSTICE

Key Challenges:

On January 27, 2021, President Biden issued EO 14008, *Tackling the Climate Crisis at Home and Abroad*, which established the historic Justice40 Initiative, a whole-of-Government effort establishing the goal that 40 percent of the overall benefits of climate and clean energy investments flow to disadvantaged communities. The ambitious and historic initiative allows the Department to deepen its current environmental justice efforts and provide an unprecedented opportunity to expand its equity footprint through diverse programs. Key challenges for Justice40 relate to its scope. For DOE, those challenges include:

- Identification of investments that fall within Justice40;
- Measurement of investment benefits with respect to specific DOE programs, pursuant to the EO;
- Determination of percentage of benefits of covered programs that accrue in disadvantaged communities versus the benefits of all covered programs; and
- Full implementation of the initiative across all DOE programs, including research and development programs.

Departmental Initiatives: In FY 2023, ED continued to lead the implementation of Justice40 on behalf of the Department. DOE staff and program offices directly or indirectly support covered programs in areas falling within Justice40, including:

- Climate change;
- Clean energy and energy efficiency;
- Clean transportation;
- Affordable and sustainable housing;
- Training and workforce development (related to climate, natural disasters, environment, clean energy, clean transportation, housing, water and wastewater infrastructure, and legacy pollution reduction, including in energy communities);
- Remediation and reduction of legacy pollution; and
- Clean water and waste infrastructure.

On January 27, 2023, OMB, the National Climate Advisor, and the Council on Environmental Quality issued updated guidance for identifying and defining Justice40 communities. The guidance called on agencies to use the Climate and Economic Justice Screening Tool (CEJST) to identify geographically defined disadvantaged communities for any covered programs under the Justice40 Initiative and for programs where a statute directs resources to disadvantaged communities, to the maximum extent possible and permitted by law.
ED released updated guidance on Justice40 implementation on July 24, 2023, which included the following activities:

- Updated DOE Justice40 webpage to provide information for both internal and external stakeholders;
- Updated the Disadvantaged Communities Reporter and Mapping Tool to align with updated White House Justice40 guidance for using the CEJST to identify disadvantaged communities; and
- Integrated the Disadvantaged Communities Reporter and Mapping Tool into other departmental resources, such as the Equity-Eligible Buildings Mapping Tool.

In FY 2023, ED continued the Justice40 CoP to support DOE program offices address challenges and opportunities associated with Justice40. The CoP involves approximately 50 participants who represent all DOE program offices and several support offices. The CoP has focused its effort on measuring benefits of the covered programs.

In FY 2023, DOE continues to lead the Equity, Energy, and Environmental Justice (EEEJ) group with representatives from a dozen program offices. The group meets bimonthly to facilitate engagement and support EEEJ work across the Department in the following areas:

- Embedding Justice40/equity into project evaluation (e.g., accountability framework);
- Development of the Department's first Energy and Environmental Justice Policy;
- Formulating hiring approaches for stakeholder engagement, program design, and policy development;
- Leveraging work within DOE and at the interagency level to facilitate deeper community transformation;
- Continued focus on sharing best practices and problem-solving; and
- Creating SOPs on Justice40/equity to support programs.

On April 21, 2023, DOE's Environmental Justice (EJ) Scorecard was released as part of the Biden-Harris Administration's Phase One Scorecard. The EJ Scorecard is the first-ever Government-wide assessment to track the Federal Government's progress on advancing environmental justice to provide transparency for the public, and increase accountability for Federal agencies. The report highlights DOE's work on: 1) Justice40 Initiative; 2) Environmental and Civil Rights Protection; and 3) Institutionalizing Environmental Justice.

In FY 2023, ED staff helped support the development and implementation of CBPs, which is a new section of applications for all BIL and IRA funding opportunity announcements and loan applications. CBPs are based on a set of four core policy priorities: 1) investing in America's workforce; 2) engaging communities and labor; 3) advancing DEIA; and 4) implementing Justice40. These key principles, when incorporated comprehensively into project proposals and applications and executed upon, will help ensure broadly shared prosperity in the clean energy transition. To facilitate the review and implementation of CBPs, ED staff lead the following activities:

- Development of templates, explanation resources, and other documents for both DOE staff and prospective applicants;
- Making training materials accessible to DOE staff and awardees to incorporate CBPs into award negotiations; and
- Facilitating listening sessions with community organizations and industry stakeholders to raise awareness of how CBPs can ensure project benefits reach communities.

Selected Justice40 FY 2023 programs and initiatives include:

- The Buildings Upgrade Prize provided more than $22 million in cash prizes and technical assistance to support the transformation of existing U.S. buildings into more energy-efficient and clean energy-ready homes, commercial spaces, and communities, with additional funding support for project teams that address solutions within disadvantaged communities.
- The HBCU Clean Energy Education Prize provided $7.75 million to fund up to 20 HBCU institutions and develop programming to strengthen the participation of K-12 and community college students in STEM fields.
- The Renew America's Schools grant program funded 24 Local Education Agencies (LEA) from predominantly underserved communities across the nation to implement energy efficiency improvements.
- The Geothermal Technologies Office announced $13 million supported 11 community geothermal heating and cooling projects to support community coalitions, offering skills and expertise in community needs, workforce, design and analysis, and deployment of geothermal solutions.
- The Funding for Accelerated, Inclusive Research initiative provided $35 million to build research

capacity, infrastructure, and expertise at institutions historically underrepresented in science, including Minority Serving Institutions (MSI) and emerging research institutions (ERI).
- The Energizing Rural Communities Prize provided $15 million in funding to individuals and organizations to develop partnership plans or innovative financing strategies to help rural or remote communities improve their energy systems and advance clean energy demonstration projects.
- The Office of Indian Energy Policy and Programs (IE) provided $34 million in funding to advance clean energy technology in 18 American Indian and Alaska Native communities.
- The Grid Resilience State and Tribal Formula Grants awarded over $200 million in investments across nine states and three Tribal Nations to modernize the electric grid.
- The Solar Energy Technology Office's Advancing Equity Through Workforce Partnerships announced $14.5 million for 12 projects to equitably grow the solar energy workforce.
- The Small Business Innovation Research and Small Business Technology Transfer Program announced $72 million in funding to pursue scientific, clean energy, and climate research, development, and demonstration projects.
- SCEP opened applications for states and territories to implement two Home Energy Rebate programs. The two programs will provide $8.5 billion for home energy upgrades, with dedicated allotments reserved for low-to-moderate income households.

On April 12, 2023, ED launched its Energy Justice to the People tour, hosting a series of workshops and community listening sessions with industry leaders, local Governments, community stakeholders and local businesses to share information about available funding opportunities to support disadvantaged frontline communities and advance U.S. energy security in a just and equitable way. The tour stops included:
- April 12 – 14, 2023: Workshops in Rio Grande Valley, TX and Corpus Christi, TX.
- June 13 – 14, 2023: Port Arthur, TX and Lake Charles, LA.
- Future tour locations will visit the Midwest and Cancer Alley in LA.

On August 15, 2023, ED, in partnership with the Treasury Department and the Internal Revenue System (IRS), released final guidance for the 48e Low-Income Communities Bonus Credit Program, including a new landing page. ED will be administering the program alongside Treasury and the IRS to promote cost-saving clean energy investments in low-income communities, with applications opening in the Fall of 2023.

On September 6, 2023, ED announced its agenda for the second annual Justice Week to take place October 30 through November 3, 2023. The agenda is broken into the following topic areas:
- DOE's equity portfolio;
- Justice40 programs within DOE;
- Energy justice research and policy;
- MSIs and MBEs; and
- DEIA.

In FY 2023, ED worked with the Office of Energy Efficiency and Renewable Energy (EERE) and DOE's Science and Energy Crosscuts team to develop an Energy Earthshot focused on the decarbonization of affordable housing. The initiative aims to lower the upfront cost of retrofit packages by at least 50 percent, while achieving at least 20 percent in energy bill savings within the next 10 years.

NUCLEAR STOCKPILE STEWARDSHIP

Key Challenges:

One of NNSA's three overarching missions is to ensure the safety, security, and effectiveness of the U.S. nuclear weapons stockpile in support of the Nation's nuclear deterrent. This mission is carried out by NNSA's Office of Defense Programs (DP) through the Stockpile Stewardship Program (SSP). The SSP was established to maintain the active stockpile; execute warhead acquisition programs to meet DoD requirements; maintain and upgrade NNSA laboratory and production infrastructure; develop and maintain the underpinning science and engineering; and ensure a highly trained and skilled workforce. Since the inception of the SSP, this mission has been accomplished without requiring nuclear explosive testing through the application of specialized science, technology, engineering, and manufacturing. The U.S. nuclear stockpile is annually assessed to be safe, reliable, effective, and secure, but the stockpile stewardship program faces several key future challenges:
- To provide a credible nuclear deterrent, the U.S. must maintain the current stockpile of nuclear weapons, extend the life of the stockpile, and modernize laboratory and production infrastructure for continued long-term stewardship.
- Sustained long-term support is critical for continued alignment of warhead acquisitions with DoD platform requirements.
  - Continued science and infrastructure investments are needed to ensure the current and future stockpile to meet the needs of the Nation.
  - Over half of NNSA's facilities are more than 40 years old, and roughly one-third date back to the early Cold War era. Many buildings and equipment require replacement.
  - Components and subsystems often require life extension or replacement.
- NNSA's ability to execute its mission depends on a modern, flexible, and resilient nuclear security infrastructure.
- NNSA executes its nuclear modernization efforts in conjunction with both DoD delivery platforms and the NNSA infrastructure needed to produce and maintain those nuclear weapons. This approach provides NNSA the flexibility to implement new policy decisions related to nuclear modernization as the U.S. understands the changing international threats facing the U.S. and its allies and partners.
  - The U.S. must continue to invest in the weapons and infrastructure modernization programs to provide the capabilities needed to ensure the

deterrent's viability into the future. For these reasons, NNSA continues to look for innovative ways to meet emerging challenges on a timescale that does not put our nuclear deterrent at risk and to enhance our science, technology, and engineering capabilities to improve the production processes' efficiency and effectiveness.

Departmental Initiatives: Nuclear deterrence has been, and currently remains, the cornerstone of our Nation's security posture, and its credibility serves as the ultimate insurance policy against a nuclear attack. NNSA's central mission is to sustain the Nation's nuclear weapons stockpile and industrial base to provide the tools of deterrence to our Nation's military and allies.

DP completed several important initiatives in FY 2023 aimed at improving performance and addressing the challenges impacting Stockpile Stewardship. Ongoing initiatives supporting DP's mission include the implementation and development of various strategies, operations, technologies, and partnerships.

- Using the annual assessment process, the science-based Stockpile Stewardship Program certified the safety, security, and military effectiveness of the U.S. nuclear weapons stockpile for the 27th consecutive year. The annual stockpile assessment process evaluates the nuclear arsenal by conducting stockpile maintenance, surveillance, experiments, simulations, and other sources to update the technical basis of each weapon system and report on their health to the President as required by 50 U.S.C. § 2525.
- The Inertial Confinement Fusion (ICF) program achieved, for the first time, a chain reaction fusion burn in the laboratory that generated more energy than delivered to it. This was performed at the National Ignition Facility (NIF), and required the perseverance, commitment and talent of a large team from around the Nation, as well as decades of NNSA support. This achievement and experiments that will follow provide access to extreme regimes of physics critical for understanding the performance, survivability, and modernization of the nuclear stockpile.
- The Office of Research, Development, Test, and Evaluation (RDT&E) provided experimental facilities and resources to support studies of hostile survivability, development and testing of special materials, assessment of plutonium aging, and opportunities for improvements in pit producibility. The unique scientific facilities and expertise in RDT&E represent the foundational tools of the stockpile stewardship program. These tools regularly support the future nuclear stockpile including the recently finalized Nimble subcritical experiment platform that will inform W80-4 & W87-1 primary performance calculations accounting for deviations from our underground test history.
- The Office of Secure Transportation maintained its spotless record by accomplishing 100 percent of assigned missions safely and securely, with no mission degradation, despite the operational challenges inherent during the COVID-19 pandemic. In order to ensure continuity of mission capability, it is imperative to prioritize and execute the Mobile Guardian Transporter program to replace aging safeguards transportation assets.
- The B61-12 completed its first production unit in November 2021 and entered Phase 6.6, *Full Rate Production,* in June 2022. The program is executing to planned production rates and fully supporting Air Force deployment schedules.
  - The B61-12 Life Extension Program (LEP) addresses multiple components that are nearing end-of-life, in addition to military requirements for reliability, service life, field maintenance, safety, and use control.
  - With the addition of an Air Force-procured tail kit assembly, the B61-12 LEP will consolidate and replace the B61-3, -4, -7, and -10 bomb variants.
  - B61-12 LEP production activities will continue through FY 2026.
- The W88 Alt 370 met its Initial Operational Capability deliverables to the U.S. Navy in January 2022 and entered Phase 6.6, *Full Rate Production*, in June 2022. The program is executing to planned production rates and fully supporting Navy deployment schedules.
  - The W88 Alt 370 modernizes the arming, fuzing, and firing assembly; improves surety; replaces the conventional high explosive and associated materials; and incorporates a lightning arrestor connector, trainers, joint test assemblies, and associated handling gear.
  - W88 Alt 370 production activities will continue through FY 2026.
- The W80-4 LEP completed initial joint Long-Range Stand-Off Weapon/W80-4 testing and component Baseline Design Reviews and entered Phase 6.4, *Production Engineering*, in March 2023.
  - Key design requirements extend the service life, replace critical non-nuclear components, along with reuse of the W80-1 pit, and incorporate modern safety features.
  - The W80-4 LEP is expected to be completed by FY 2033.
- The W87-1 Modification Program completed the Weapon Design and Cost Report and entered Phase 6.3, *Development Engineering*, in November 2022.
  - The W87-1 will be deployed alongside the W87-0 on the Sentinel Missile and will replace the aging W78 warhead by modifying the existing legacy W87-0 design.
  - The W87-1 Modification Program will meet DoD and NNSA requirements for performance, safety, and security and is planned to deploy as part of the Sentinel by no later than 2032.
- The W93 entered Phase 2, *Feasibility Study and Design Options,* in mid-FY 2022.
  - The W93 will address future Navy ballistic missile warhead requirements and incorporate modern technologies to improve safety, security, and flexibility to address future threats.
  - The W93 will deploy in the Mk7 reentry body and inform the associated DoD Mk7 program activities.
- NNSA continued to meet tritium production requirements for national security while working to

increase supply chain reliability, flexibility, and resiliency. NNSA continued to execute our successful strategic plan for tritium, partnering with TVA to use both Watts Bar reactors to meet current requirements and to maintain a schedule for increased production capacity for future requirements.
  - Completed irradiation of 1,792 Tritium-Producing Burnable Absorber Rods (TPBAR) in Fuel Cycle #18 at Watts Bar Unit 1 in May 2023 and commenced irradiation of 1,792 TPBARs in Fuel Cycle #19.
  - Continued irradiation of 1,104 TPBARs in Watts Bar Unit 2, Fuel Cycle #5 with expected completion in early FY 2024.
- Pit production activities continued at LANL and Savannah River Site (SRS) to fulfill the requirement to produce not less than 80 pits per year (ppy) as close to 2030 as possible. Initiatives include:
  - LANL exceeded their annual baseline production goal for pit build attempts in support of achieving a 30 War Reserve (WR) ppy production rate.
  - Reconfiguring Technical Area 55 (TA-55) Plutonium Facility-4 (PF-4) for efficient pit production by completing the ongoing equipment installations and facility modification to optimize the pit production process flow and establish the capacity for a reliable 30 War Reserve (WR) ppy production rate.
  - LANL is actively supporting a knowledge transfer program for the SRS pit production mission with subject matter expertise.
  - A multi-year training and qualification process will be undertaken to ensure the necessary people, processes, procedures, and commodities are in place to meet the minimum 50 ppy requirement at SRS.
- NNSA continues to modernize secondary stage manufacturing capabilities while meeting near-term weapons deliverables.
  - In FY 2023, Y-12 met annual lithium requirements for the B61-12, successfully completing 125 percent of annual lithium metal production requirements, three months ahead of schedule. Simultaneously, Y-12 matured a safer lithium metal production technology that is state-of-the-art for both the nuclear security enterprise and private industry.
  - Y-12, LANL, and the LLNL have accelerated multiple technologies ahead of schedule for radiation case manufacturing, including Direct Cast (DC) and Electron Beam Cold Hearth Melting (EBCHM), to supplement unreliable and material inefficient processes.
- NNSA awarded a contract to Nuclear Fuel Services for enriched uranium conversion services that builds flexibility and resiliency during a time of technology transformation at Y-12.
- The Advanced Simulation and Computing program deployed the Crossroads Phase 1 system at LANL and the Commodity Technology systems at tri-labs. Additionally, its tri-lab next-generation simulation codes are running on the El Capitan early-access system, named RZVernal, to prepare for the arrival of El Capitan, NNSA's first Exascale system, at the end of FY 2024.

Financial Management Systems Plan

Corporate Business Systems
DOE's enterprise-wide Corporate Business Systems (CBS), (i.e., information technology [IT] systems) consist of financial, budgetary, procurement, and personnel systems. Supported by a data warehouse linking common data elements from each of the Department's business systems, these systems assist with external and internal reporting. The major business systems include:

- Budget: Budget Formulation and Distribution System (BFADS) (*formerly FDS 2.0*).
- Financial: Standard Accounting and Reporting System (STARS).
- Personnel: Corporate Human Resource Information System (CHRIS).
- Procurement: Strategic Integrated Procurement Enterprise System (STRIPES).
- Data Linking: Integrated Data Warehouse (IDW)/ iPortal.
- Travel Processing: Services outsourced through the General Services Administration's (GSA) eTravel Services contract using a system called Concur Government Edition.
- Payroll Processing: Automated Time and Attendance Production System (ATAAPS) along with internal systems for collating internal data, which is then outsourced to be serviced by the Defense Finance and Accounting Service (DFAS).

Current Systems
Budget Formulation and Distribution System (formerly FDS 2.0): BFADS is the Department's budgetary funds formulation and distribution system providing the capability to capture and report all formulation activities, as well as to record, distribute, and execute appropriations, apportionments, allotments, allocations, and ancillary processes such as reprogramming and appropriation transfers. BFADS integrates with STARS, IDW, and field office reimbursable work systems. FY 2023 BFADS activities include:

- Implemented single sign-on for BFADS development and sandbox environments.
- Updated Oracle Hyperion from version 11.2.6 to version 11.2.12.
- Created an execution reporting strategy document.
- Offered training for users on the budget formulation functionality.
- Provided 24x7 support for key processing and reporting timeframes (month, quarter, year-end, as well as annual financial statement audit).
- Actively maintained the required security posture and upgraded to the most current quarterly Oracle patch set.

Looking forward to FY 2024, BFADS will focus on the next update for Hyperion and implementing multi-factor authentication (MFA) for the remaining environments, and implement compliancy with IPv6. DOE will continue to improve system functionality and technical enhancements, as well as maintain a rigorous security posture.

Standard Accounting and Reporting System: STARS is the Department's financial management system, providing accounting, reporting, and performance measurement services. STARS integrates with procurement, funds distribution, travel, and human resources (HR) systems. FY 2023 STARS activities include:

- Migrated ConnectDirect server into the cloud platform; coordinated with FAST, VIPERS, National Laboratories, Concur, ASAP, and H2H. DNP applications for file transmission through ConnectDirect.
- Implemented MFA for STARS quality assurance, development, and sandbox environments.
- Supported the setup and testing of FY 2024 accounting changes required for Statement of Federal Financial Accounting Standards (SFFAS) No. 54 leases.
- Assisted the Office of Finance and Accounting and the Office of Management on G-Invoicing initiative.
- Provided 24x7 support for key processing and reporting timeframes (month, quarter, year-end, as well as annual financial statement audit).
- Maintained security posture by performing the annual disaster recovery testing, security assessment and authorization (A&A) activities, and privacy impact assessment activities.

Future STARS activities include implementation of MFA in the production and year-end environments and supporting the upgrade of the STARS Oracle database from version 12c to 19c.

Corporate Human Resource Information System: As DOE's HR system, CHRIS improves operational HR efficiencies, reduces paperwork, and provides the strategic information needed to make informed HR management decisions. FY 2023 CHRIS activities include:

- Continued supporting the customizations for the CHRIS upgrade from PeopleSoft 9.1 to PeopleSoft 9.2.
- Supported and enhanced functionality and reporting based on user requirements in 9.1.
- Supported HC Mass Pay Preparations.
- Supported and enhanced functionality and reporting based on user requirements.

In FY 2024, CHRIS will finalize the upgrade process for PeopleSoft 9.2, plan OneID/MFA implementation, and evaluate the Windows upgrade from 2016 to 2019. In addition, the Office of the Chief Human Capital Officer (OCHCO) has embarked on a project to replace CHRIS.

Strategic Integrated Procurement Enterprise System: STRIPES is DOE's procurement and contracts management system, automating all procurement and contract activities associated with planning, awarding, and administering various unclassified acquisition and financial assistance instruments. Integrated with STARS and IDW, STRIPES connects DOE with GSA Integrated Award Environment (IAE) systems, which includes the System for Award Management (SAM), Federal Procurement Data System (FPDS) – Next Generation (NG), and SAM.gov's Contracts Opportunities. STRIPES also interfaces with Grants.gov and Unison's FedConnect. FY 2023 STRIPES activities include:

- Continued support of DATA Act regulatory requirements, data calls, and quarterly reconciliations as mandated by the Office of Management and Budget (OMB).
- Coordinated with Unison and Cyber on Synack penetration testing results and mitigation.
- Completed the Windows 2012 migration to Windows 2019.
- Coordinated with the Office of Management for replacement of ESS/MIS STRIPES account access to the IRC Access Management software solution.
- Assisted the Office of Finance and Accounting and Office of Management on the OMB Infrastructure and G-Invoicing initiatives.
- Provided 24x7 support for key processing and reporting timeframes (month, quarter, year-end, as well as annual financial statement audit).
- Maintained security posture by performing the security A&A activities and the privacy impact assessment activities.
- Conducted and created general/targeted user training webinars.
- Developed and deployed Robotic Process Automation (RPA) bots to automate purchase card account closeout, which resulted in 265 days in staff time-savings for the agency.

In FY 2024, STRIPES plans to upgrade to PRISM 7.5.7, as well as implement MFA. OCFO will develop and deploy more RPA bots for Inflation Reduction Act (IRA)/ Infrastructure Investment and Jobs Act (IIJA) loans processing.

Integrated Data Warehouse/iPortal: IDW is a central data warehouse linking common data elements from multiple DOE corporate business applications, providing reporting to DOE executives, managers, and staff, including access to business applications, personalized dashboards, messaging, and discussion boards.

FY 2023 IDW activities include:

- Continued efforts of creating and enhancing reporting subject areas, standard reports/dashboards, collaboration tools, ad hoc queries, and data inquiries in support of Department-wide program needs.
- Provided support and enhanced functionality for APEX-developed solutions such as AMERICA, iBenefits, ANA, Small Business, and Conference Management.
- Performed annual documents and reports cleanup.
- Continued to provide support to users at Headquarters, program offices, and DOE sites for assistance with standard reports and dashboards, collaboration tools, ad hoc queries, and data inquiries.
- Established infrastructure and data connections in support of the Departmental Lifecycle Spending (DLCS) dashboards for reporting on IIJA and BIL activities.

In FY 2024, OCFO will continue working on optimizing the Azure cloud environment with specific focus on vNet peering and rightsizing for applications and databases. The team also plans to complete the upgrade of all Oracle databases to version 19C.

Additional Efforts Underway

In FY 2023, in support of IIJA, OCFO is developing a new dashboard with visualization to support the reporting of lifecycle funding for IIJA.

In FY 2024, OCFO will continue expanding the use of RPA technology throughout the systems to further optimize system functionality. OCFO will evaluate systems functionalities with focus on operational efficiency, in addition to proposing RPA solutions to stakeholders.

OCFO will continue examining optimization opportunities for the cloud infrastructure. In particular, OCFO will analyze and design system architecture for containerization as a step to realization of immutable infrastructure. Furthermore, OCFO will begin to phase in replacement of all self-signed certificates with managed ones to strengthen communications within the boundaries of OCFO. Finally, OCFO will begin to integrate all financial applications with OneID to comply with the requirement for MFA and identity and access management (IAM).

FY 2023 DOE Highlight: Newton's Gravity Apple Tree

(Unaudited)

In 2023, the National Institute of Standards and Technology (NIST) gifted the DOE its very own Sir Isaac Newton apple tree. The tree is cut from the original apple tree from Newton's birthplace and family home garden at Woolsthorpe Manor in Lincolnshire, England.

The tale of Newton and the "gravity tree" is known around the world. Purportedly, Sir Isaac Newton discovered the concept of gravity when he was sitting in his garden and watched an apple fall to the ground. That experience helped spark Newton's work on the laws of motion and gravitation that were eventually published in his book, The Mathematical Principles of Natural Philosophy. Despite being nearly destroyed in a storm, the original apple tree still stands at Woolsthorpe Manor and is now more than 350 years old.

DOE's "gravity tree" is planted at DOE headquarters in Washington, D.C., at the James V. Forrestal Building (see photo at the bottom of the Table of Contents page). For more information, visit: https://www.energy.gov/articles/doe-receives-newtons-gravity-tree.

Financial Results

Message from the Deputy Chief Financial Officer

(Unaudited)

For the 17th consecutive year, I am pleased to report that DOE has received an unmodified audit opinion on its financial statements from the independent public accounting firm of KPMG LLP. The audit identified no material weaknesses and no instances of noncompliance with laws and regulations, nor instances in which DOE's financial management stewardship and systems did not comply with governmental financial requirements. This audit opinion reflects an important measure of the integrity and reliability of DOE's financial management and the strength of its internal controls. DOE's senior leadership recognize the importance of accurate and timely financial information for decision-making, and I commend the Department's financial management community for achieving this major accomplishment.

In fiscal year (FY) 2023, the CFO community met mission goals and provided high-caliber financial management and fiscal stewardship, exemplified by many achievements. We:

- Developed the DOE Lifecycle Dashboard that incorporates both financial and programmatic data with visualization to support decision-making on the supplemental funds received from the Infrastructure Investment and Jobs Act of 2021 (IIJA). Future plans include incorporating data from other sources of funding;
- Implemented the federally mandated G-Invoicing for Interagency Agreements;
- Continued to mature the Office of Chief Financial Officer (OCFO) robotic processing automation program to harness efficiencies and to bolster DOE's workforce through both Citizen Developers-centric and centralized models. The Citizen Developer model successfully deployed or launched in process 13 bots. The Centralized model, deployed a bot for Office of Management to perform closeout of historical purchase card orders and another bot that initiated the creation of IIJA financial assistance awards in the Department's procurement system;
- Ensured the multi-disciplinary Data Analytics Working Group, composed of Federal and contractor team members, made significant progress in inventorying and advocating for analytics in areas highly susceptible to fraud, including rebates, financial assistance awards, labor hours, and loans that will improve the Department's data literacy; and
- Upskilled the financial management workforce through trainings for headquarters, field, and contractor staff; this included a Financial Management Development course attended by over 70 participants, as well as 50 financial management webinars with a total attendance of over 2,300 participants.

In FY 2024 the CFO's Office will:

- Transition the Budget Line of Business services to the OMB MAX platform managed by the United States Department of Agriculture;
- Support the implementation of the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act of 2022 over the next four years to help the U.S. regain a leading position in semiconductor chip manufacturing;
- Continue deployment of significant IIJA and Inflation Reduction Act of 2022 (IRA) funding to execute the provisions of the Acts, while mitigating increased risk for potential fraud;
- Continue to gain access to high-quality data sets to support implementation of data analytics across the DOE complex for improved financial management; and
- Continue to focus on workforce modernization and building a succession pipeline to ensure the OCFO continues to deliver exceptional services and meet mission support activities of the Department.

DOE's CFO community continues to manage taxpayer dollars wisely, as demonstrated by these notable successes. In FY 2024, the Department is committed to building on these successes, continuing to deliver superior financial stewardship and management through a sustained focus on DOE's mission, and realizing results.

Christopher S. Johns
Deputy Chief Financial Officer
November 15, 2023

Financial Statements, Footnotes, and Consolidating Schedules

Introduction to Principal Statements
The Department's financial statements have been prepared to report the financial position and results of operations of the Department of Energy (the Department or DOE), pursuant to the requirements of the Chief Financial Officers Act of 1990, the Government Management Reform Act of 1994, and the OMB Circular A-136, *Financial Reporting Requirements*.

The responsibility for the integrity of the financial information included in these statements rests with the management of the Department. The audit of the Department's principal financial statements was performed by an independent certified public accounting firm selected by the Department's Inspector General. The auditors' report issued by the independent certified public accounting firm is included in this report.

The following provides a brief description of the nature of each required financial statement.

Consolidated Balance Sheets
The *Consolidated Balance Sheets* present, as of a specific time, amounts of future economic benefits owned or managed by the Department (assets), amounts owed by the Department (liabilities), and residual amounts retained by the Department comprising the difference (net position).

Consolidated Statements of Net Cost
The *Consolidated Statements of Net Cost* summarize the Department's costs by the major programs of the Department. All costs reported reflect full costs, except for certain indirect costs, which are reported within the Other Programs line of the statements. The costs for each line are reduced by earned revenues to arrive at net costs.

Consolidated Statements of Changes in Net Position
The *Consolidated Statements of Changes in Net Position* identify appropriated funds used as a financing source for goods, services or capital acquisitions. These statements present the accounting events that caused changes in the net position section of the Consolidated Balance Sheets from the beginning to the end of the reporting periods.

Combined Statements of Budgetary Resources
The *Combined Statements of Budgetary Resources* identify the Department's budgetary authority. Federal law gives budgetary authority to agencies to incur financial obligations that will eventually result in outlays or expenditures. Budgetary authority that the Department receives includes appropriations, borrowing authority, contract authority and spending authority from offsetting collections. The *Combined Statements of Budgetary Resources* provide information on budgetary resources available to the Department during the year and the status of those resources at the end of the year. Detail on the amounts shown in the *Combined Statements of Budgetary Resources* is included in the Required Supplementary Information section on the schedule of Budgetary Resources by Major Account.

Consolidated Statements of Custodial Activities
The *Consolidated Statements of Custodial Activities* identify revenues collected by the Department on behalf of others. These revenues primarily result from Power Marketing Administrations that sell power generated by hydroelectric facilities owned by Department of Defense (DoD), U.S. Army Corps of Engineers (USACE), and the Department of the Interior (DOI).

Notes to the Consolidated and Combined Financial Statements
The notes to the consolidated and combined financial statements provide a detailed explanation for activity that is included in the line items of each statement. The notes also provide information to support the valuation and computation of the financial statement activity.

Consolidating and Combining Schedules
The consolidating and combining schedules separate the Department's financial activity by the independent organizations that are included in the financial statement line items. The independent organizations include Power Marketing Administrations (PMA) and the Federal Energy Regulatory Commission (FERC). The consolidating schedules also identify intradepartmental activity that is eliminated during the financial statement preparation process. Intradepartmental activity is not eliminated from the combining schedules.

Principal Statements

U.S. Department of Energy Consolidated Balance Sheets

As of September 30, 2023 and 2022

($ IN MILLIONS)	FY 2023	FY 2022
ASSETS: (Note 2)		
Intragovernmental Assets:		
Fund Balance with Treasury (Note 3)	$ 129,301	$ 117,665
Investments, Net (Note 4)	50,393	49,005
Accounts Receivable, Net (Note 5)	679	628
Advances and Prepayments	117	4
Other Assets (Note 9)	—	—
Total Intragovernmental	**$ 180,490**	**$ 167,302**
Other than Intragovernmental Assets:		
Cash	$ 129	$ 128
Accounts Receivable, Net (Note 5)	3,189	5,292
Loans Receivable, Net (Note 6)	16,764	15,445
Inventory, Net (Note 7)	44,452	45,012
General Property, Plant, and Equipment, Net (Note 8)	52,091	46,771
Advances and Prepayments	814	630
Other Assets (Notes 9 and 10)	13,361	13,717
Total Other than Intragovernmental	**$ 130,800**	**$ 126,995**
Total Assets	**$ 311,290**	**$ 294,297**
LIABILITIES: (Note 11)		
Intragovernmental Liabilities:		
Accounts Payable	$ 129	$ 178
Debt (Note 12)	22,984	21,662
Advances from Others and Deferred Revenue (Note 15)	1,502	216
Other Liabilities (Note 14)	5,382	4,965
Total Intragovernmental	**$ 29,997**	**$ 27,021**
Other than Intragovernmental Liabilities:		
Accounts Payable	$ 6,201	$ 5,075
Federal Debt and Interest Payable (Note 12)	5,130	5,101
Federal Employee Benefits Payable	292	424
Environmental and Disposal Liabilities (Note 13)	534,314	519,660
Loan Guarantee Liabilities (Note 6)	79	89
Advances from Others and Deferred Revenue (Note 15)	52,841	50,659
Other Liabilities (Notes 14, 15, 16, 17 and 18)	55,995	54,906
Total Other than Intragovernmental	**$ 654,852**	**$ 635,914**
Total Liabilities	**$ 684,849**	**$ 662,935**
NET POSITION: (Note 26)		
Unexpended Appropriations - Funds from Dedicated Collections (Note 19)	$ 207	$ 200
Unexpended Appropriations - Funds from Other than Dedicated Collections	95,903	92,870
Total Unexpended Appropriations (Consolidated)	**$ 96,110**	**$ 93,070**
Cumulative Results of Operations - Funds from Dedicated Collections (Note 19)	$ (13,968)	$ (13,002)
Cumulative Results of Operations - Funds from Other than Dedicated Collections	(455,701)	(448,706)
Total Cumulative Results of Operations (Consolidated)	**$ (469,669)**	**$ (461,708)**
Total Net Position	**$ (373,559)**	**$ (368,638)**
Total Liabilities and Net Position	**$ 311,290**	**$ 294,297**

The accompanying notes are an integral part of these statements.

U.S. Department of Energy Consolidated Statements of Net Cost

For the Years Ended September 30, 2023 and 2022

($ IN MILLIONS)	FY 2023	FY 2022
MAJOR PROGRAMS: (Note 20)		
Nuclear Security and NNSA		
Program Costs	$ 17,812	$ 17,443
Less: Earned Revenues	(21)	(14)
Net Cost of Nuclear Security and NNSA	**$ 17,791**	**$ 17,429**
Science		
Program Costs	$ 34,597	$ 20,645
Less: Earned Revenues	(128)	(96)
Net Cost of Science	**$ 34,469**	**$ 20,549**
Energy		
Program Costs	$ 14,871	$ 15,393
Less: Earned Revenues	(11,695)	(22,648)
Net Cost of Energy	**$ 3,176**	**$ (7,255)**
Net Cost of Major Programs	**$ 55,436**	**$ 30,723**
OTHER PROGRAMS: (Note 20)		
Reimbursable Programs		
Program Costs	$ 5,934	$ 5,422
Less: Earned Revenues	(6,068)	(5,430)
Net Cost of Reimbursable Programs	**$ (134)**	**$ (8)**
Other Programs		
Program Costs	$ 2,837	$ 2,599
Less: Earned Revenues	(514)	(467)
Net Cost of Other Programs	**$ 2,323**	**$ 2,132**
Costs Applied to Reduction of Legacy Environmental Liabilities (Notes 13 and 20)	$ (7,075)	$ (6,436)
Costs Not Assigned to Programs (Note 21)	$ 23,329	$ 721
Net Cost of Operations	**$ 73,879**	**$ 27,132**

The accompanying notes are an integral part of these statements.

U.S. Department of Energy Consolidated Statements of Changes in Net Position

For the Years Ended September 30, 2023 and 2022

($ IN MILLIONS)	FUNDS FROM DEDICATED COLLECTIONS (Note 19)	ALL OTHER FUNDS	ELIMINATIONS	CONSOLIDATED
	FY 2023			
UNEXPENDED APPROPRIATIONS: (Note 26)				
Beginning Balances	$ 200	$ 92,877	$ —	$ 93,077
Appropriations Received (Note 23)	$ 527	$ 61,831	$ —	$ 62,358
Appropriations Transferred - In/Out	—	13	—	13
Other Adjustments	—	(12,604)	—	(12,604)
Appropriations Used	(520)	(46,214)	—	(46,734)
Net Change in Unexpended Appropriations	**$ 7**	**$ 3,026**	**$ —**	**$ 3,033**
Total Unexpended Appropriations	**$ 207**	**$ 95,903**	**$ —**	**$ 96,110**
CUMULATIVE RESULTS OF OPERATIONS: (Note 26)				
Beginning Balances	$ (13,002)	$ (448,713)	$ —	$ (461,715)
Other Adjustments	$ —	$ —	$ —	$ —
Appropriations Used	520	46,214	—	46,734
Non-Exchange Revenue	6	1	—	7
Donations and Forfeitures of Cash	—	11	—	11
Transfers - In/Out Without Reimbursement	(517)	(2)	—	(519)
Donations and Forfeitures of Property	19	11	—	30
Imputed Financing (Notes 22 and 25)	14	22,394	—	22,408
Other	(2,392)	(354)	—	(2,746)
Net Cost of Operations	**$ 1,384**	**$ (75,263)**		**$ (73,879)**
Net Change in Cumulative Results of Operations	**$ (966)**	**$ (6,988)**	**$ —**	**$ (7,954)**
Total Cumulative Results of Operations	**$ (13,968)**	**$ (455,701)**	**$ —**	**$ (469,669)**
Net Position	**$ (13,761)**	**$ (359,798)**	**$ —**	**$ (373,559)**
	FY 2022			
UNEXPENDED APPROPRIATIONS: (Note 26)				
Beginning Balances	$ 27	$ 34,928	$ —	$ 34,955
Appropriations Received (Note 23)	$ 527	$ 97,980	$ —	$ 98,507
Appropriations Transferred - In/Out	(1)	22	—	21
Other Adjustments	2	(279)	—	(277)
Appropriations Used	(355)	(39,781)	—	(40,136)
Net Change in Unexpended Appropriations	**$ 173**	**$ 57,942**	**$ —**	**$ 58,115**
Total Unexpended Appropriations	**$ 200**	**$ 92,870**	**$ —**	**$ 93,070**
CUMULATIVE RESULTS OF OPERATIONS: (Note 26)				
Beginning Balances	$ (14,004)	$ (464,594)	$ —	$ (478,598)
Other Adjustments	$ —	$ —	$ —	$ —
Appropriations Used	355	39,781	—	40,136
Non-Exchange Revenue	1	—	—	1
Donations and Forfeitures of Cash	—	21	—	21
Transfers - In/Out Without Reimbursement	(501)	(2)	—	(503)
Donations and Forfeitures of Property	16	1	—	17
Imputed Financing (Note 22)	10	8,220	—	8,230
Other	(3,548)	(332)	—	(3,880)
Net Cost of Operations	**$ 4,669**	**$ (31,801)**		**$ (27,132)**
Net Change in Cumulative Results of Operations	**$ 1,002**	**$ 15,888**	**$ —**	**$ 16,890**
Total Cumulative Results of Operations	**$ (13,002)**	**$ (448,706)**	**$ —**	**$ (461,708)**
Net Position	**$ (12,802)**	**$ (355,836)**	**$ —**	**$ (368,638)**

The accompanying notes are an integral part of these statements.

U.S. Department of Energy Combined Statements of Budgetary Resources

For the Years Ended September 30, 2023 and 2022

($ IN MILLIONS)	BUDGETARY	NON-BUDGETARY CREDIT REFORM FINANCING ACCOUNTS	BUDGETARY	NON-BUDGETARY CREDIT REFORM FINANCING ACCOUNTS
	FY 2023		FY 2022	
BUDGETARY RESOURCES:				
Unobligated Balance from Prior Year Budget Authority, Net (Note 23)	$ 72,536	$ 744	$ 8,715	$ 762
Appropriations (Note 23)	50,151	—	98,350	—
Borrowing Authority	2,472	13,747	739	3,235
Contract Authority	1,933	—	1,270	—
Spending Authority from Offsetting Collections	21,589	1,152	20,908	871
Total Budgetary Resources	**$ 148,681**	**$ 15,643**	**$ 129,982**	**$ 4,868**
STATUS OF BUDGETARY RESOURCES:				
New Obligations and Upward Adjustments (Total)	$ 71,588	$ 14,414	$ 58,269	$ 3,909
Unobligated Balance, End of Year:				
Apportioned, Unexpired Accounts	$ 76,325	$ 13	$ 37,188	$ 15
Exempt from Apportionment, Unexpired Accounts	15	—	12	—
Unapportioned, Unexpired Accounts	633	1,216	34,423	944
Unexpired, Unobligated Balance, End of Year	**$ 76,973**	**$ 1,229**	**$ 71,623**	**$ 959**
Expired, Unobligated Balance, End of Year (Note 23)	120	—	90	—
Unobligated Balance, End of Year (Total)	**$ 77,093**	**$ 1,229**	**$ 71,713**	**$ 959**
Total Budgetary Resources	**$ 148,681**	**$ 15,643**	**$ 129,982**	**$ 4,868**
OUTLAYS, NET				
Outlays, Net (Total) (Note 25)	$ 39,288	$ —	$ 28,944	$ —
Distributed Offsetting Receipts (-) (Note 25)	(4,875)	—	(6,128)	(393)
Agency Outlays, Net (Note 25)	**$ 34,413**	**$ —**	**$ 22,816**	**$ (393)**
Disbursements, Net (Total)	**$ —**	**$ 1,326**	**$ —**	**$ (814)**

The accompanying notes are an integral part of these statements.

U.S. Department of Energy Consolidated Statements of Custodial Activities

For the Years Ended September 30, 2023 and 2022

($ IN MILLIONS)	FY 2023	FY 2022
SOURCES OF COLLECTIONS:		
Cash Collections: (Note 24)		
Power Marketing Administrations	$ 495	$ 544
Federal Energy Regulatory Commission	62	43
Total Cash Collections	**$ 557**	**$ 587**
Accrual Adjustment	(2)	(2)
Total Custodial Revenue	**$ 555**	**$ 585**
DISPOSITION OF REVENUE:		
Transferred to Others:		
Bureau of Reclamation	$ (183)	$ (162)
Department of the Treasury	(223)	(228)
Army Corps of Engineers	(161)	(197)
Others	(3)	(3)
Decrease/(Increase) in Amounts to be Transferred	15	5
Net Custodial Activity	**$ —**	**$ —**

The accompanying notes are an integral part of these statements.

Notes to the Consolidated and Combined Financial Statements

1. Summary of Significant Accounting Policies

A. BASIS OF PRESENTATION

These consolidated and combined financial statements have been prepared to report the financial position and results of operations of the Department. The statements were prepared from the books and records of the Department in accordance with United States generally accepted accounting principles issued by the Federal Accounting Standards Advisory Board (FASAB) and presentation guidelines in Office of Management and Budget (OMB) Circular A-136, *Financial Reporting Requirements*. Additionally, certain records are presented in accordance with standards established by the Financial Accounting Standards Board (FASB).

Accounting standards require all reporting entities to disclose that accounting standards allow certain presentations and disclosures to be modified, if needed, to prevent the disclosure of classified information per *Statement of Federal Financial Accounting Standards* (SFFAS) 56, Classified Activities.

B. DESCRIPTION OF REPORTING ENTITY

The accompanying financial statements include activities and operations of the United States Department of Energy. In accordance with SFFAS 47, *Reporting Entity*, DOE has included all consolidation entities for which it is accountable in the accompanying financial statements and DOE does not have relationships requiring disclosure as a disclosure entity or related party.

The Department is a cabinet-level agency of the Executive Branch of the U.S. Government. The Department is not subject to Federal, state, or local income taxes. The Department's Headquarters organizations are located in Washington, D.C. and Germantown, Maryland, and consist of an executive management structure that includes the Secretary; the Deputy Secretary; the Under Secretary for Science and Innovation; the Under Secretary for Infrastructure; the Under Secretary for Nuclear Security/ National Nuclear Security Administration; Secretarial staff organizations; program organizations that provide technical direction and support for the Department's principal programmatic missions; and the PMAs (Bonneville Power Administration, Southeastern Power Administration, Southwestern Power Administration, and Western Area Power Administration) whose primary offices are located in the region served by each PMA. The Department also includes the Federal Energy Regulatory Commission (FERC), which is an independent organization responsible for regulating the transmission and sale of natural gas for resale in interstate commerce, for regulating the transmission and wholesale of electricity in interstate commerce, and the licensing of hydroelectric power projects.

The Department has a field structure comprised of operational offices, field offices, primary offices and operations of the PMAs, laboratories, and other facilities. The majority of the Department's environmental cleanup, energy research and development, and testing and production activities are carried out by major contractors. These contractors operate, maintain, or support the Department's Government-owned facilities. The Department indemnifies these contractors against financial responsibility from nuclear accidents under the provisions of the Price-Anderson Act.

These contractors have unique contractual relationships with the Department. In most cases, their charts of accounts and accounting systems are integrated with the Department's accounting system through a home office-branch office type of arrangement. Additionally, the Department is responsible for reimbursing the allowable costs of contractor contributions to certain defined benefit pension plans, as well as postretirement benefits such as medical care and life insurance, for the employees of these contractors. As a result, the Department's financial statements reflect not only the costs incurred by these contractors, but also include certain contractor assets (e.g., employee advances and prepaid pension costs) and liabilities (e.g., accounts payable, accrued expenses including payroll and benefits, and pension and other actuarial liabilities) that would not be reflected in the financial statements of other Federal agencies that do not have these unique contractual relationships.

C. BASIS OF ACCOUNTING

Transactions are recorded on the accrual and budgetary bases of accounting. Under the accrual basis, revenues are recognized when earned and expenses are recognized when liabilities are incurred, without regard to receipt or payment of cash. Budgetary accounting facilitates compliance with legal constraints and controls over the use of Federal funds. All material intradepartmental balances and transactions have been eliminated in the *Consolidated Balance Sheets, Consolidated Statements of Net Cost, Consolidated Statements of Changes in Net Position, and Consolidated Statements of Custodial Activities*. The *Combined Statements of Budgetary Resources* are prepared on a combined basis and do not include intradepartmental eliminations.

Throughout these financial statements, assets, liabilities, earned revenue, and costs have been classified according to the type of entity with which the transactions were made. Intragovernmental assets and liabilities are those from or to other Federal entities. Intragovernmental earned revenue represents collections or accruals of revenue from other Federal entities. Intragovernmental costs are payments or accruals for goods and services provided by other Federal entities, and costs incurred by

other Federal entities as a result of the Department's programs.

D. FUND BALANCE WITH U.S. TREASURY

Funds with the U.S. Department of the Treasury (Treasury) primarily represent general and revolving funds that are available to pay current liabilities and finance authorized purchases. Disbursements and receipts are processed by Treasury, and the Department's records are reconciled with those of Treasury (see Note 3).

E. INVESTMENTS AND RELATED INTEREST, NET

All investments are reported at cost net of amortized premiums and discounts as it is the Department's intent to hold the investments to maturity. Premiums and discounts are amortized using the effective interest yield method (see Note 4).

F. ACCOUNTS RECEIVABLE, NET

Accounts receivable are recognized when claims to cash or other assets against other entities or individuals can be established, either based on legal provisions, or goods or services provided. Accounts receivable are reduced to net realizable value by the allowance for loss on accounts receivable, when appropriate, for both intragovernmental receivables and other than intragovernmental receivables. The estimate of the allowance is based on past experience in the collection of receivables and an analysis of the outstanding balances (see Note 5).

G. CASH

The Cash amount includes cash held in escrow that is restricted to fund operations, maintenance, rehabilitation, and modernization activities at hydroelectric generating facilities. This amount also includes cash held in a margin account with Bonneville Power Administration's (BPA) financial futures broker.

H. DIRECT LOANS AND LOAN GUARANTEES, NET

The Department has one loan that was obligated and disbursed prior to FY 1992, and is presented net of an allowance for loss. All loans obligated after FY 1992 are presented on a present value basis in compliance with the Federal Credit Reform Act of 1990. The present value of the loans is revalued on an annual basis (see Note 6).

Interest expense on the U.S. Treasury Bureau of the Fiscal Service (BFS) and U.S. Treasury Federal Financing Bank (FFB) debt is calculated in accordance with OMB Circular A-11, Sections 185.32, 185.34 and 185.35 using the Credit Subsidy Calculator. Capitalized interest receivables on loans with FFB are reclassified to principal outstanding on the capitalization date.

I. INVENTORY, NET

Stockpile materials are recorded at historical cost in accordance with SFFAS 3, *Accounting for Inventory and Related Property*, except for certain nuclear materials identified as surplus or excess to the Department's needs. These nuclear materials are recorded at their net realizable value (see Note 7).

J. GENERAL PROPERTY, PLANT, AND EQUIPMENT, NET

Property, plant, and equipment (PP&E) that are purchased, constructed, or fabricated in-house, including major modifications or improvements, are capitalized at cost. The Department's property, plant, and equipment capitalization threshold, except as noted below, is $500,000. The capitalization threshold for the Nuclear Waste Fund is $50,000. The capitalization thresholds for the PMAs and FERC range from $5,000 to $100,000 or may depend on whether particular equipment is considered a major unit of property, which is capitalized upon purchase, or a minor unit, which is generally expensed. The capitalization threshold for internal use software is $750,000, except for the PMAs and FERC, which use thresholds ranging from $5,000 to $500,000 and leasehold improvements over $250,000 for the FERC (see Note 8).

Costs of construction are accumulated as construction work in process. Upon completion or beneficial occupancy or use, the cost is transferred to the appropriate property account. The Department does not capitalize property, plant, and equipment related to environmental management facilities storage and processing of the Department's environmental legacy wastes.

Depreciation expense is generally computed using the straight-line method. The units of production method is used only in special cases where applicable, such as depreciating automotive equipment on a mileage basis and construction equipment on an hourly use basis. In accordance with SFFAS 6, *Accounting for Property, Plant, and Equipment*, land is a non-depreciable asset, whereas depreciation is calculated for land improvements. The ranges of service lives are generally as follows:

- Structures and Facilities: 25 – 50 years
- Automated Data Processing Software: 3 – 7 years
- Equipment: 5 – 40 years
- Land rights for a specified period or 50 years, whichever is less

K. LIABILITIES

Liabilities represent amounts of monies or other resources likely to be paid by the Department as a result of a transaction or event that has already occurred. However, no liability can be paid by the Department absent an authorized appropriation. Liabilities for which an appropriation has not been enacted are, therefore, classified as not covered by budgetary resources (see Note 11), and there is no certainty that the appropriations will be enacted. Also, liabilities of the Department that are not contract based can be abrogated by the Government acting in its sovereign capacity.

L. FUNDS FROM DEDICATED COLLECTIONS

Funds from dedicated collections are financed by specifically identified revenues provided to the Government by non-Federal sources, often supplemented by other financing sources, which remain available over time. These specifically identified revenues and other financing sources are required by statute to be used for designated activities, benefits, or purposes, and must be

accounted for separately from the Government's general revenues (see Note 19).

M. FEDERAL EMPLOYEE BENEFITS PAYABLE

The FECA (Federal Employees' Compensation Act) actuarial liability represents the liability for future workers' compensation benefits, which includes the expected liability for disability, survivors, and medical benefits to employees who are injured, or become ill, in the course of Federal employment and to the survivors of employees killed on the job. This liability is calculated annually by the Department of Labor (DOL) for financial reporting purposes. The Department also accrues an estimated liability for earned, but unpaid, and unfunded annual leave which is $201 million for FY 2023.

N. ACCRUED ANNUAL, SICK, AND OTHER LEAVE

Federal Employees: Federal employees' annual leave is accrued as it is earned, and the accrual is reduced annually for actual leave taken. Each year, the accrued annual leave balance is adjusted to reflect the latest pay rates. To the extent that current-year or prior-year appropriations are not available to fund annual leave earned but not taken, funding will be obtained from future financing sources. Sick leave and other types of non-vested leave are expensed as taken.

Contractor Employees: The Department accrues annual leave for contractor employees. Unlike leave for most of the Department's Federal employees, this is a funded liability rather than an unfunded liability.

O. RETIREMENT PLANS

Federal Employees: There are two primary retirement systems for Federal employees. Employees hired prior to January 1, 1984, may participate in the Civil Service Retirement System (CSRS). On January 1, 1984, the Federal Employees Retirement System (FERS) went into effect pursuant to Public Law 99-335. Most employees hired after December 31, 1983, are automatically covered by FERS and Social Security. Employees hired prior to January 1, 1984, elected to either join FERS and Social Security or remain in CSRS. All employees are eligible to contribute to the Federal Thrift Savings Plan (TSP). For employees covered by FERS, a TSP account is automatically established to which the Department is required to contribute one percent of gross pay and match employee contributions up to an additional four percent. For most employees hired since December 31, 1983, the Department also contributes the employer's matching share for Social Security. The Department does not report CSRS or FERS assets, accumulated plan benefits, or unfunded liabilities, if any, applicable to its employees. Reporting such amounts is the responsibility of the Office of Personnel Management (OPM). The Department does report, as an imputed financing source and a program expense, the difference between its contributions to Federal employee pension and other retirement benefits and the estimated actuarial costs as computed by OPM. The PMAs make additional annual contributions to Treasury to ensure that all postretirement benefit programs provided to their employees are fully funded and such costs are both recovered through rates and properly expensed.

Contractor Employees: The Department is contractually responsible for reimbursing its major contractors who sponsor employee defined benefit pension plans for the costs of contractor employee retiree benefits because these are allowable costs under their contracts. Most of these contractors sponsor defined benefit pension plans under which these plans promise to pay employees specified benefits, such as a percentage of the final average pay for each year of service. The Department does not sponsor and is not the fiduciary of contractor employee defined benefit plans. Contractors are required to make contributions to their plans as required by the Internal Revenue Code and the Employee Retirement Income Security Act (ERISA), as amended. For qualified defined benefit pension plans, the Department's current funding policy is to reimburse contractors for the minimum required contributions made, absent the Department's agreement to reimburse at a different level. For nonqualified plans, the funding policy is pay-as-you-go. Employer contributions are calculated to ensure that plan assets are sufficient to provide for accrued benefits of contractor employees. The level of contributions is dependent on plan provisions and actuarial assumptions about the future, such as interest rates, employee turnover and mortality, age of retirement, and compensation increases. The Department's major contractors also sponsor postretirement benefits (PRB) other than pensions consisting of predominantly postretirement health care benefits which are generally funded on a pay-as-you-go basis. Since the Department is responsible for the allowable costs of funding these contractor pension and PRB plans, it reports assets and liabilities for these plans (see Note 16).

P. NET COST OF OPERATIONS

Program costs are summarized in the *Consolidated Statements of Net Cost* by the Department's major programs (see Note 20). Full costs are reduced by exchange (earned) revenues to arrive at net operating cost.

Q. REVENUES AND OTHER FINANCING SOURCES

The Department receives the majority of the funding needed to perform its mission through Congressional appropriations. These appropriations may be used, within statutory limits, for operating and capital expenditures. In addition to appropriations, other financing sources include exchange and non-exchange revenues and imputed financing sources. The Department also collects custodial revenues on behalf of others.

Exchange and Non-Exchange Revenues: In accordance with Federal Government accounting standards, the Department classifies revenues as either exchange (earned) or non-exchange. Exchange revenues are those that derive from transactions in which the Government provides value to the public or another Government entity at a price. Non-exchange revenues derive from the

Government's sovereign right to demand payment, including fines and penalties. Non-exchange revenues also include interest earned on investments funded from amounts remaining from the privatization of the U.S. Enrichment Corporation Fund (see Note 4). These revenues are not considered to reduce the cost of the Department's operations and are reported on the *Consolidated Statements of Changes in Net Position*.

Imputed Financing Sources: In certain instances, program costs of the Department are paid out of the funds appropriated to other Federal agencies. For example, certain costs of retirement programs are paid by OPM, and certain legal judgments against the Department are paid from the Judgment Fund maintained by Treasury. When costs are incurred by other Federal entities as a result of the Department's programs, the Department recognizes these amounts on the *Consolidated Statements of Net Cost*. In addition, these amounts are recognized as imputed financing sources on the *Consolidated Statements of Changes in Net Position* (see Notes 22 and 25).

Custodial Revenues: The Department collects certain revenues on behalf of others, which are designated as custodial revenues. The Department incurs virtually no costs to generate these revenues, nor can it use these revenues to finance its operations. The revenues are returned to Treasury and others and are reported on the *Consolidated Statements of Custodial Activities* (see Note 24).

R. USE OF ESTIMATES

The preparation of financial statements requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Significant items subject to such estimates and assumptions include present value of loan receivables, including the allowance for subsidy cost; estimated lives of general property, plant, and equipment; environmental cleanup and disposal liabilities; pension and other actuarial liabilities; contingencies and commitments; cost accruals; and estimated accrued unbilled revenues for PMAs. Actual results could differ from these estimates.

S. COMPARATIVE DATA

In FY 2023, the beginning balance amounts in the *Consolidated Statements of Changes in Net Position* were adjusted to correct an immaterial difference from the prior year. Treasury crosswalk updates in FY 2023 included a change between Accounts Payable and Debt (see Note 12). In addition, certain other FY 2022 amounts have been reclassified to conform to the FY 2023 presentation.

T. PARENT-CHILD REPORTING

The Department is a party to allocation transfers with other Federal agencies as both a transferring (parent) entity and/or a receiving (child) entity. Allocation transfers are legal delegations by one department of its authority to obligate budget authority and outlay funds to another department. A separate fund account (allocation account) is created in the Treasury as a subset of the parent fund account for tracking and reporting purposes. All allocation transfers of balances are credited to this account, and subsequent obligations and outlays incurred by the child entity are charged to this allocation account as it executes the delegated activity on behalf of the parent entity. Generally, all financial activity related to these allocation transfers (e.g., budget authority, obligations, outlays) is reported in the financial statements of the parent entity, from which the underlying legislative authority, appropriations and budget apportionments are derived. The Department receives allocation transfers, as a child entity, from the Department of Transportation. Additionally, the Department allocates funds, as the parent, to the USACE.

2. Non-Entity Assets

($ IN MILLIONS)	FY 2023	FY 2022
Intragovernmental		
Inventories - Department of Defense stockpile oil (Note 7)	123	123
Other	13	6
Subtotal	**$ 136**	**$ 129**
Other	8	8
Total non-entity assets	**$ 144**	**$ 137**
Total entity assets	**$ 311,146**	**$ 294,160**
Total assets	**$ 311,290**	**$ 294,297**

Assets in the possession of the Department that are not available for its use are considered non-entity assets.

3. Fund Balance with Treasury

($ IN MILLIONS)	FY 2023	FY 2022
Status of Fund Balance with Treasury		
Unobligated balance:		
Available	$ 76,367	$ 37,230
Unavailable	1,379	34,642
Obligated balance not yet disbursed	66,683	46,908
Borrowing authority not yet converted to fund balance	(17,243)	(3,475)
Budgetary resources invested in U.S. Treasury securities	(1,129)	(951)
Non-Budgetary Fund Balance with Treasury	3,244	3,311
Total Fund Balance with Treasury	**$ 129,301**	**$ 117,665**

Unobligated balance and Obligated balance not yet disbursed amounts reported above differ from related amounts in the Combined Statements of Budgetary Resources (SBR) because budgetary balances on the SBR are supported by amounts other than the FBWT. These amounts include contract authority, transfers of invested balances payable, realized authority to be transferred from invested balances, and budgetary resources temporarily precluded or reduced.

Borrowing authority not yet converted to fund balance represents unobligated and obligated amounts recorded that will be funded by future borrowings. Borrowing resources invested in U.S. Treasury securities represents unobligated and obligated amounts that will be redeemed in the future to pay program costs as they arise. Non-Budgetary FBWT includes special fund receipt accounts, deposit funds, and clearing and suspense account balances awaiting disposition or reclassification.

Unobligated balance amounts may be available in future years which are included in Category C – Apportioned for future years as specified on the annual OMB Standard Form SF-132 (Apportionment and Reapportionment Schedule).

4. Investments

($ IN MILLIONS)	FACE VALUE	UNAMORTIZED PREMIUM (DISCOUNT)	INTEREST RECEIVABLE	INVESTMENTS, NET	UNREALIZED MARKET GAINS (LOSSES)	MARKET VALUE
	FY 2023					
Intragovernmental Non-Marketable						
Nuclear Waste Fund	$ 60,458	$ (12,908)	$ 139	$ 47,689	$ (1,976)	$ 45,713
D&D Fund	1,112	(13)	6	1,105	(1)	1,104
U.S. Enrichment Corporation Fund	—	—	—	—	—	—
Power Marketing Administrations	1,599	—	—	1,599	—	1,599
Total investments and related interest, net	**$ 63,169**	**$ (12,921)**	**$ 145**	**$ 50,393**	**$ (1,977)**	**$ 48,416**
	FY 2022					
Intragovernmental Non-Marketable						
Nuclear Waste Fund	$ 56,632	$ (10,728)	$ 111	$ 46,015	$ (125)	$ 45,890
D&D Fund	771	(3)	1	769	(2)	767
U.S. Enrichment Corporation Fund	606	—	4	610	(1)	609
Power Marketing Administrations	1,619	(8)	—	1,611	—	1,611
Total investments and related interest, net	**$ 59,628**	**$ (10,739)**	**$ 116**	**$ 49,005**	**$ (128)**	**$ 48,877**

Pursuant to statutory authorizations, the Department invests monies in U.S. Treasury securities. The Department's investments primarily involve the NWF and the Uranium Enrichment Decontamination and Decommissioning (D&D) Fund. Fees collected from owners and generators of Spent Nuclear Fuel (SNF) and high-level radioactive waste and fees collected from domestic utilities are deposited into the respective funds. Funds in excess of those needed to pay current program costs are invested in U.S. Treasury securities.

Upon the privatization of the U.S. Enrichment Corporation Fund (USEC) on July 28, 1998, the OMB and Treasury designated the Department as the successor to USEC for the purposes of disposition of balances remaining in the USEC Fund. These funds were invested in U.S. Treasury securities, but have been transferred to the D&D Fund based on language in the Consolidated Appropriations Act, 2023.

The Federal Government does not set aside assets to pay for expenditures associated with the NWF and D&D funds for which the Department holds U.S. Treasury securities. These U.S. Treasury securities are an asset to the Department and a liability to Treasury. Because the Department and Treasury are both parts of the Federal Government, these assets and liabilities offset each other from the standpoint of the Federal Government as a whole. For this reason, they do not represent an asset or a liability in the U.S. Government-wide financial statements. U.S. Treasury securities provide the Department with the ability to draw upon the Treasury to make expenditures, subject to available appropriations and OMB apportionments. When the Department requires redemption of these securities, the Federal Government finances those expenditures out of accumulated cash balances by raising taxes or other receipts, by borrowing from the public, repaying less debt, or by curtailing other expenditures. This is the same way the Federal Government finances all other expenditures.

5. Accounts Receivable, Net

($ IN MILLIONS)	FY 2023			FY 2022		
	RECEIVABLE	ALLOWANCE	NET	RECEIVABLE	ALLOWANCE	NET
Intragovernmental	$ 679	$ —	$ 679	$ 628	$ —	$ 628
Nuclear Waste Fund	$ 2,550	$ —	$ 2,550	$ 2,436	$ —	$ 2,436
Power Marketing Administrations	546	(1)	545	704	(1)	703
Other	115	(21)	94	2,190	(37)	2,153
Subtotal	**$ 3,211**	**$ (22)**	**$ 3,189**	**$ 5,330**	**$ (38)**	**$ 5,292**
Total accounts receivable, net	**$ 3,890**	**$ (22)**	**$ 3,868**	**$ 5,958**	**$ (38)**	**$ 5,920**

Intragovernmental accounts receivable primarily represent amounts due from other Federal agencies for reimbursable work performed pursuant to the Economy Act, Atomic Energy Act, and other statutory authorities.

Non-intragovernmental receivables primarily represent fees due from owners and generators of SNF that contribute resources to the NWF. The NWF receivables are supported by contracts and are comprised of amounts due

for two types of fees to be paid to the Department for disposal services: (a) a one-time charge for SNF existing prior to April 7, 1983; and (b) a per kWh fee on all net electricity generated and sold by civilian nuclear power reactors after April 7, 1983. The Department ceased the per kWh portion of the fee in 2014. However, the receivables associated with the one-time charges remain and continue to earn interest each year.

For PMAs, receivables due from the public primarily arise from the sale of power and transmission services. The other receivables balance primarily includes reimbursable work billings, trade receivables, and other miscellaneous balances.

6. Loans Receivable, Net and Loan Guarantee Liabilities

($ IN MILLIONS)	FY 2023	FY 2022
Pre-FCRA loans	$ 1	$ 1
FCRA Direct loans		
ATVM	1,153	—
Title XVII	15,610	15,444
Total direct loans and 100% guarantee loans, net *	**$ 16,764**	**$ 15,445**
FCRA Guarantee loans (guaranteed value)		
Title XVII	1,224	1,321
Total direct loans and loan guarantees, net	**$ 17,988**	**$ 16,766**

*** Net means disbursements net of interest, repayments, recoveries and allowance for subsidy**

PRE-FCRA LOANS

The Department has one loan outstanding as of September 30, 2023, and September 30, 2022, that was issued prior to the Federal Credit Reform Act of 1990 (FCRA). The loan is presented net of an allowance for loss of $0.6 million as of September 30, 2023, and September 30, 2022. The balance is rounded on the face of this footnote.

FCRA DIRECT LOANS AND LOAN GUARANTEES

The Department's direct loans and loan guarantees made and issued, post-FY 1991, are subject to FCRA. These FCRA loans and loan guarantees are valued at the net present value of expected future cash flows, discounted at the interest rate of Treasury marketable securities. The net present value of the FCRA loans and loan guarantees are not necessarily representative of proceeds that might be expected if these loans were sold on the open market.

The subsidy costs for FCRA loans and loan guarantees, which include interest rate differentials, delinquencies, defaults, fees and other cash flow items, are intended to estimate the long-term cost to the U.S. Government of such loans and loan guarantees. These costs are recognized in the year the loan or loan guarantee is disbursed. A subsidy re-estimate is performed annually as of September 30. The subsidy re-estimates take into account factors that may have affected the estimated cash flows. Any increase in the subsidy resulting from the re-estimate is recognized as a subsidy expense.

For direct loans, interest revenue is accrued on a monthly basis on the loan balance outstanding at the interest rate assigned to that loan at the time of disbursement, net of any interest on non-performing loans over 90 days.

The Department operates the following FCRA direct loan and loan guarantee programs:

- Advanced Technology Vehicles Manufacturing (ATVM) Loan Program
- Title XVII Innovative Clean Energy Loan Guarantee Program:
  - Innovative Energy (Section 1703/Section 1705)
  - Innovative Supply Chain (Section 1703)
  - State Energy Financing Institution (SEFI, Section 1703)
  - Energy Infrastructure Reinvestment (EIR) Program (Section 1706)
- Tribal Energy Loan Guarantee Program (TELGP)
- Carbon Dioxide Transportation Infrastructure Financing Innovation (CIFIA) Program - (BIL Section 40304)

ATVM

Section 136 of the Energy Independence and Security Act of 2007, which established the ATVM Loan Program, authorized the Department to make direct loans to support the establishment of manufacturing facilities for the production of advanced technology vehicles and qualifying components for such vehicles. The ATVM direct loans to such manufacturers are available to finance the cost of re-equipping, expanding, or establishing such manufacturing facilities and for the costs of engineering integration associated with such vehicles and components.

The Infrastructure Investment and Jobs Act (IIJA), also referred to as the Bipartisan Infrastructure Law (BIL), enacted on November 15, 2021, expanded the scope of the

ATVM loan program to support not only facilities for the manufacturing of light-duty vehicles and their components, but also medium and heavy-duty vehicle, locomotives, maritime vessels including offshore wind vessels, aviation, and hyperloop, subject to receipt of future appropriations.

The FY 2009 Continuing Resolution (CR) enacted on September 30, 2008, appropriated $7.5 billion to support a maximum of $25 billion in loans under the ATVM Loan Program.

The Inflation Reduction Act (IRA), enacted on August 16, 2022, removed the maximum loan authority cap provided by the 2009 CR and appropriated an additional $3 billion available through September 30, 2028, to support the subsidy and administrative costs of direct loans under ATVM, including direct loans for the categories added by the BIL.

The ATVM Loan Program makes direct loans that are funded by the FFB with interest rates that are equal to the cost of funds to the Treasury for obligations of comparable maturity. The subsidy cost for an ATVM direct loan is comprised of default subsidy, financing subsidy, and fees. The loan and subsidy are obligated at the time the Department offers a Conditional Commitment to an applicant.

In determining the credit subsidies, the Department estimates a base borrower interest rate from the budget assumption yield curve used to discount cash flows that generates a zero-financing subsidy when determining the final subsidy cost at the point of obligation. This base interest rate is used for calculating the subsidy cost only. Actual interest rates that borrowers pay are not affected. During the interest rate re-estimate, the actual interest rates and the discount rates are updated and will true-up the difference in the Treasury interest rates assumed in the original subsidy cost, and the actual Treasury rates at the point of disbursement, when the borrower interest rates are set.

The Department received a contingent financial interest and warrants in connection with the sales of defaulted ATVM loans. The Department has determined that the contingent financial interest has no value until certain conditions occur. The warrants have been determined to have no value at this time.

The Department previously obligated $7.3B representing five ATVM loans which are no longer active. As of September 30, 2023, the ATVM program had two active projects.

As of September 30, 2023, the Department obligated approximately $2.6 billion in closed loans under the ATVM Loan Program for two borrowers active in the portfolio. Of this sum, the Department disbursed $1.1 billion. Additionally, the Department obligated funds to six prospective borrowers via Conditional Commitments totaling approximately $13.3 billion.

Title XVII

The Energy Policy Act of 2005 (EPAct05), P.L. 109-58 authorized the Department to issue loan guarantees to eligible projects that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases" and "employ new or significantly improved technologies as compared to technologies in service in the U.S. at the time the guarantee is issued." Title XVII of EPAct05 provided broad authority for the Department to guarantee loans for projects that satisfy the above criteria if "there is reasonable prospect of repayment of the principal and interest on the obligation by the borrower."

Since the introduction of Title XVII in 2005, further legislation has designed the program to support a number of emergent energy sectors via loan guarantees including fossil energy, nuclear energy generation, front-end nuclear, renewable energy and energy efficiency. The BIL enacted in FY 2022, expanded the scope of Section 1703 program to target additional sectors including critical minerals processing, manufacturing, recycling, and removing the innovation requirement for State Energy Financing Institution supported projects.

The Consolidated Appropriations Act, 2023, Public Law 117-328, rescinded $150 million of the unobligated balance from amounts made available in Public Law 112-10 for the cost of loan guarantees but provided additional authority to guarantee loans for eligible projects in the amount of $15 billion.

The IRA, enacted in FY 2022, provides $40 billion in loan guarantee authority as well as $3.5 billion for credit subsidy costs and $0.1 billion for administrative expenses, available through September 30, 2026, to support these loans. This loan authority and corresponding appropriation is open to all currently eligible for Title XVII Innovative Clean Energy technology categories.

In addition to the program under Section 1703 of Title XVII, the American Recovery and Reinvestment Act established a program under Section 1705 of Title XVII that permitted the Department to issue loan guarantees for certain renewable energy systems, electric power transmission systems, and leading edge biofuel projects that commenced construction on or before September 30, 2011, and also appropriated $6 billion to pay for the subsidy costs for the loan guarantees of such projects.

Public Law 111-47 required $2.0 billion of the subsidy funds to be transferred to the Department of Transportation to fund the “Cash for Clunkers” program. Public Law 111-226 required $1.5 billion of the subsidy funds to be rescinded. Public Law 111-203 required $0.5 billion of the subsidy to be rescinded and returned to the U.S. Treasury (Dodd-Frank). In FY 2021, Public Law 116-260 rescinded an additional $0.4 billion of remaining Section 1705 subsidy funds. The loan guarantee authority

for Sections 1703 and 1705 and the subsidy for loan guarantees issued under Section 1705 have historically been obligated at the time the loan guarantee was issued by the Department. However, the issuance of an Interim Final Rule in 2023 amended certain regulations of Title XVII resulting in LPO obligating loan authority and subsidy at Conditional Commitment. Both the Section 1703 and 1705 programs are authorized to issue loan guarantees for up to 100 percent of a debt obligation, which must not exceed 80 percent of eligible project costs. In cases where the Department issues a 100 percent guarantee, the regulations implementing Title XVII requires that FFB provide the funding. Guarantees by the Department of 100 percent of loans made by FFB constitute direct loans under FCRA.

For the purpose of determining the subsidy, the Department models these loan guarantees as direct loans to reflect the economic reality to the Federal Government as a whole. Under Title XVII, the subsidy cost for a direct loan or a loan guarantee is comprised of default subsidy and financing subsidy. The Department collects fees designed to offset the cost of administering the Title XVII loan program, and these fees are not considered when calculating the subsidy cost.

In implementing the Section 1705 program, the Department also established the Financial Institution Partnership Program (FIPP) which supported loans for conventional renewable energy generation projects with commercial financing. Under FIPP, the Department provided a guarantee for up to 80 percent of a loan. The goal of FIPP was to leverage the human and financial capital of private sector financial institutions in accelerating the loan application process, while balancing risk between the Department and private sector partners participating in the program. The subsidy related to FIPP loans was obligated at the time the loan guarantees closed.

In determining the subsidy for FFB direct loans, the Department estimates a base borrower interest rate from the budget assumption yield curve used to discount cash flows that generates a zero-financing subsidy when determining the final subsidy cost at the point of obligation. The Department then adds a spread to that interest rate estimate to reflect any spread that the FFB or DOE may charge. This base interest rate is used for calculating the subsidy cost only. Actual interest rates that borrowers pay are not affected. During the interest rate re-estimate, the actual interest rates and the discount rates are updated and will true-up the difference in the Treasury interest rates assumed in the original subsidy cost, and the actual Treasury rates at the point of disbursement, when the interest rates payable by the borrower are set.

As of September 30, 2023, under the Section 1703 program, the Department has obligated approximately $15.7 billion for four active projects, of which $11.8 billion has been disbursed.

As of September 30, 2023, under the Section 1703 program, one Conditional Commitment to issue loan guarantee has been issued for $0.95 billion.
As of September 30, 2023, under the Section 1705 program, the Department has obligated approximately $13.2 billion for 23 projects (the Department initially obligated approximately $15.7 billion for 28 projects, but subsequently de-obligated approximately $2.5 billion). Seventeen of 22 projects received 100 percent guarantees of loans and six projects received partial guarantees of loans under FIPP. The Department obligated approximately $9.1 billion to the projects receiving 100 percent guarantees under the Section 1705 program and has disbursed approximately $9.1 billion. The Department made loan guarantee commitments totaling $4.2 billion to the six FIPP projects with disbursements of approximately $4.1 billion.

EIR (1706)

The IRA expands the scope of the original Title XVII language, which targets innovative energy projects that avoid, reduce or sequester greenhouse gases, via a new loan program.

The Energy Infrastructure Reinvestment (EIR) Program or Section 1706 is established to provide loan guarantees to projects that retool, repower, repurpose, or replace energy infrastructure that has ceased operations, or enable operating energy infrastructure to avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gases. The IRA appropriates $5 billion through September 30, 2026, to carry out EIR, with a total loan authority cap of $250 billion.

The Title XVII Interim Final Rule issued in 2023 established eligibility requirements for prospective EIR projects, stipulating that LPO can finance projects that retool, repower, repurpose, or replace energy infrastructure that has ceased operations or enable operating energy infrastructure to avoid, reduce, utilize or sequester air pollutants or greenhouse gas emissions. Additionally, these projects may include the remediation of environmental damage caused by energy infrastructure.

As this program is newly established, it has not obligated any authority as of September 30, 2023.

TELGP

The TELGP authorized under EPAct05 (25 USC 3502(c)) a loan guarantee program that permits DOE to guarantee third party and FFB loans made to a federally recognized Indian tribe including Alaska Native village or regional or village corporations; or a Tribal Energy Development Organization (TEDCO) that is wholly or substantially owned by a federally recognized Indian Tribe or Alaska Native Corporation for energy development. Under the Consolidated Appropriations Act, 2017, Public Law 115-31, Congress made initial appropriation of credit subsidy and loan guarantee authority available. A solicitation outlining the rules of the loan program was issued on June 12, 2018. The Consolidated Appropriations

Act, 2023, Public Law 117-328, appropriated an additional $2 million of credit subsidy.

After the enactment of the IRA in 2022, the TELGP program has received expanded loan guarantee authority of up to $20 billion as well as $75 million, available until September 30, 2028, to carry out the program. The IRA also allows TELGP borrowers to access FFB for loan proceeds while maintaining the option of working with third-party lenders as well.

As of September 30, 2023, under the TELGP, no loan guarantees have been obligated. Any appropriated credit subsidy amounts shall be obligated at conditional commitment.

CIFIA

Section 40304 of the BIL established the Carbon Dioxide Transportation Infrastructure Finance and Innovation Program (CIFIA). CIFIA is intended to provide capital, including debt financing, to large-capacity, common-carrier carbon dioxide transport projects. These projects may include pipelines, rail, shipping and other transport methods. Prospective CIFIA projects may apply for direct loans from the U.S. Treasury or loan guarantees of a third-party lender.

The BIL appropriates $3 million for administrative costs, in FY 2022, which is available until expended. The BIL further appropriates an additional $2.097 billion to carry out the program, including administrative costs, in FY 2023, also available until expended.

LPO, in partnership with DOE's Office of Fossil Energy and Carbon Management, will implement the program. A guidance document for CIFIA Loan application was released on October 5, 2022 and further guidance on CIFIA Future Growth Grants will be released in FY24.

Direct Loans and 100 percent Loan Guarantees Obligated and Disbursed Post 1991

($ IN MILLIONS)	LOANS RECEIVABLE GROSS	INTEREST RECEIVABLE	ALLOWANCE FOR SUBSIDY COST (PRESENT VALUE)	VALUE OF ASSETS RELATED TO LOANS, NET	DISBURSED IN FISCAL YEAR
	FY 2023				
ATVM	$ 1,067	$ 2	$ 84	$ 1,153	$ 1,066
Title XVII	15,782	80	(252)	15,610	588
Total loans	**$ 16,849**	**$ 82**	**$ (168)**	**$ 16,763**	**$ 1,654**
	FY 2022				
ATVM	$ —	$ —	$ —	$ —	$ —
Title XVII	15,682	73	(311)	15,444	464
Total loans	**$ 15,682**	**$ 73**	**$ (311)**	**$ 15,444**	**$ 464**

Subsidy Expense for Direct Loans and 100 percent Loan Guarantees by Program and Component

($ IN MILLIONS)	INTEREST DIFFERENTIAL	DEFAULTS	FEES AND OTHER COLLECTIONS	OTHER	TOTAL
	FY 2023				
Subsidy expense for new direct loans disbursed*					
ATVM	$ 1	$ 57	$ (1)	$ —	$ 57
Title XVII	(27)	12	—	—	(15)
Total	**$ (26)**	**$ 69**	**$ (1)**	**$ —**	**$ 42**
	INTEREST RE-ESTIMATES	TECHNICAL RE-ESTIMATES	TOTAL RE-ESTIMATES	TOTAL MODIFICATIONS	TOTAL DIRECT LOAN SUBSIDY EXPENSE
Re-estimates and Modifications					
ATVM	$ —	$ (161)	$ (161)	$ —	$ (104)
Title XVII	—	(131)	(131)	—	(146)
Total	**$ —**	**$ (292)**	**$ (292)**	**$ —**	**$ (250)**

($ IN MILLIONS)	INTEREST DIFFERENTIAL	DEFAULTS	FEES AND OTHER COLLECTIONS	OTHER	TOTAL
	FY 2022				
Subsidy expense for new direct loans disbursed*					
ATVM	$ —	$ —	$ —	$ —	$ —
Title XVII	(19)	9	—	—	(10)
Total	**$ (19)**	**$ 9**	**$ —**	**$ —**	**$ (10)**

	INTEREST RE-ESTIMATES	TECHNICAL RE-ESTIMATES	TOTAL RE-ESTIMATES	TOTAL MODIFICATIONS	TOTAL DIRECT LOAN SUBSIDY EXPENSE
Re-estimates and Modifications					
ATVM	$ —	$ (81)	$ (81)	$ —	$ (81)
Title XVII	(262)	66	(196)	—	(206)
Total	**$ (262)**	**$ (15)**	**$ (277)**	**$ —**	**$ (287)**

*** New disbursements of existing loan obligations**

Subsidy Rates for FCRA Direct Loans by Program and Component

	INTEREST DIFFERENTIAL	DEFAULTS	FEES AND OTHER COLLECTIONS	OTHER	TOTAL
	FY 2023				
ATVM	0.000%	3.480%	-0.100%	0.000%	3.380%
Title XVII	-0.812%	4.546%	0.000%	0.000%	3.734%
	FY 2022				
ATVM	0.120%	5.210%	-0.100%	0.000%	5.230%
Title XVII	-5.877%	2.204%	0.000%	0.000%	-3.673%

Rates are the weighted-average of the individual loan subsidy rates for that program. The subsidy rates disclosed pertain only to the current year's cohorts. These rates cannot be applied to the direct loans disbursed during the current reporting year to yield the subsidy expense.

The subsidy expense for new loans reported in the current year could result from disbursements of loans from both current year cohorts and prior-year(s) cohorts. The subsidy expense reported in the current year also includes re-estimates.

Schedule for Reconciling Subsidy Cost Allowance Balances (Post-1991 Direct Loans and 100 Percent Loan Guarantees)

($ IN MILLIONS)	FY 2023	FY 2022
Beginning balance of the subsidy cost allowance	$ 311	$ 536
Add: subsidy expense for direct loans disbursed during the reporting years by component		
Interest rate differential costs	$ (26)	$ (19)
Default costs (net of recoveries)	69	9
Fees and other collections	(1)	—
Total of the above subsidy components	**$ 42**	**$ (10)**
Adjustments:		
(a) Modification adjustment transfer	—	—
(b) Subsidy allowance amortization	105	62
(c) Other	2	—
Ending balance of subsidy cost allowance before re-estimates	**$ 460**	**$ 588**
Add or subtract subsidy re-estimates by component:		
Interest rate re-estimates	—	(262)
Technical/default re-estimates	(292)	(15)
Ending balance of subsidy cost allowance	**$ 168**	**$ 311**

Guaranteed Loans Outstanding

($ IN MILLIONS)	PRINCIPAL OF GUARANTEED LOANS FACE VALUE	AMOUNT OF OUTSTANDING PRINCIPAL GUARANTEED
	FY 2023	
Title XVII	$ 1,530	$ 1,224
	FY 2022	
Title XVII	$ 1,651	$ 1,321

Liability for Loan Guarantees, Present Value Method

($ IN MILLIONS)	FY 2023	FY 2022
Title XVII	$ 79	$ 89

Subsidy Expense for New Loan Guarantees by Program and Component

($ IN MILLIONS)	INTEREST DIFFERENTIAL	DEFAULTS	FEES AND OTHER COLLECTIONS	OTHER	TOTAL
	FY 2023				
Subsidy expense for new loan guarantees Title XVII	$ —	$ —	$ —	$ —	$ —
	INTEREST RE-ESTIMATES	TECHNICAL RE-ESTIMATES	TOTAL RE-ESTIMATES		TOTAL GUARANTEE SUBSIDY EXPENSE
Re-estimates Title XVII	$ —	$ (13)	$ (13)	$ —	$ (13)
($ IN MILLIONS)	INTEREST SUPPLEMENTS	DEFAULTS	FEES AND OTHER COLLECTIONS	OTHER	TOTAL
	FY 2022				
Subsidy expense for new loan guarantees Title XVII	$ —	$ —	$ —	$ —	$ —
	INTEREST RE-ESTIMATES	TECHNICAL RE-ESTIMATES	TOTAL RE-ESTIMATES		TOTAL GUARANTEE SUBSIDY EXPENSE
Re-estimates Title XVII	$ —	$ (12)	$ (12)	$ —	$ (12)

Subsidy Rates for FCRA Guarantee Loans by Program and Component

	INTEREST SUPPLEMENTS	DEFAULTS	FEES AND OTHER COLLECTIONS	OTHER	TOTAL
	FY 2023				
Title XVII	0.000%	2.967%	-2.795%	0.000%	0.172%
	FY 2022				
Title XVII	0.000%	0.000%	0.000%	0.000%	0.000%

Rates are the weighted-average of the individual loan subsidy rates for that program. The subsidy rates disclosed pertain only to the current year's cohorts. These rates cannot be applied to the direct loans disbursed during the current reporting year to yield the subsidy expense. The subsidy expense for new loans reported in the current year could result from disbursements of loans from both current year cohorts and prior-year(s) cohorts. The subsidy expense reported in the current year also includes re-estimates.

Schedule for Reconciling Loan Guarantee Liability Balances (Post-1991 Loan Guarantees)

($ IN MILLIONS)	FY 2023	FY 2022
Beginning balance of the loan guarantee liabilities	$ 89	$ 98
Add interest expense on entity borrowings	3	3
Less downward re-estimates	(13)	(12)
Ending balance of the loan guarantee liabilities	**$ 79**	**$ 89**

Administrative Expenses

($ IN MILLIONS)	FY 2023	FY 2022
Direct loan program - ATVM	$ 15	$ 9
Loan guarantee program - Title XVII	$ 63	$ 45

Loans Receivable

($ IN MILLIONS)	FY 2023	FY 2022
Loans Receivable, start of year	$ 15,682	$ 16,800
Plus Loan Disbursements	1,654	464
Less Principal Payments Received	(434)	(1,519)
Plus Loan Reinstatement	2	—
Plus/Less Capitalized Interest	(55)	(63)
Ending balance of loan guarantee liability	**$ 16,849**	**$ 15,682**

7. Inventory, Net

($ IN MILLIONS)	FY 2023	FY 2022
Strategic Petroleum, Northeast Home Heating Oil and Gasoline Supply Reserves	$ 11,093	$ 13,166
Nuclear Materials	32,517	31,067
Other Inventory	842	779
Total inventory, net	**$ 44,452**	**$ 45,012**

Inventory includes stockpile materials consisting of crude oil and gasoline held in the SPR, ultra-low sulfur diesel held in the Northeast Home Heating Oil Reserve, refined petroleum in the Northeast Gasoline Supply Reserve, and nuclear materials. Other inventory consists primarily of operating materials and supplies.

STRATEGIC PETROLEUM RESERVE

The SPR consists of crude oil stored in salt domes, terminals, and pipelines. As of September 30, 2023, the SPR contained crude oil with a historical cost of $10.8 billion. The SPR provides a response mechanism should a severe oil disruption occur. Included in the SPR is six million barrels of crude oil held for future DoD use. The Department of Defense Appropriations Act, 1993, authorized the Department of Energy (DOE) to acquire, transport, store and prepare for ultimate drawdown of crude oil for DoD. Of the $10.8 billion, the crude oil purchased with DoD funding is commingled with DOE's stock and is valued at its historical cost of $123 million as of September 30, 2023 (see Notes 2 and 14).

Beginning in FY 2017 and ending in FY 2031, the Department will conduct a series of oil sales authorized by the Bipartisan Budget Act of 2015 (sections 403 and 404), 21st Century Cures Act of 2015 (Cures Act), Fixing America's Surface Transportation Act of 2015 (FAST), Tax Cuts and Jobs Act of 2017, Bipartisan Budget Act of 2018, Consolidated Appropriations Act of 2018, America's Water Infrastructure Act of 2018, and the Infrastructure Investment and Jobs Act. As of September 30, 2023, stockpile materials held for sale of crude oil are valued at $30.69 per barrel.

NORTHEAST HOME HEATING OIL RESERVE

The Northeast Home Heating Oil Reserve was established in FY 2000 pursuant to the Energy Policy and Conservation Act of 1975. The Reserve contains petroleum distillate in the New England geographical area. The historical cost of the reserve was $141 million as of September 30, 2023.

NORTHEAST GASOLINE SUPPLY RESERVE

The Northeast Gasoline Supply Reserve was established in FY 2014 pursuant to the Energy Policy and Conservation Act of 1975. The Reserve contains refined petroleum product in the New York Harbor area and the Boston/ Northern New England area. The historical cost of the product contained in the reserve was $122 million as of September 30, 2023.

NUCLEAR MATERIALS

Nuclear materials include plutonium (weapon-grade, and fuel-grade), uranium (highly enriched uranium [HEU], low enriched uranium [LEU], natural uranium, and depleted uranium), tritium, and other materials including those in the custody of the DoD, as allowed under Presidential Directive. Nuclear materials are used in weapons and components, naval and other reactors, and research and development.

As of September 30, 2023, the Department has natural uranium inventories of 3,710.7 metric tons (MTU) of uranium hexafluoride (UF6). This material can be divided into two stockpiles of material: U.S. origin (1,980.6 MTU of UF6) and Russian origin material (1,730.1 MTU of UF6). This includes the Reclassified US Origin (142.3 MTU of UF6) to Russian and Canadian. The nuclear materials inventory includes numerous items for which future use and disposition decisions have not been made. Decisions will be made through analysis of the economic benefits and costs, and the environmental impacts of the various use and disposition alternatives. The carrying value of these items is not significant to the nuclear materials stockpile inventory balance. The Department will recognize disposition liabilities and record the material at net realizable value when disposal as waste is identified as the most likely alternative and disposition costs can be reasonably estimated. Inventory values are reduced by costs associated with disposition, decay, or damage.

Under a declaration by the Nuclear Weapons Council and an announcement by the President in 1995, 174.3 MTU of the Department's HEU was identified as excess to national security needs (S94). Analysis of this 174.3 MTU identified 154 MTU that was appropriate for downblending. In 2005, Secretary of Energy Bodman announced that, over the coming decades, another 200 MTU of HEU would be removed from use as fissile material in weapons. The majority of this 200 MTU was set aside for naval reactors and other HEU reactors, but analysis identified about 28 MTU for downblending. Finally, another 4 MTU of HEU not included in these declarations, has been identified for downblending. All totaled, 186 MTU HEU will be dispositioned through downblending, where 168.5 MTU has been completed at the end of FY 2023.

8. Property, Plant, and Equipment, Net

($ IN MILLIONS)	ACQUISITION COSTS	ACCUMULATED DEPRECIATION	NETBOOK VALUE	ACQUISITION COSTS	ACCUMULATED DEPRECIATION	NETBOOK VALUE
	FY 2023			FY 2022		
Land and Land improvements	$ 2,724	$ (1,304)	$ 1,420	$ 2,692	$ (1,271)	$ 1,421
Structures and facilities	58,467	(38,841)	19,626	57,619	(37,973)	19,646
Internal use software	1,358	(927)	431	1,286	(904)	382
Equipment	24,080	(14,954)	9,126	23,082	(14,310)	8,772
Natural Resources	155	(22)	133	143	(23)	120
Construction work in process	21,355	—	21,355	16,430	—	16,430
Total general property, plant, and equipment	**$ 108,139**	**$ (56,048)**	**$ 52,091**	**$ 101,252**	**$ (54,481)**	**$ 46,771**

($ IN MILLIONS)	PP&E	ACCUMULATED DEPRECIATION	NET PP&E
PP&E Balance beginning of year	$ 101,252	$ (54,481)	$ 46,771
Capitalized acquisitions from the Public	8,511	—	8,511
Capitalized acquisitions from Government agencies	8	—	8
Dispositions	(543)	543	—
Revaluations	(1,089)	—	(1,089)
Depreciation/Amortization	—	(2,110)	(2,110)
Total PP&E Balance at end of year	**$ 108,139**	**$ (56,048)**	**$ 52,091**

Information concerning deferred maintenance and repairs and estimated land acreage is discussed in the unaudited required supplementary information.

9. Other Assets

($ IN MILLIONS)	FY 2023	FY 2022
Other Than Intragovernmental		
Regulatory assets (Note 10)	$ 8,596	$ 8,954
Operating non-federal generation	3,136	3,205
Other	1,629	1,558
Total other assets	**$ 13,361**	**$ 13,717**

OPERATING NON-FEDERAL GENERATION

BPA is party to long-term contracts for BPA to acquire all of the generating capability of Energy Northwest's Columbia Generating Station (CGS) and Lewis County Public Utility District's Cowlitz Falls Hydroelectric Project. CGS is a non-Federal nuclear power plant owned and operated by Energy Northwest, a joint operating agency of the state of Washington. The current license termination dates for CGS and the Cowlitz Falls Project are in December 2043 and May 2036, respectively. BPA has acquired the output of the Cowlitz Falls Project through June 30, 2032. These contracts require that BPA meet all of the facilities' operating, maintenance and debt service costs (see Note 12). The assets are amortized on a straight-line basis through their respective license termination dates to program costs.

OTHER

This amount includes BPA's assets for non-Federal nuclear decommissioning trusts, lease-purchase trust funds, derivative instruments that represent unrealized gains, and funding agreements for certain joint transmission projects. The balance also includes oil owed to the SPR for loaning oil to oil companies during the FY 2021 Hurricane Ida Exchange and the FY 2022 Keystone Emergency exchanges. Amounts due include base and premium barrels.

In addition, this amount includes Western Area Power Administration's (WAPA) long-term power rights, which are not directly identifiable to a specific WAPA-owned facility and are owned and used by WAPA in operations. Power rights are amortized over 40 years.

10. Regulatory Assets

($ IN MILLIONS)	FY 2023	FY 2022
Refinanced and additional appropriated capital	$ 5,054	$ 5,133
Residential exchange programs scheduled and refund amounts	1,299	1,514
Non-operating facilities	1,380	1,463
Fish and Wildlife and Conservation Measures	262	315
Other Regulatory Assets	601	529
Total Regulatory Assets (Note 9)	**$ 8,596**	**$ 8,954**

The Department's PMAs record certain amounts as assets in accordance with the Financial Accounting Standards Board's Accounting Standards Codification (FASB ASC) 980, *Regulated Operations*. The provisions of this standard require that regulated enterprises reflect rate actions of the regulator in their financial statements, when appropriate. These rate actions can provide reasonable assurance of the existence of an asset, reduce or eliminate the value of an asset, or impose a liability on a regulated enterprise. To defer incurred costs under this standard, a regulated entity must have the statutory authority to establish rates that recover all costs, and those rates must be charged to, and collected from, customers.

REFINANCED AND ADDITIONAL APPROPRIATED CAPITAL

BPA is responsible for repaying the Treasury for transmission and power generating assets that were funded by appropriations, including those of the USACE and Bureau of Reclamation (BOR). In accordance with accounting guidance for regulated operations, BPA records a regulatory asset based on this deferred cost that must be repaid to the Treasury for those assets owned by the USACE and BOR. This regulatory asset is amortized to program costs over a period of 50 years on a straight-line method based on the estimated service lives of the assets. BPA's trial balance also includes a regulatory asset and a corresponding intragovernmental debt for refinanced and additional appropriations owed to the Treasury. Under the BPA Refinancing Section of the Omnibus Consolidated Rescissions and Appropriations Act of 1996 (Refinancing Act), 16 U.S.C. 838(l), BPA refinanced its unpaid capital appropriations as of September 30, 1996, and is responsible for the repayment of additional appropriated capital investment after the Refinancing Act (see Note 14).

NON-OPERATING FACILITIES

BPA is responsible for the repayment of debt for terminated Energy Northwest Nuclear Projects 1 and 3. These assets are amortized to program costs through 2043. BPA is also responsible for the repayment of the Northern Wasco Hydro Project for which BPA ceased its participation as the recipient of the project's electric power. These assets are amortized to program costs through 2025 (see Note 12).

RESIDENTIAL EXCHANGE PROGRAM (REP) SCHEDULED AND REFUND AMOUNTS

Under the provisions of the 2012 REP Settlement Agreement, BPA's Investor-Owned Utilities (IOU) customer receive a fixed schedule of benefit payments (i.e. Scheduled Amounts) that are being recovered in rates through 2028. These amounts amortize to program costs (see Note 14).

FISH AND WILDLIFE AND CONSERVATION MEASURES

Fish and wildlife measures consist of deferred fish and wildlife project expenses to be recovered in future rates. These costs are amortized to program costs over a period of 15 years. Conservation measures consist of the costs of deferred energy conservation measures to be recovered in future rates. These costs are amortized to program costs over periods of 12 or 20 years. BPA deferred certain costs of energy conservation measures through FY 2015 and beginning with FY 2016 began recording such costs as expenses when incurred.

PHASE 2 IMPLEMENTATION PLAN (P2IP) SETTLEMENT AGREEMENT

P2IP Settlement Agreement represents the deferral of expenses related to this agreement signed in September 2023. BPA expects that these costs will be recovered through future rates and will be amortized to program costs beginning in fiscal year 2026. The amortization period will be determined prior to the BP-26 rate proposal (see Note 15).

OTHER REGULATORY ASSETS

Other regulatory assets for BPA primarily include decommissioning and site restoration costs that reflect amounts to be recovered in future rates for funding the Asset Retirement Obligation (ARO) liability related to the former Trojan nuclear facility; decommissioning and site restoration costs representing unrealized losses in the non-Federal nuclear decommissioning trust assets for CGS; spacer damper replacement program costs to replace deteriorated spacer dampers on certain transmission lines (amortized over a period of 25 or 30 years); and costs to be recovered in future rates for preliminary construction and related activities for the former I-5 Corridor Reinforcement Project (amortized through FY 2024).

11. Liabilities Not Covered by Budgetary Resources

($ IN MILLIONS)	FY 2023	FY 2022
Intragovernmental		
Debt	$ 6,083	$ 5,755
Appropriated capital and other adjustments	4,305	3,891
Future reimbursements to the Treasury Judgment Fund	410	410
Other	24	38
Total Intragovernmental	**$ 10,822**	**$ 10,094**
Federal debt held by the public (Note 12)	5,130	5,101
Federal employee benefits payable	291	422
Environmental liabilities (Note 13)	531,322	516,621
Nuclear Waste Fund deferred revenues (Note 15)	50,241	48,452
Other liabilities		
Contingencies and commitments (Note 18)	34,221	31,093
Pension and other actuarial liabilities (Notes 14 and 16)	12,329	14,804
Residential exchange - scheduled amounts (Note 14)	1,299	1,514
Environment, safety, and health compliance activities	1,878	1,653
Energy savings performance contracts and utility energy service contracts (Note 14)	390	435
Capital leases (Note 17)	234	78
Other	55	62
Total liabilities not covered by budgetary resources	**$ 648,212**	**$ 630,329**
Total liabilities covered by budgetary resources	35,470	31,525
Total liabilities not requiring budgetary resources	1,167	1,081
Total liabilities	**$ 684,849**	**$ 662,935**

12. Debt

($ IN MILLIONS)	BEGINNING BALANCE	NET BORROWINGS	ENDING BALANCE	BEGINNING BALANCE	NET BORROWINGS	ENDING BALANCE
	FY 2023			FY 2022		
Debt Owed to the Federal Financing Bank	$ 15,219	$ 1,220	$ 16,439	$ 15,612	$ (393)	$ 15,219
Debt Owed to Treasury other than FFB	6,442	103	6,545	6,968	(525)	6,443
Debt Owed to the Public	5,101	29	5,130	5,082	19	5,101
Total debt	**$ 26,762**	**$ 1,352**	**$ 28,114**	**$ 27,662**	**$ (899)**	**$ 26,763**

DEBT OWED TO THE FFB

To finance its loan programs, the Department is required to use the FFB for the ATVM program and the 100 percent loan guarantees of the Title XVII program. As of September 30, 2023 and 2022, the maturity range of the debt was from October 2, 2023 to June 14, 2052 and October 3, 2022 to April 3, 2045, respectively. The interest rate range was from 0.818 percent to 3.00 percent as of September 30, 2023 and 1.356 percent to 3.00 percent as of September 30, 2022. All debt from the FFB is considered covered by budgetary resources as there is no congressional action necessary to pay the debt.

DEBT OWED TO TREASURY OTHER THAN FFB

BPA is authorized by Congress to issue and sell bonds to the Treasury, and to have outstanding at any time up to $13.7 billion aggregate principal amount of bonds. Beginning in FY 2028, an additional $4.0 billion of Treasury borrowing authority will be available. Of the $13.7 billion in borrowing authority currently available, $1.3 billion is available for electric power conservation and renewable resources, including capital investment at the Federal Columbia River Power System (FCRPS) hydroelectric facilities owned by the USACE and BOR, and $12.5 billion is available for BPA's transmission capital program and to implement BPA's authorities under the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act). Of the total Treasury borrowing authority available at any one time ($13.7 billion through FY 2027 and $17.7 billion beginning in FY 2028), $750 million can be issued to finance Northwest Power Act-related expenses. The interest on BPA's outstanding bonds is set at rates comparable to rates on debt issued by other comparable Federal government institutions at the time of issuance. Bonds can be issued with call options.

As of September 30, 2023 and 2022, BPA had no bonds outstanding related to Northwest Power Act expenses.

As of September 30, 2023, $495 million of variable-rate bonds were callable by BPA at par value on their interest repricing dates, which occurs every three or six months. The remaining $5.3 billion of bonds are callable by BPA at a premium or discount, which is calculated based on the current government agency rates for the remaining term to maturity at the time the bonds are called. As of September 30, 2022, $626 million of variable-rate bonds were outstanding.

In fiscal year 2023, BPA called $323 million of bonds it had previously issued to the Treasury. As a result, BPA recognized a net gain of $5 million. BPA recorded no such gains or losses in fiscal year 2022.

WAPA has authority to borrow up to $3.3 billion from the Treasury for planning, constructing, financing, operating, or maintaining new or upgraded electric power transmission lines and facilities; and for delivering or facilitating the delivery of power generated by renewable energy.

The Department is authorized to borrow from Treasury if cash previously collected is not enough to cover interest expense and other items related to the ATVM and Title XVII loan programs. As of September 30, 2023, the maturity range of the debt was September 30, 2045 to September 30, 2053, and the interest rate range was 1.356 percent to 3.00 percent. As of September 30, 2022, the maturity range of the debt was September 30, 2040 to September 30, 2048, and the interest rate range was 1.356 percent to 3.00 percent . Borrowings from Treasury related to ATVM and Title XVII loan programs are considered covered by budgetary resources as there is no congressional action necessary to pay the debt.

DEBT OWED TO THE PUBLIC

Debt owed to the public primarily includes liabilities associated with BPA purchased generating capability, discussed in Note 10; the non-operating facilities for which BPA bears repayment responsibility discussed in Note 10; and customer prepaid power purchases.

As of September 30, 2023 and 2022, Energy Northwest could borrow $110 million under a line-of-credit borrowing arrangement with a banking institution. As of September 30, 2023 and 2022, Energy Northwest had no amounts outstanding on this line of credit.

During FY 2013, BPA entered into agreements with four regional consumer-owned utilities for the advance payment of portions of their power purchases. Under this program, customers purchased prepaid power in blocks through FY 2028. For each block purchased, BPA repays the prepayment, with interest, as monthly fixed credits on the customers' power bills.

In March 2013, BPA received $340 million representing $474 million in scheduled credits for blocks purchased by customers. BPA accounts for the prepayment proceeds as a financing transaction and reports the value of the obligations associated with the fixed credits as a prepayment liability. Interest expense is recognized using a weighted-average effective interest rate of 4.5 percent. The prepaid liability is reduced and the credits are applied as power is delivered through FY 2028. As of September 30, 2023, BPA's remaining liability is $139 million.

13. Environmental and Disposal Liabilities

($ IN MILLIONS)	FY 2023	FY 2022
Beginning balance	$ 519,660	$ 515,645
Changes to environmental cleanup and disposal liability estimates	22,905	11,443
Costs applied to reduction of legacy environmental liabilities (Note 20)	(7,075)	(6,436)
Capital expenditures related to remediation activities	(1,176)	(992)
Ending environmental cleanup and disposal liabilities	**$ 534,314**	**$ 519,660**
Unfunded environmental liabilities (Note 11)	$ 531,322	$ 516,621
Funded environmental liabilities	2,992	3,039
Total environmental cleanup and disposal liabilities	**$ 534,314**	**$ 519,660**

After World War II, the U.S. developed a massive industrial complex to research, produce, and test nuclear weapons and commercial nuclear power reactors. The nuclear complex was comprised of nuclear reactors, chemical processing buildings, metal machining plants, laboratories, and maintenance facilities.

At all sites where these activities took place, some environmental contamination occurred. This contamination was caused by the production, storage, and use of radioactive materials and hazardous chemicals, which resulted in contamination of soil, surface water, or groundwater. In particular, the environmental legacy of nuclear weapons production also included thousands of contaminated buildings and large volumes of waste and special nuclear materials requiring treatment, stabilization, and disposal.

The Nuclear Waste Policy Act of 1982 (NWPA) established the Federal Government's responsibility to provide for permanent disposal of the Nation's high-level radioactive waste and SNF. The Act requires all owners and generators of high-level nuclear waste and SNF, including the Department, to pay their respective shares of the full cost of disposal. The Department's liability for disposal reflects its share of the estimated future costs of the disposal of its inventory of high-level waste and SNF. The Department's liability does not include the portion of the cost attributable to commercial owners and generators.

The Department has estimated environmental cleanup liability for the environmental contamination and waste disposition obligations discussed above. The estimates provide for a site-by-site projection of the work required to safely complete all EM projects, while complying with regulatory agreements, statutes, and regulations. Project estimates include projections of the technical scope, schedule, and estimable costs at each site for their cleanup. In addition to the assumptions and uncertainties discussed above, the following key assumptions and uncertainties relate to the Department's estimates:

- The Department has identified approximately 11,740 potential release sites from which contaminants could migrate into the environment. Although virtually all sites have been at least partially characterized, final remedial action and regulatory decisions have not been made for many sites. Site-specific assumptions regarding the amount and type of contamination and the remediation technologies that will be utilized were used in estimating the environmental liabilities related to these sites.

- Cost estimates for management of the Department's high-level waste and SNF have been predicated upon assumptions as to the timing of permanent disposition. Changes in high-level waste and SNF disposition plans could cause Departmental projected costs to change.

- Estimates are based on remedies considered technically and environmentally reasonable and achievable by local project managers and appropriate regulatory authorities.

- Estimated cleanup costs at sites for which there are no current feasible remediation approaches are excluded from the estimates, although applicable stewardship and monitoring costs for these sites are included. The Department has not been required via regulation to establish remediation activities for these sites.

Changes to the Department's environmental liabilities estimates in FY 2023 resulted from inflation adjustments to reflect constant dollars for the current year; improved and updated estimates for the same scope of work, including changes resulting from deferral or acceleration of work and/or changes to funding assumptions; revisions in technical approach or scope, including additional contamination; updated estimates of projected waste volumes; legal and regulatory changes; and cleanup activities performed.

The Department's liabilities also include the estimated cleanup and post-closure responsibilities, including surveillance and monitoring activities, soil and groundwater remediation, and disposition of excess material for sites. The Department is responsible for the post-closure activities at many of the closure sites, as well as other sites (former uranium mills and certain sites remediated by the USACE). The costs for these post-closure activities are estimated for a period of 75 years after the balance sheet date, i.e., through FY 2098 in

FY 2023 and through FY 2097 in FY 2022. While some post-cleanup monitoring and other long-term stewardship activities post FY 2098 are included, there are others the Department expects to continue beyond FY 2098 for which the costs cannot reasonably be estimated.

A portion of the environmental liability at various field sites includes anticipated costs for facilities managed by the Department's ongoing program operations which will ultimately require stabilization, deactivation, and decommissioning. These estimates are largely based upon a cost-estimating model. Site-specific estimates are used, in lieu of the cost-estimating model, when available. Cost estimates for ongoing program facilities are updated each year. For facilities newly contaminated since FY 1997, costs are allocated to the periods benefiting from the operations of the facilities. Facilities' cleanup costs allocated to future periods and not included in the liability amounted to $1.14 billion at September 30, 2023, and $1.1 billion at September 30, 2022.

Estimating the Department's environmental cleanup liability requires making assumptions about future activities and is inherently uncertain. The future course of the Department's environmental cleanup and disposal will depend on a number of fundamental technical and policy choices, many of which have not been made. The cost and environmental implications of alternative choices can be profound. For example, some contaminated sites and facilities could be restored to a condition suitable for any desired use; they could also be restored to a point where they pose no near-term health risks to surrounding communities but are essentially secured, monitored, and left in place. Achieving the former condition would have a higher cost but may, or may not, warrant the cost or be legally required. The estimates reflect applicable decisions and current expectations as to the extent of cleanup and site and facility reuse, which include consideration of legal requirements and stakeholder input. The environmental liability estimate includes contingency estimates intended to account for the uncertainties associated with the technical cleanup scope of the program. Congressional appropriations at lower-than-anticipated levels or lack of Congressional approval, unplanned delays in project completions including potential delays due to COVID-19, unforeseen technical issues, obtaining regulatory approval, among other things, could cause increases in life-cycle costs. All environmental liabilities as of September 30, 2023, and September 30, 2022, are stated in FY 2023 dollars and FY 2022 dollars, respectively, as required by generally accepted accounting principles for Federal entities. Future inflation could cause actual costs to be substantially higher than the recorded liability.

HANFORD SITE

The Department's Hanford Site covers 586 square miles in the desert of southeastern Washington State. The area is home to nine former production reactors and their associated processing facilities. The major activities comprising the environmental liability at Hanford include the following:

- The Waste Treatment Plant is a multi-year construction project that once complete will provide the primary treatment capability to immobilize the radioactive and chemical tank waste at the Hanford site.
- The Tank Farm project includes activities required to manage and stabilize approximately 56 million gallons of radioactive waste stored in 177 underground tanks, including retrieval, treatment, disposal, and closure.
- Waste Treatment Plant Operations is responsible for the operational scope for the Waste Treatment Plant Low-Activity Waste Facility, the Analytical Laboratory, and the Balance of Facilities starting with hot commissioning but after project completion for those facilities.
- The River Corridor Closure Project addresses the remediation of contaminated soils and facilities adjacent to the Columbia River. Much of this work has been completed but remediation activities continue for the soil beneath the 324 Building; the treatment and packaging of radioactive sludge to interim storage; and in the future, the remediation of 618-11 burial grounds.
- Solid Waste Operations in the central plateau in support of remediation activities on the Hanford Site.
- Soil and groundwater, as well as D&D activities, which addresses the remediation of contaminated soils and facilities in the central plateau.
- Infrastructure services in support of the operations on the Hanford Site including safeguards and security, utility operations, and fire operations.

SAVANNAH RIVER SITE

The Savannah River Site (SRS), located in South Carolina, is 310 square miles in size with 1,000 facilities concentrated within 10 percent of the total land area. The SRS environmental liability estimate reflects the mission of safely storing, treating, and disposing of a variety of radioactive and hazardous waste streams, remediating the environment, deactivating and decommissioning excess facilities, stabilization and immobilization of high-level waste (HLW), and the secure storage of foreign and domestic nuclear materials including spent nuclear fuel and plutonium at the site. The major activities comprising the environmental liability at SRS include the following:

The Radioactive Liquid Waste (LW) Stabilization and Disposition program is a highly integrated operation involving safely storing LW in underground storage tanks; removing, treating, and dispositioning of approximately 34 million gallons of legacy radioactive high-level waste (HLW) stored in 43 of 51 underground storage tanks. To date, eight tanks have achieved regulatory operational closure and have been grouted in place. Most of the liquid tank waste is a solution of salt which is processed through

the Salt Waste Processing Facility (SWPF) which produces two waste streams - HLW strip effluent containing fission products and actinides and low-level waste (LLW) decontaminated salt solution (DSS). The HLW stream is combined with the radioactive HLW sludge stored in the liquid waste storage tanks and sent to the Defense Waste Processing Facility (DWPF) for vitrification. The vitrified HLW glass is poured into stainless steel canisters, which are temporarily stored on-site in the Glass Waste Storage Buildings (GWSBs). The DSS is sent to the Saltstone Production facility where it is combined with slag and fly ash to form a LLW grout called saltstone. The LLW saltstone is sent to one of 12 (4 are still under construction) on-site Saltstone Disposal Units (SDU) for permanent storage.

- The surplus plutonium disposition program provides the capability to disposition certain inventories of the Nation's surplus plutonium. In FY 2019, the Mixed Oxide (MOX) project was terminated and the Department is pursuing the implementation of the dilute and dispose strategy to fulfill the United States' commitment to dispose of 34 metric tons of plutonium.

IDAHO NATIONAL LABORATORY SITE

The Idaho National Laboratory (INL) is a research and engineering complex that occupies 890 square miles in southeastern Idaho and has been the center of nuclear energy research since 1949. Idaho has fulfilled numerous DOE missions including the design and testing of 52 nuclear reactors and reprocessing spent nuclear fuel to recover fissile materials. These activities resulted in inventories of waste managed as high-level, transuranic, mixed low-level, and low-level wastes. The major activities comprising the environmental liability at the INL include the following:

- The Spent Nuclear Fuel Stabilization and Disposition project includes stabilizing legacy spent nuclear fuel and managing the receipt of off-site spent nuclear fuel from research reactors.

- The Radioactive Liquid Tank Waste Stabilization and Disposition Project will treat and disposition the sodium-bearing tank wastes, close the underground waste tanks and maintain the Idaho Nuclear Technology and Engineering Center.

- The Solid Waste Stabilization and Disposition Project dispositions stored transuranic waste, low-level radioactive waste, Resource Conservation and Recovery Act hazardous waste, and mixed low-level radioactive waste in compliance with the Idaho Settlement Agreement requirements and closes on-site low-level radioactive waste disposal facilities at the Radioactive Waste Management Complex.

- The Soil and Water Remediation project is responsible for remediation of contaminated soil and groundwater and closure of legacy Comprehensive Environmental Response, Compensation, and Liability Act sites at the Idaho National Laboratory. Completion of this project will contribute to reducing the footprint and the completion of the Idaho Cleanup Project.

GASEOUS DIFFUSION PLANTS

The Department constructed and formerly operated three gaseous diffusion plants (GDPs) located in Oak Ridge, Tennessee; Portsmouth, Ohio; and Paducah, Kentucky to enrich uranium which resulted in radioactive and chemical contamination at the sites. The major activities comprising the environmental liabilities at the GDPs include the following:

- The Oak Ridge, Portsmouth, and Paducah Nuclear Facility D&D projects include environmental cleanup and surveillance and maintenance activities, demolition and disposal, and decontamination and decommissioning of inactive or excess facilities. Oak Ridge completed D&D of all facilities not supporting soil remediation at East Tennessee Technology Park (ETTP) in FY 2020. Soil remediation continues at ETTP to support future site closure.

- The Portsmouth and Paducah Nuclear Material Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion projects include the operation of the depleted uranium hexafluoride conversion facilities at the Portsmouth and Paducah sites. These facilities convert the material into a more stable form of depleted uranium oxide suitable for reuse or disposition.

OAK RIDGE OFFICE OF ENVIRONMENTAL MANAGEMENT OTHER THAN GASEOUS DIFFUSION PLANT

The Oak Ridge Office of Environmental Management, located in Tennessee, includes deactivation and demolition on excess contaminated facilities at the Y-12 National Security Site and the Oak Ridge National Laboratory, construction of Mercury Treatment Facility and onsite Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA) disposal facility to support D&D activities and disposition of U-233 material and transuranic waste.

ENVIRONMENTAL LIABILITIES ESTIMATE FOR OTHER SITES

Environmental liabilities exist for other sites and activities across the Department. The cleanup activities at these sites are similar to those mentioned above, including, depending on the site, soil and groundwater remediation; waste retrieval, treatment, and disposal; and decontamination and decommissioning of nuclear reactors and other facilities.

14. Other Liabilities

($ IN MILLIONS)	FY 2023	FY 2022
Intragovernmental		
Appropriated capital	$ 2,376	$ 1,806
Refinanced and additional appropriations	1,106	1,197
Capitalization adjustment	823	888
Other	1,077	1,074
Total intragovernmental	**$ 5,382**	**$ 4,965**
Other than intragovernmental		
Pension and other actuarial liabilities (Notes 11 and 16)	$ 12,329	$ 14,804
Obligations under capital leases (Note 17)	2,259	2,167
Contingencies and commitments (Note 18)	34,221	31,097
Environment, safety, and health compliance activities (Note 21)	1,888	1,657
Accrued payroll, funded leave, and withholding taxes	2,089	1,823
Residential exchange program (REP) (Note 11)	1,299	1,514
Asset retirement obligations	1,015	964
Energy savings performance contracts and utility energy service contracts (Note 11)	390	435
Other	505	445
Total other than intragovernmental	**$ 55,995**	**$ 54,906**
Total other liabilities	**$ 61,377**	**$ 59,871**

APPROPRIATED CAPITAL

Appropriated capital owed represents the balance of appropriations provided to WAPA, Southwestern Power Administration (SWPA) and Southeastern Power Administration (SEPA) for construction, operation, and maintenance of power facilities that will be repaid to the Treasury General Fund. The amount owed includes accumulated and current year interest on the net unpaid Federal investment in the power projects. The Federal investment in these facilities is to be repaid within 50 years from the time the facilities are placed in service or are commercially operational. Replacements of Federal investments are generally expected to be repaid over their useful service lives. There is no requirement for repayment of a specific amount of Federal investment on an annual basis.

SEPA receives annual appropriations from the Treasury's General Fund for operating expenses. Annual program costs are repaid from offsetting collections from the sale of Federal hydroelectric power during the current year, resulting in a net zero appropriation.

SWPA receives annual appropriations from the Treasury's General fund for capital, operation and maintenance expenses. Annual operation and maintenance costs are repaid from offsetting collections from the sale of Federal hydroelectric power during the current year, interest is recovered annually, and construction costs are generally repaid over their estimated useful lives. WAPA receives annual appropriations from the Reclamation Fund for construction, operation and maintenance expenses: additional detail on WAPA's debt owed to the Reclamation Fund and corresponding elimination are found in Note 26. Annual operation and maintenance costs are repaid from offsetting collections during the current year, interest is recovered annually and construction costs are generally repaid over their estimated useful lives. Funding received from the Reclamation Fund is not reported as appropriated capital owed since the Reclamation Fund is managed by WAPA and all inter-fund activity is eliminated for combined reporting.

WAPA has also received appropriations from Treasury General Fund, as noted in the first paragraph of this section, the unpaid balance of these appropriations are reported as appropriated capital owed Treasury.

Except for the appropriation refinancing asset described in Note 10 and in the next section, the Department's financial statements do not reflect the Federal investment in power generating facilities owned by the USACE; DOI, BOR; and the Department of State (DOS), International Boundary and Water Commission. BPA makes annual payments to Treasury from its net proceeds.

REFINANCED AND ADDITIONAL APPROPRIATED CAPITAL

As discussed in Note 10, BPA refinanced its unpaid capital appropriations as of September 30, 1996. Federal appropriations reflect the responsibility that BPA has to repay Treasury for congressionally appropriated amounts

in the FCRPS. Federal appropriations repayment obligations consist of the remaining unpaid power portion of USACE and BOR capital investments funded through congressional appropriations.

BPA is obligated to establish rates to repay appropriations for Federal generation and transmission plant investments within a specified repayment period, which is the reasonably expected service life of the facilities, not to exceed 50 years. Federal appropriations may be repaid early without penalty at their par value (i.e. carrying value for Federal appropriations) as part of BPA's payment to Treasury. BPA repaid appropriations earlier than their due date in FY 2023 and FY 2022. BPA establishes schedules for the repayment of Federal appropriations when it establishes its power and transmission rates. These schedules can change depending on whether appropriations have been prepaid or deferred. Interest on appropriated amounts begins accruing when the related assets are placed into service, unless repayment obligation is deferred by specific legislation.

CAPITALIZATION ADJUSTMENT

The capitalization adjustment is the difference between the outstanding balance of Federal appropriations, plus $100 million, before and after refinancing under the Refinancing Act. Consistent with treatment in BPA's power and transmission rate cases, this adjustment is amortized over a 40-year period through FY 2036. Amortization of the capitalization adjustment was $65 million for FY 2023 and FY 2022 (see Note 10).

OTHER INTRAGOVERNMENTAL

Other Intragovernmental Liabilities "Other" represents the amount due to the Treasury Judgment Fund, liability for non-entity assets, custodial liability, and various other miscellaneous liabilities.

ENVIRONMENT, SAFETY, AND HEALTH COMPLIANCE ACTIVITIES

The Department's environment, safety, and health (ES&H) liability represents those activities necessary to bring facilities and operations into compliance with existing ES&H laws and regulations (e.g., Occupational Safety and Health Act; Clean Air Act; Safe Drinking Water Act). Types of activities included in the estimate relate to the following: upgrading site-wide fire and radiological programs; nuclear safety upgrades; industrial hygiene and industrial safety; safety related maintenance; emergency preparedness programs; life safety code improvements; and transportation of radioactive and hazardous materials. The estimate covers corrective actions expected to be performed in future years for programs outside the purview of the Department's EM Program. ES&H activities within the purview of the EM program are included in the environmental liabilities estimate.

ACCRUED PAYROLL, FUNDED LEAVE, AND WITHHOLDING TAXES

This represent amounts owed to the Department's Federal and contractor employees for accrued payroll, funded accrued annual leave for contractor employees, and withholding taxes owed to state and local governments.

RESIDENTIAL EXCHANGE PROGRAM (REP)

In 1981, and as provided in the Northwest Power Act, BPA began to implement the REP through various contracts with eligible regional utility customers. BPA's implementation of the REP has been the subject of various litigations and settlement agreements.

Beginning in April 2010, over 50 litigants and other regional parties entered into mediation to resolve numerous disputes over the REP. In FY 2011, the parties reached a final settlement agreement – the 2012 Residential Exchange Program Settlement Agreement (2012 REP Settlement Agreement). As a result of the settlement, BPA recorded an associated long-term IOU exchange benefits liability and corresponding regulatory asset of $3.1 billion. Under the 2012 REP Settlement Agreement the IOUs' REP benefits were determined for FY's 2012-2028 (also referred to herein as Scheduled Amounts). The Scheduled Amounts started at $182 million for FY 2012 and increase over time to $286 million for FY 2028. As provided in the 2012 REP Settlement Agreement, the Scheduled Amounts are established for each IOU based on the IOUs' average system cost, its residential exchange load and BPA's applicable Priority Firm Exchange rate. The Scheduled Amounts total $4.1 billion over the 17-year period through FY 2028, with remaining Scheduled Amounts as of September 30, 2023 totaling $1.4 billion. Amounts recorded of $1.3 billion at September 30, 2023 represent the present value of future cash outflows for these IOUs' exchange benefits.

ASSET RETIREMENT OBLIGATIONS

BPA recognizes asset retirement obligations (AROs) based on the future retirement of certain tangible, long-lived assets. BPA's AROs are recognized based on the estimated fair value of the dismantlement and restoration costs, primarily associated with the retirement of the Columbia Generating Station (CGS). BPA also has AROs for a 30 percent share of the former Trojan nuclear power plant decommissioning activities and for certain Energy Northwest-related site restoration activities. ARO liabilities are adjusted for any revisions, expenditures and the passage of time.

Based on agreements in place, BPA directly funds Eugene Water and Electric Board's 30 percent share of the former Trojan nuclear power plant decommissioning activities that consist of long-term operation and decommissioning of the Independent Spent Fuel Storage Installation (ISFSI). BPA funds these costs through current rates. Trojan decommissioning primarily relates to the storage of spent nuclear fuel through 2059 at the former nuclear plant site. Decommissioning of the ISFSI and final site restoration activities is not expected to occur before 2059, which is the year the Nuclear Regulatory Commission (NRC) extended the fuel storage license through. In FY 2023, BPA management revised the estimate for the ARO liability by $15 million. This change in estimate was driven by

increases in expected annual ISFSI operation costs primarily due to additional personnel and construction related expenses.

BPA also has tangible long-lived assets without an associated ARO because no legal obligation exists to remove these assets.

ENERGY SAVINGS PERFORMANCE CONTRACTS AND UTILITY ENERGY SERVICE CONTRACTS

Beginning in FY 2019, SFFAS 49, *Public-Private Partnerships*, requires the disclosure of risk-sharing arrangements with expected lives greater than five years between public and private sector entities. Per SFFAS 49, "Such arrangements or transactions provide a service or an asset for government and/or general public use where in addition to the sharing of resources, each party shares in the risks and rewards of said arrangements or transactions." DOE has determined that Energy Savings Performance Contracts (ESPC) and Utility Energy Service Contracts (UESC) meet the Public-Private Partnership (P3) criteria outlined in SFFAS 49; the disclosure details for DOE's ESPC and UESC arrangements are provided below.

Initially authorized by the Energy Policy Act of 1992 and subsequently codified as 42 U.S.C. 8287 and 42 U.S.C. 8256, respectively, ESPCs and UESCs represent partnerships with energy service companies (ESCOs) and utility companies in the form of fixed-price, performance-based arrangements that are paid back over time through generated energy cost savings. In particular, ESPCs enable DOE to partner with an ESCO for a period not to exceed 25 years to improve energy efficiency in one or more DOE facilities at no direct capital cost to the U.S. Government and without special Congressional appropriations. The ESCO finances the upfront costs of implementing energy conservation measures—often borrowing the necessary funding for the investment from a third-party financier—and receives, in return, a contractually determined share of the cost savings that result. The ESCO provides a guarantee that the improvements will generate sufficient energy cost savings to pay for the project over the expected life of the arrangement, and after the arrangement ends, DOE fully retains all subsequent cost savings. Ultimately, ESPCs and UESCs provide DOE with the overall ability to implement energy efficient infrastructure upgrades at little to no upfront expense to the Government and to generate future energy cost savings. (Similar to ESPCs, UESCs are partnerships between a Federal agency and its serving utility company in which the utility company arranges financing to cover the upfront costs of energy efficiency projects and the agency's subsequent payments are based on energy cost savings; unlike ESPCs, however, cost savings are not guaranteed by the utility company.)

Although ESPC and UESC arrangements are structured to minimize the level of risk to which DOE and the Government are exposed, general processes such as a mutual understanding of each entity's role and responsibilities within the partnership, proper and timely project planning, installation and functionality oversight, and participation in the measurement and verification of equipment performance are all key components to helping ensure that energy cost savings are successfully realized. Failure to appropriately conduct these types of processes could potentially result in lost or unachieved energy cost savings and/or reduced payments to ESCOs in the case of ESPCs, payments being made by DOE in excess of the amount of actual energy cost savings achieved, or costs related to future contract or infrastructure modifications. Additionally, though standard contract language generally allows DOE to terminate ESPC and UESC arrangements for convenience, any such action is considered by DOE to be remote and often requires, at a minimum, payment by DOE of the remaining unamortized principal (the total of which, as of September 30, 2023, is primarily represented by the "Energy savings performance contracts and utility energy service contracts" liability figure above) as well as other termination fees based on the financial details of each arrangement. Further, because title to infrastructure improvement systems and equipment is typically transferred to DOE upon project acceptance, early termination could potentially lead to increased costs related to ownership (for example, maintenance and repairs previously performed by the ESCO or utility company needing to be performed by DOE or another contractor). Lastly, some arrangements contain contractual clauses specifically clarifying that the Government will be responsible for losses due to remote risks such as accidents or "force majeure" events.

As of September 30, 2023, DOE has 19 ESPC arrangements/modifications that are active or for which implementation is currently in process and two active UESC arrangements. The period of performance range for the 21 total arrangements is between 10 and 24 years in length, with the calculation of the period of performance largely dependent upon the amount of predicted annual cost savings in conjunction with the amount of annual payments (not to exceed the amount of annual cost savings in the case of ESPCs) required to eventually fund the overall value of the project. Payments related to these types of arrangements are generally made by DOE indirectly to the ESCO or utility company through a trustee on an annual basis.

The below table provides the amount of funding related to the non-Federal partners' implementation of DOE's ESPC and UESC arrangements; the combined total DOE payments to be made over the expected life of arrangements (including principal repayment, interest, and performance period expenses); and the total cumulative amount of payments made by DOE as of September 30, 2023.

($ IN MILLIONS) AS OF SEPTEMBER 30, 2023	NON-FEDERAL PARTNERS' IMPLEMENT-ATION AMOUNT	TOTAL DOE PAYMENTS TO BE MADE OVER THE EXPECTED LIFE OF ARRANGEMENT	TOTAL CUMULATIVE PAYMENTS
ESPCs	$ 619	$ 1,981	$ 1,044
UESCs	20	23	19
Total	**$ 639**	**$ 2,004**	**$ 1,063**

The following table presents the actual payments in FY 2023 and FY 2022, and the estimated amount to be paid in FY 2024 and beyond.

($ IN MILLIONS) AS OF SEPTEMBER 30, 2023	FY 2023	FY 2022	FUTURE PERIODS
Agreements/ Contracts	Actual amount paid	Actual amount paid	Estimated amount to be paid in FY 2024+
ESPCs	$ 101	$ 114	$ 937
UESCs	3	2	4
Total	**$ 104**	**$ 116**	**$ 941**

OTHER LIABILITIES

Other than Intragovernmental Liabilities "Other" represents contract holdbacks, limited payroll related liabilities, undistributed advances, and various other miscellaneous liabilities.

15. Advances from Others and Deferred Revenue

($ IN MILLIONS)	FY 2023	FY 2022
Intragovernmental	$ 1,502	$ 216
Nuclear Waste Fund (Note 11)	$ 50,241	$ 48,452
Power Marketing Administrations	1,874	1,601
Reimbursable work advances	432	346
Other	294	260
Subtotal	**$ 52,841**	**$ 50,659**
Total advances from others and deferred revenue	**$ 54,343**	**$ 50,875**

NUCLEAR WASTE FUND

NWF revenues are accrued based on interest earned on charges assessed against owners and generators of high-level radioactive waste and SNF and interest accrued on investments in U.S. Treasury securities. These revenues are recognized as a financing source as costs are incurred for NWF activities. Revenues that exceed the NWF expenses are deferred.

POWER MARKETING ADMINISTRATIONS

BPA's deferred revenues and other credits make up the majority of the deferred revenues and other credits for the Power Marketing Administrations. BPA's deferred revenues and other credits primarily represent the following:

- Regulatory liabilities are amounts previously collected through rates for accumulated plant removal costs as part of depreciation and unrealized gains from BPA's derivative portfolio which are deferred over the corresponding underlying contract delivery months.

- Interconnection agreements are advances for requested new network upgrades and interconnections. These advances accrue interest and will be returned as cash or credits against future transmission service on the new or upgraded lines.

- P2IP settlement agreements represents the undiscounted long-term portion of future payments to be made to certain Upper Columbia River Tribes as agreed to in the P2IP Settlement Agreement signed in September 2023. Per the terms of the agreement, BPA will provide $10 million per year, beginning in FY 2024 for the 20-year duration of the agreement, for a total of $200 million (adjusted for inflation). The funds are to be used to test the feasibility of, and ultimately reintroduce salmon in blocked habitats in the Upper Columbia River Basin. The settlement agreement became effective in October 2023 upon the dismissal of the related Tribal litigation.

- Deferred project revenue funded in advance consisting of third party advances received where BPA will own the resulting transmission assets. The balance is amortized over the life of the assets so that the balance prevents any stranded costs in case of impairment as prescribed by the transmission rate process.

- Third Alternating Current (AC) Intertie capacity agreements reflecting unearned revenues from customers related to the Third AC Intertie transmission line capacity project. Revenue is recognized over an estimated 51-year life of the related assets, which are generally added and retired each year.

- Unearned revenue from customer deposits consists of advances received from customers for projects or studies undertaken at their request. Revenue is recognized as expenditures are incurred.

- Service deposits reflect required deposits for BPA products or services. The majority of these amounts are expected to be returned to the customer after a period of service. In certain cases, the deposits are considered prepayments, in which case they are recognized as revenue as per terms of the contract.

- Derivative instruments reflect the unrealized loss from BPA's derivative portfolio, which primarily includes physical power purchase and sale transactions.

16. Pension and Other Actuarial Liabilities

($ IN MILLIONS)	FY 2023	FY 2022
Contractor pension plans	$ 6,365	$ 8,456
Contractor postretirement benefits other than pensions	5,943	6,325
Contractor disability and life insurance plans	21	23
Total pension and other actuarial liabilities (Notes 11 and 14)	**$ 12,329**	**$ 14,804**

Most of the Department's major contractors sponsor defined benefit pension plans which promise to pay specified benefits, such as a percentage of the final average pay for each year of service, to their employees. The Department's allowable costs under these contracts include reimbursement of annual contractor contributions to these pension plans. Most of the contractors also sponsor postretirement benefits other than pensions (PRB) consisting of predominantly postretirement health care benefits. The Department approves, for cost reimbursement purposes, these contractors' pension and postretirement benefit plans and is responsible for the allowable costs of funding the plans. The Department also reimburses these contractors for employee disability insurance plans, and estimates are recorded as unfunded liabilities for these plans.

For accounting measurements, the Department follows FASB ASC 715, *Compensation - Retirement Benefits*, for reporting contractor pension and Postretirement Benefit plans for which the Department has a continuing obligation to reimburse allowable costs. Because the Department reports under Federal accounting requirements, newly measured net prior service costs/(credits) and net (gains)/losses are recognized immediately as components of net periodic cost rather than classified as other comprehensive income under FASB ASC 715 and later amortized and included as components of net periodic cost. All components of the net periodic cost are recognized in the *Consolidated Statements of Net Cost*. Service costs are recorded by program and all other net periodic costs are recorded as costs not assigned (see Note 21).

CONTRACTOR PENSION PLANS

As of September 30, 2023, the Department reports contractor pension assets (i.e., aggregate of net assets for all contractor plans with plan assets in excess of the projected benefit obligation) of $311 million and contractor pension liabilities (i.e., aggregate of net liabilities for all contractor plans with projected benefit obligations in excess of the plan assets) of $6.4 billion. The Department has a continuing obligation to reimburse allowable costs for a variety of contractor-sponsored pension plans (32 qualified and 12 nonqualified).

Contractors are required to make contributions to their plans as required by the Internal Revenue Code and the Employee Retirement Income Security Act (ERISA), as amended. For qualified defined benefit pension plans, the Department's current funding policy is to reimburse contractors for the minimum required contributions made, absent the Department's agreement to reimburse at a different level. For nonqualified plans, the funding policy is pay-as-you-go.

Assumptions and Methods – Contractors use their own actuarial assumptions for determining required contributions to employee pension plans. However, in order to provide consistency among the Department's various contractors, the Department requires the use of certain standardized actuarial assumptions for financial reporting purposes. These standardized assumptions include the discount rates, mortality assumptions, and an expected long-term inflation rate of 2.25 percent used consistently in the expected long-term rate of return on assets, salary scale, and other relevant economic assumptions affected by inflation, with adjustments to the 2.25 percent inflation rate to reflect regional or industry rates as appropriate. In most cases, except for the standardized mortality assumption, the demographic assumptions used for the ERISA valuation were used for these purposes.

The following specific assumptions and methods were used to determine the net benefit cost. The weighted average discount rate was 5.10 percent for FY 2023 and 2.70 percent for FY 2022; the weighted average long-term

rate of return on assets was 6.85 percent for FY 2023 and 5.85 percent for FY 2022; and the average rate of compensation increase was 3.2 percent for FY 2023 and 3.2 percent for FY 2022. The average long-term rate of return on assets shown above is the average rate for the contractor plans. Each contractor develops its own average long-term rates of return on assets based on the specific investment profiles of the specific plans it sponsors. Therefore, there is no one overall approach to setting the rate of return for each of the contractors' plans.

The weighted average discount rates used to determine the benefit obligations as of September 30, 2023, and September 30, 2022, were 5.60 percent and 5.10 percent, respectively.

The aggregate accumulated benefit obligation and aggregate fair value of plan assets for plans with accumulated benefit obligations in excess of plan assets are $35.7 billion and $31.7 billion as of September 30, 2023 and $43.7 billion and $38.5 billion as of September 30, 2022. The aggregate projected benefit obligation and aggregate fair value of plan assets for plans with projected benefit obligations in excess of plan assets are $41.5 billion and $35.2 billion as of September 30, 2023, and $46.9 billion and $38.5 billion as of September 30, 2022, respectively.

CONTRACTOR POSTRETIREMENT BENEFITS OTHER THAN PENSIONS

The Department's contractors sponsor a variety of postretirement benefits other than pensions. As of September 30, 2023, the Department reports contractor PRB assets (i.e., aggregate of net assets for all contractor plans with plan assets in excess of the benefit obligation) of $16 million and contractor PRB liabilities (i.e., aggregate of net liabilities for all contractor plans with benefit obligations in excess of the plan assets) of $5.9 billion. The Department accrues the cost of PRB during the years that the employees render service. Generally, the PRB plans are unfunded, and the Department's funding policy is to fund on a pay-as-you-go basis. There are five contractors, however, that are partially prefunding benefits as permitted by law.

Assumptions and Methods – In order to provide consistency among the Department's various contractors, certain standardized actuarial assumptions were used.

These standardized assumptions include medical and dental trend rates, discount rates, and mortality assumptions.

The following specific assumptions and methods, with respect to trends in the costs of medical and dental benefit plans, were used in determining the PRB estimates. The projected medical trend rates for a point of service plan, Health Maintenance Organization (HMO), Preferred Provider Organization (PPO), or similar plan grade (i.e., decrease or increase) from 6.97 percent in 2023 down to 5.00 percent in 2038 and later for under age 65; and 5.80 percent in 2023 down to 5.00 percent in 2038 and later for age 65 and older. The medical trend rates for a traditional indemnity or similar plan grade from 7.21 percent in 2023 down to 5.00 percent in 2038 and later for under age 65; and 6.05 percent in 2023 down to 5.00 percent in 2038 and later for age 65 and older. Separate trend rates were used for a Medicare Advantage plan, a Part D Prescription Drug Plan (PDP), and a Non-Part D PDP. Trend rates for Medicare Advantage plans at all per member per month levels of employer costs grade from 5.33 percent in 2023 down to 5.00 percent by 2038 and later. The trend rates for a Part D PDP grade from 8.31 percent in 2023 down to 5.00 percent in 2038 and later; and for a Non-Part D PDP grade from 9.04 percent in 2023 down to 5.00 percent in 2038 and later. The medical trend rates or combination of rates used to determine the PRB estimates are dependent on each of the contractor's specific plan design and impact of health care reform, if applicable. The projected dental trend rates at all ages grade from 3.58 percent in 2023 down to 3.00 percent in 2038 and later.

The weighted average discount rates of 5.10 percent for FY 2023 and 2.70 percent for FY 2022, and the weighted average long-term rate of return on assets of 3.27 percent for FY 2023 and 3.19 percent for FY 2022 were used to determine the net periodic cost. The rate of compensation increase was the same rate as each contractor used to determine pension contributions. The average long-term rate of return on assets shown above is the average rate for the contractor plans. Each contractor develops its own average long-term rate of return on assets based on the specific investment profile of the specific plans it sponsors. Therefore, there is no one overall approach to setting the rate of return for each of the contractors' plans.

The weighted average discount rates used to determine the benefit obligations as of September 30, 2023, and September 30, 2022, were 5.60 percent and 5.10 percent, respectively.

The aggregate accumulated postretirement benefit obligation and aggregate fair value of plan assets for plans with accumulated postretirement benefit obligations in excess of plan assets are $6.1 billion and $109 million as of September 30, 2023 and $6.4 billion and $113 million as of September 30, 2022.

($ IN MILLIONS)	PENSION BENEFITS		OTHER POSTRETIREMENT BENEFITS	
	FY 2023	FY 2022	FY 2023	FY 2022
NET AMOUNT RECOGNIZED IN THE BALANCE SHEET				
Accumulated benefit obligation	$ 43,674	$ 44,666		
Effect of future compensation increases	2,485	3,246		
Benefit obligation	**$ 46,159**	**$ 47,912**	$ 6,054	$ 6,441
Plan assets	40,105	39,699	127	131
Net amount recognized in the balance sheet (net funded status)	**$ (6,054)**	**$ (8,213)**	**$ (5,927)**	**$ (6,310)**
RECONCILIATION OF AMOUNTS RECOGNIZED IN THE BALANCE SHEET				
Asset (prepaid plan costs)	$ 311	$ 243	$ 16	$ 15
Liability	(6,365)	(8,456)	(5,943)	(6,325)
Net amount recognized in the balance sheet (net funded status)	**$ (6,054)**	**$ (8,213)**	**$ (5,927)**	**$ (6,310)**
COMPONENTS OF NET PERIODIC COSTS				
Service costs	$ 691	$ 1,170	$ 85	$ 145
Interest costs	2,407	1,738	317	231
Expected return on plan assets	(2,644)	(2,921)	(4)	(4)
(Gain)/loss due to curtailments, settlements or special termination benefits	(2)	—	—	—
Net prior service cost/(credit)	—	—	(4)	28
Net (gain)/loss	(1,698)	(3,501)	(415)	(2,778)
Total net periodic costs	**$ (1,246)**	**$ (3,514)**	**$ (21)**	**$ (2,378)**
CONTRIBUTIONS AND BENEFIT PAYMENTS				
Employer contributions	$ 920	$ 1,276	$ 363	$ 365
Participant contributions	94	95	79	78
Benefit payments	2,839	2,957	452*	458*

*Includes $11 million paid from plan assets for FY 2023, and $15 million paid from plan assets for FY 2022. For FY 2023, gross benefit payments were $453 million including $1.3 million of Federal Medicare subsidy. This resulted in net benefit payments of $452 million for FY 2023. For FY 2022, gross benefit payments were $459 million including $1.6 million of Federal Medicare subsidy. This resulted in net benefit payments of $458 million for FY 2022.

($ IN MILLIONS)	PENSION BENEFITS	OTHER POSTRETIREMENT BENEFITS
Expected contributions for fiscal year ending September 30, 2024		
Employer contributions	$1,044	$401
Participant contributions	92	74

($ IN MILLIONS)	PENSION BENEFITS	OTHER POSTRETIREMENT BENEFITS		
		GROSS PAYMENT	LESS FEDERAL MEDICARE PART D SUBSIDY *	NET PAYMENT
ESTIMATED FUTURE BENEFIT PAYMENTS FY:				
2024	$ 2,905	$ 491	$ 3	$ 487
2025	2,984	503	4	499
2026	3,068	512	4	508
2027	3,151	520	4	516
2028	3,187	525	4	521
2029 to 2033	16,672	2,626	17	2,609

* Under the Medicare Prescription Drug, Improvement and Modernization Act of 2003, a Federal subsidy is provided to sponsors of retiree healthcare benefit plans that provide a benefit at least actuarially equivalent to the benefit established by law. Generally, the Department has reflected the impact of the subsidy as a reduction to the employers' cost of the benefits.

Explanation of Significant Gains and Loss Related to Changes in the Benefit Obligation - The Department's FY 2023 net costs and unfunded liability estimates decreased by $2.1 billion for contractor pension plans and decreased by $0.4 billion for contractor postretirement benefits other than pensions (PRB) plans. The most significant component of the change in the contractor pension plan net costs and liabilities resulted an increase to the rate used to discount liabilities. The 50 basis point increase in the discount rate decreased the unfunded liability by approximately $2.6 billion. The most significant components of the change in contractor PRB net costs and liabilities resulted from an increase in the rate used to discount the liability to present value. The 50 basis point increase in the discount rate decreased the unfunded liability by approximately $0.4 billion. There was also a significant change in the PRB net costs and liabilities due to assumption changes for per capita claims and medical trends, totaling a decrease of $0.2 billion. However, this change was offset by a $0.2 increase due to actual demographic experience. The discount rate is based on the yields of high-quality fixed income securities as of September 30, 2023 and September 30, 2022.

The following chart shows the average target allocation for the 32 pension benefit plans and 5 other postretirement benefit plans with assets. The weighted average actual FY 2023 and FY 2022 allocations of assets are also shown.

	PENSION BENEFITS			OTHER POSTRETIREMENT BENEFITS		
	TARGET ALLOCATION	PERCENT OF PLAN ASSETS AT END FY 2023	PERCENT OF PLAN ASSETS AT END FY 2022	TARGET ALLOCATION	PERCENT OF PLAN ASSETS AT END FY 2023	PERCENT OF PLAN ASSETS AT END FY 2022
Cash and Equivalents	1.8 %	3.0 %	3.9 %	0.1 %	0.1 %	0.1 %
US Government Bonds	10.5 %	8.0 %	9.0 %	3.3 %	3.3 %	4.3 %
State and Municipal Government Bonds	0.2 %	0.2 %	0.3 %	0.8 %	0.8 %	1.0 %
Foreign Government Bonds	0.4 %	0.4 %	0.4 %	0.0 %	0.0 %	0.0 %
High-yield Corporate Bonds	2.0 %	1.0 %	3.4 %	0.0 %	0.0 %	0.0 %
Corporate Bonds other than high-yield	19.0 %	20.0 %	15.6 %	3.1 %	3.1 %	3.0 %
Domestic Equities	18.2 %	16.1 %	16.2 %	2.1 %	2.1 %	1.8 %
International Equities	18.5 %	12.6 %	12.6 %	1.1 %	1.1 %	0.9 %
Real Estate Investment Funds	8.0 %	6.3 %	7.3 %	0.0 %	0.0 %	0.0 %
Other Real Estate	0.2 %	0.4 %	0.3 %	0.0 %	0.0 %	0.0 %
Mortgage-Backed Securities	0.4 %	0.5 %	0.5 %	0.3 %	0.3 %	0.2 %
Asset-Backed Commercial Paper	0.0 %	0.0 %	0.1 %	0.0 %	0.0 %	0.0 %
Bonds/Notes Issued by Structured Investment Vehicles	0.2 %	0.2 %	0.2 %	0.0 %	0.0 %	0.0 %
Derivatives, including Collateralized Debt Obligations and Credit Default Swaps	0.1 %	0.1 %	0.1 %	3.7 %	3.7 %	2.2 %
Private Investment Funds, including Hedge Funds	5.0 %	5.4 %	6.1 %	0.0 %	0.0 %	0.0 %
Insurance Contracts (general accounts)	0.1 %	0.2 %	0.2 %	79.0 %	79.0 %	79.7 %
Insurance Contracts (separate accounts)	1.0 %	0.0 %	0.0 %	6.4 %	6.4 %	6.6 %
Employer Securities	0.4 %	0.5 %	0.5 %	0.0 %	0.0 %	0.0 %
Aggregate Bond Index, Long Bond Index	1.6 %	0.8 %	0.8 %	0.0 %	0.0 %	0.0 %
Other	12.4 %	24.3 %	22.5 %	0.1 %	0.1 %	0.2 %
Total	**100.0 %**	**100.0 %**	**100.0 %**	**100.0 %**	**100.0 %**	**100.0 %**

Each contractor develops its own investment policies and strategies for the plans it sponsors. Therefore, there is no one overall investment policy for the contractors' plans. Generally, their objectives provide for benefit security for plan participants through the maximization of total returns while limiting risk and providing liquidity coverage of benefit payments.

The following chart shows the allocation of the assets for FY 2023 and FY 2022 among the levels in the fair value hierarchy and net asset values (NAV) as a practical expedient for the pension benefit plans with assets. The allocation of assets among the fair value hierarchy reflects the implementation of *Accounting Standards Update* (ASU) No. 2015-07 for reporting investments using the net asset value per share (or its equivalent) as a practical expedient, as applicable.

($ IN MILLIONS)			QUOTED PRICES IN ACTIVE MARKETS FOR IDENTICAL ASSETS		SIGNIFICANT OBSERVABLE INPUTS		SIGNIFICANT UNOBSERVABLE INPUTS		NET ASSET VALUE, AS A PRACTICAL EXPEDIENT	
Asset Class	**Total**		**Level 1**		**Level 2**		**Level 3**		**NAV**	
	FY 2023	**FY 2022**	**FY 2023**	**FY 2022**	**FY 2023**	**FY 2022**	**FY 2023**	**FY 2022**	**FY 2023**	**FY 2022**
Cash and Equivalents	$ 1,192	$ 1,560	$ 442	$ 554	$ 466	$ 584	$ —	$ —	$ 284	$ 422
US Government Bonds	3,212	3,581	1,215	1,422	1,167	1,298	—	—	830	861
State and Municipal Government Bonds	97	117	—	—	96	116	—	—	1	1
Foreign Government Bonds	177	169	55	50	75	71	—	—	47	48
High-yield Corporate Bonds	418	1,351	5	6	162	186	—	—	251	1,159
Corporate Bonds other than high-yield	8,039	6,202	575	533	5,080	5,434	—	1	2,384	234
Domestic Equities	6,442	6,445	2,743	2,606	1,104	1,035	—	—	2,595	2,804
International Equities	5,069	5,003	1,011	1,160	390	221	—	—	3,668	3,622
Real Estate Investment Funds	2,522	2,886	1	2	—	—	3	2	2,518	2,882
Other Real Estate	156	119	—	—	—	—	80	70	76	49
Mortgage-Backed Securities	218	193	3	3	144	113	1	—	70	77
Asset-Backed Commercial Paper	19	21	—	—	—	—	—	—	19	21
Bonds/Notes Issued by Structured Investment Vehicles	72	75	—	—	—	—	—	—	72	75
Derivatives	37	59	(18)	—	17	(2)	—	—	38	61
Private Investment Funds	2,162	2,421	—	—	—	—	17	60	2,145	2,361
Insurance Contracts (general accounts)	80	81	—	—	1	1	79	80	—	—
Insurance Contracts (separate accounts)	20	18	—	—	20	18	—	—	—	—
Employer Securities	212	194	212	194	—	—	—	—	—	—
Aggregate Bond Index, Long Bond Index	333	324	—	—	333	324	—	—	—	—
Other	9,628	8,880	(326)	(444)	119	120	95	94	9,741	9,110
Total Assets	**$ 40,105**	**$ 39,699**	**$ 5,918**	**$ 6,086**	**$ 9,174**	**$ 9,519**	**$ 275**	**$ 307**	**$ 24,739**	**$ 23,787**

The following chart shows the reconciliation of the Level 3 assets for FY 2023 and FY 2022 for the pension benefit plans with assets.

($ IN MILLIONS)	DOMESTIC EQUITIES	REAL ESTATE INVESTMENT FUNDS	OTHER REAL ESTATE	PRIVATE INVESTMENT FUNDS	INSURANCE CONTRACTS (GENERAL ACCOUNTS)	OTHER	TOTAL
	FY 2023						
Beginning Balance	$ —	$ 2	$ 70	$ 59	$ 81	$ 94	$ 306
Actual return on plan assets:							
Relating to assets still held at the reporting date	—	(1)	7	—	—	(5)	1
Relating to assets sold during the period	—	—	—	5	(1)	—	4
Purchases, sales, and settlements	—	2	11	14	(1)	7	33
Transfers in and/or out of Level 3	—	—	(4)	(59)	—	(12)	(75)
Other	—	—	(4)	(2)	—	11	5
Ending Balance	**$ —**	**$ 3**	**$ 80**	**$ 17**	**$ 79**	**$ 95**	**$ 274**
	FY 2022						
Beginning Balance	$ 6	$ —	$ 52	$ 96	$ 82	$ 95	$ 331
Actual return on plan assets:							0
Relating to assets still held at the reporting date	—	—	7	(7)	1	1	2
Relating to assets sold during the period	—	—	—	(1)	(1)	—	(2)
Purchases, sales, and settlements	(6)	2	7	(22)	(1)	15	(5)
Transfers in and/or out of Level 3	—	—	—	(7)	—	(20)	(27)
Other	—	—	4	—	—	3	7
Ending Balance	**$ —**	**$ 2**	**$ 70**	**$ 59**	**$ 81**	**$ 94**	**$ 306**

Pension assets included in Level 1 of the fair value hierarchy are valued daily based on quoted prices in active markets. Assets included in Level 2 are valued using significant observable inputs other than quoted prices in active markets. U.S. Government Bonds and Corporate Bonds included in Level 2 assets are generally part of collective investment funds valued at the net asset values of the commingled funds based on the quoted prices of the underlying investments as a readily determinable fair value that is published by investors and is the basis for current transactions or valued based on other observable inputs such as market indices or other comparable investments. Other bonds in these categories are valued based on interest rates and yield curves observable at commonly quoted intervals or at bid evaluation prices for securities traded on OTC markets as provided by independent pricing vendors. Domestic and International Equities included in Level 2 assets are generally part of collective investment funds valued at the net asset values of the commingled funds based on the quoted prices of the underlying investments as a readily determinable fair value that is published by investors and is the basis for current transactions. Assets included in Level 3 are valued using significant unobservable inputs. Private Investment Funds and Real Estate Funds included in Level 3 assets are generally priced by the fund general partners or investment managers, verified by independent third-party appraisers, and audited by independent auditing firms. The actual market values are generally determinable by investment managers and verified by third parties, or by negotiations between independent parties pursuant to sales transactions. Assets held in Life Insurance Company General Accounts under Level 3 are generally credited guaranteed interest rates under the contracts or are valued based on the values of the underlying asset holdings of the accounts.

There are two pension plans that have securities of the employer or related parties included in the plan assets. No assets are expected to be returned to the employers during the next fiscal year.

The $127 million of assets in the five other postretirement benefit plans include $100 million of investments in insurance contracts (General Accounts) of which $66 million is valued using significant unobservable inputs (Level 3). The balance of the Level 3 insurance contracts decreased by $6 million during FY 2023 from $72 million to $66 million. Assets held in Life Insurance Company General and Separate Accounts under Levels 2 and 3 of the fair value hierarchy are generally credited guaranteed interest rates based on customized fixed income indices.

The remaining assets in the other postretirement benefit plans are invested in asset classes similar to the assets of the pension plans. None of the other assets in the other postretirement benefit plans were valued using unobservable inputs and none were valued based on the net asset value as a practical expedient of fair value.

Some of the Department's contractors' plan assets are invested in investment funds, which are recorded based on the net asset value (NAV) per share (or its equivalent) and

reported by the underlying funds without further adjustment, as a practical expedient of fair value.

Generally, the fair value of the investment in a privately offered investment fund represents the amount that the investor could reasonably expect to receive from the investment fund if the investment is withdrawn at the measurement date based on the NAV. These investments are redeemable at NAV under ordinary terms of the agreements and based on the operation of the underlying funds. However, it is possible that these redemption rights may be restricted or eliminated by the funds in the future in accordance with the underlying fund agreements. The terms of any fund agreements may vary by contractor.

17. Leases

Non-Federal Capital Leases:

($ IN MILLIONS)	FY 2023	FY 2022
SUMMARY OF ASSETS UNDER CAPITAL LEASE		
Power Line Equipment	$ 1,988	$ 2,049
Buildings	—	12
ADP equipment	399	211
Lease-purchase trust funds	15	14
Total capital lease assets	**$ 2,402**	**$ 2,286**
Less accumulated depreciation	(470)	(421)
Net assets under capital leases	**$ 1,932**	**$ 1,865**

($ IN MILLIONS) FISCAL YEAR 2023	POWER LINE EQUIPMENT	OTHER	TOTAL
Future lease payments:			
2024	158	107	265
2025	253	91	344
2026	167	64	231
2027	140	7	147
2028	126	—	126
2029+	1,997	—	1,997
Total future lease payments	**$ 2,841**	**$ 269**	**$ 3,110**
Less imputed interest	(816)	(21)	(837)
Less executory costs	(14)	—	(14)
Net capital lease liability	**$ 2,011**	**$ 248**	**$ 2,259**
Capital lease liabilities covered by budgetary resources			$ (2,025)
Capital lease liabilities not covered by budgetary resources (Note 11)			(234)
Total capital lease liability			**$ (2,259)**

Federal and Non-Federal Operating Leases:

($ IN MILLIONS)	ASSET CATEGORY		TOTAL	
FISCAL YEAR 2023	BUILDINGS/ FACILITIES	OTHER	FEDERAL	NON-FEDERAL
Future lease payments:				
2023	$ 131	$ 5	$ 83	$ 53
2024	119	5	82	42
2025	108	4	81	31
2026	104	1	78	27
2027	95	1	76	20
2028+	327	1	280	48
Total future lease payments	**$ 884**	**$ 17**	**$ 680**	**$ 221**

The Department acquires functional use of various buildings/facilities, equipment, and other assets via operating lease instruments. The above table shows the Department's total future lease payments by FY for all Federal and non-Federal operating leases that have initial or remaining non-cancellable terms in excess of one year as of September 30, 2023. In particular, the bulk of the Department's $681 million of total future lease payments for Federal non-cancellable operating leases is comprised of two Occupancy Agreements (OA) between DOE and the General Services Administration (GSA) consisting of $582 million in combined future lease payments. The two OAs have lease terms that expire in FY 2032-2033.

18. Contingencies and Commitments

($ IN MILLIONS)	FY 2023	FY 2022
Unfunded contingencies (Note 11)		
Spent nuclear fuel litigation	$ 34,145	$ 31,024
Other	76	69
Subtotal	**$ 34,221**	**$ 31,093**
Funded contingencies		
Other	—	4
Total contingencies	**$ 34,221**	**$ 31,097**

($ IN MILLIONS)	ACCRUED LIABILITIES	ESTIMATED RANGE OF LOSS		ACCRUED LIABILITIES	ESTIMATED RANGE OF LOSS	
		Lower End	Upper End		Lower End	Upper End
	FY 2023			FY 2022		
Legal Contingencies:						
Probable	$ 34,164	$ 34,164	$ 41,052	$ 31,041	$ 31,041	$ 31,041
Reasonably Possible	—	60	150	—	—	90
Environmental Contingencies:						
Probable	—	—	—	—	—	—
Reasonably Possible	—	113	142	—	113	142
Other Contingencies:						
Probable	57	57	57	56	56	56
Reasonably Possible	—	—	—	—	—	—
Total Contingencies	**$ 34,221**	**$ 34,394**	**$ 41,401**	**$ 31,097**	**$ 31,210**	**$ 31,329**

The Department is a party in various administrative proceedings, legal actions, and tort claims, which may ultimately result in settlements or decisions adverse to the Federal Government. The Department has accrued contingent liabilities where losses are determined to be probable and the amounts can be estimated. Other significant contingencies exist where a loss is reasonably possible or where the loss is probable and an estimate cannot be determined. In some cases, a portion of any loss that may occur may be paid from Treasury's Judgment Fund and reported as Costs Not Assigned (see Note 21).

The Judgment Fund is a permanent, indefinite appropriation available to pay judgments against the government. The following are significant contingencies:

SPENT NUCLEAR FUEL LITIGATION

In accordance with the NWPA, the Department entered into more than 69 Standard Contracts with utilities in which, in return for payment of fees into the NWF, the Department agreed to begin disposal of SNF by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPA, it has been unable to begin disposal of the utilities' SNF as required by the contracts. Significant litigation claiming damages for partial breach of contract has ensued as a result of this delay.

To date, 44 suits have been settled involving utilities that collectively own 85 percent of the nuclear reactors subject to litigation for partial breach of contract. Under the terms of the settlements, the Judgment Fund, 31 U.S.C. 1304, paid $7.9 billion as of September 30, 2023 to the settling utilities for delay damages they have incurred through September 30, 2023. In addition, 72 cases have been resolved by 64 final unappealable judgments and eight voluntary withdrawals with no damages. Eight of the unappealable judgments resulted in an award of no damages by the trial court and the 56 remaining cases resulted in a total of $2.7 billion in damages that have been paid by the Judgment Fund as of September 30, 2023. An additional 16 cases remain pending the Court of Federal Claims. Liability is probable in these cases, and in many of these cases orders have already been entered establishing the Government's liability and the only outstanding issue to be litigated is the amount of damages to be awarded.

The Department uses settlements as the basis for estimating the Government's aggregate SNF litigation. The Department's SNF litigation liability is updated to include the effects of final judgments and settlements as well as payments to date from the Judgment Fund. Additional payments under these settled and adjudicated cases may be made if the utilities incur additional costs resulting from the Department's delay in acceptance of SNF. The Department believes its assumptions and methodology provide a reasonable basis for the contingent liability estimate. Based on these settlement estimates, the total liability estimate as of September 30, 2023 was in the range of between $44.7 billion and $51.6 billion. After deducting the cumulative amount paid of $10.6 billion as of September 30, 2023 under these settlements and as a result of final judgments, the remaining liability is estimated to be in the range of between $34.1 billion and $41.0 billion. A key input to the estimate is the duration that each operating reactor will continue to operate. Given that a longer operating duration results in an increased amount of SNF generated, a longer operating duration also increases liability. Currently, most reactors are licensed to operate for 60 years. The Nuclear Regulatory Commission may also grant a "subsequent license renewal" which would extend a license by 20 years, for a total of 80 years. The liability estimate reflects a range of possible scenarios regarding the duration reactors will continue to operate. The Department has recognized as a liability the low end of that range. Under current law, any damages or settlements in this litigation will be paid out of the Judgment Fund. The Department's contingent liability estimate for SNF litigation is reported net of amounts paid to date from the Judgment Fund.

Under the Nuclear Waste Disposal Appropriation account, Congress appropriated $20 million for both FY 2021 and FY 2022 for the Department to proceed with planning a consent-based approach to federal consolidated interim storage. Accordingly, the Department has completed planning activities for a consent-based approach to site one or more federal consolidated interim storage facilities in the near term which will be followed by a disposal facility some years after. For FY 2023, Congress appropriated $53 million for the Office of Nuclear Energy's Integrated Waste Management System (IWMS) subprogram within the Fuel Cycle R&D program. The $53 million covered ongoing IWMS activities and also reflected funding for federal consolidated interim storage activities that was previously funded under the Nuclear Waste Disposal Appropriation account, as well as a ramp-up in activities to develop a consent-based process for federal consolidated interim storage.

Given that the Department intends to fulfill its contractual obligations upon the acceptance of SNF and HLW for transport from the reactor facilities, a preliminary operational date of the federal consolidated interim storage facility or facilities is factored into the liability calculation. On April 25, 2023, the Department released the *Consent-Based Siting Process for Federal Consolidated Interim Storage of Spent Nuclear Fuel*. Figure 1 on page 20 of that document illustrates the Department's roadmap for its consent-based siting process. The performance assumption used for the FY 2023 liability estimate is consistent with the sum of the upper ends of the ranges of durations provided for consent-based siting phases in this roadmap. The liability estimate is contingent upon Congress providing adequate ongoing appropriations and amending the NWPA. While the consent-based process is adaptive and further actions are required by Congress, this is the best information available upon which to base the liability estimate. Future determinations on how the Department will meet its obligations under the standard contracts could materially decrease or increase the SNF litigation liability.

ALLEGED EXPOSURES TO RADIOACTIVE AND/OR TOXIC SUBSTANCES

A number of class action and/or multiple plaintiff tort suits have been filed against current and former DOE contractors in which the plaintiffs seek damages for alleged exposures to radioactive and/or toxic substances as a result of the historic operations of the Department's nuclear facilities. The most significant of these cases arise out of operations of the facilities at Brookhaven, New York. Collectively, in these cases, damages of $1.2 billion are currently sought by the plaintiffs. However, the Department believes that if any damages are ultimately awarded, the amounts would be significantly less than what the plaintiffs seek.

In the Brookhaven litigation, two class action cases, Osarczuk v. Associated Universities and Tarzia v. Associated Universities (AUI), were filed in which residents and property owners near Brookhaven National Laboratory (BNL) asserted claims for negligence, gross negligence, abnormally dangerous activity, and private nuisance and sought damages, primarily for air and ground water contamination, as a result of the release of hazardous substances stemming from Lab operations. In addition, one toxic tort case, McGowan, et al. v. AUI, was filed in which a former worker at BNL asserted claims for negligence, abnormally dangerous activity, gross negligence, and loss of consortium and sought damages as a result of the release of Trichloroethylene (TCE) stemming from Lab operations. In Osarczuk, the parties have settled all of the cases in the first cohort of 20 bellwether cases and all of the cases in the second cohort of 20 bellwether cases. In addition to the 18 bellwether plaintiff groups, there are 35 remaining bellwether groups in this action. Settlement offers for the third cohort were exchanged, but no agreements were reached. AUI filed individual motions for summary judgment against the remaining plaintiffs, and the parties filed a stipulation to extend the time to prepare opposition and reply papers. On March 17, 2022, the trial court granted the defense motions for summary judgment, dismissing all remaining cases. On March 31, 2022, plaintiffs filed a notice of appeal. On April 18, 2022, plaintiffs filed a motion for leave with the trial court to reargue the court's decision granting summary judgment. On September 16, 2022, the Appellate Division granted plaintiffs' application to extend the time to perfect the appeal to October 31, 2022. On September 19, 2023, the trial court denied plaintiffs' motion. Neither

the trial court nor the Appellate Division have yet issued dispositive rulings on plaintiffs' recent filings. In Tarzia, the plaintiffs filed on April 6, 2018, with the Appellate Division of the New York Supreme Court, a notice of appeal of the trial court's February 22, 2018, Order granting AUI's motion to dismiss with prejudice the plaintiffs' complaint in this action for failure to prosecute, after the plaintiffs failed to comply with the judge's earlier Order requiring them to serve their responses to AUI's discovery demands. The plaintiffs failed to perfect that appeal, and the Appellate Division dismissed the appeal. The plaintiffs subsequently filed an appeal brief with the Appellate Division. On September 23, 2020, the Appellate Division issued an opinion affirming the trial court. Plaintiffs filed a motion with the Appellate Division seeking re-argument, which the Appellate Division denied. Then on May 6, 2021, the New York City Court of Appeals dismissed plaintiffs' motion for leave to appeal. In McGowan, a complaint was filed on May 19, 2020 and AUI responded to the complaint on February 19, 2021. The case is in discovery.

HANFORD SITE NATURAL RESOURCES DAMAGES

The Confederated Tribes of the Yakama Nation filed suit in September 2002 against DOE and the Department of Defense alleging natural resources damages in the 1100 area of the Hanford site. The Yakama Nation has since amended its complaint to add the 100 and 300 areas to the suit, alleging additional natural resources damages. In addition, the States of Washington and Oregon, as well as the Confederated Tribes of the Umatilla and the Nez Perce Tribe, have joined the suit. Two of the four claims have been settled, the third claim remains stayed, and the fourth has been dismissed. The Government reimbursed the Yakama Nation for its past response costs under claim one of the complaint. Under the settlement for claim two, the Trustees use the Trustee Council's administrative process to conduct a natural resource damage assessment through consensus activities, and DOE provides funding as appropriate through discretionary financial assistance agreements. Claim three, which seeks natural resource damages recovery, remains stayed, until the issue of resource damages (if any) is resolved. Claim four was dismissed. The case is still pending.

LOS ALAMOS ENVIRONMENTAL CLEAN-UP COMPLIANCE

Nuclear Watch New Mexico filed suit in May 2016 in the U.S. District Court for the District of New Mexico against DOE and Los Alamos National Security, LLC (LANS), the operating contractor for Los Alamos National Laboratory (LANL), pursuant to the citizen suit provision of the Resource Conservation and Recovery Act (RCRA). Nuclear Watch alleges that DOE and LANS are in violation of a Compliance Order on Consent entered into in 2005 between the New Mexico Environment Department (NMED), DOE, and LANS, which established various milestones for environmental cleanup activity at Los Alamos. A new Compliance Order on Consent between DOE and NMED was entered into in June 2016, shortly after Nuclear Watch filed its lawsuit, which explicitly supersedes the 2005 order. In its complaint, Nuclear Watch sought declaratory and injunctive relief to bring DOE and LANS into compliance with the 2005 order and sought civil penalties under RCRA, which Nuclear Watch estimated to total up to $300 million. NMED intervened as a defendant, and Nuclear Watch twice amended its complaint. In late 2016, the defendants moved to dismiss the suit. In July 2018, the district court granted the motions to dismiss in part, dismissing all claims for declaratory and injunctive relief, but denied the motions to dismiss with respect to claims seeking civil penalties for alleged past violations. All parties filed cross-motions for summary judgment, which the court denied for Nuclear Watch and DOE but granted for LANS in November 2019. The parties commenced discovery and continued settlement discussions. The parties informed the court of a settlement agreement in principle. A status conference was held on October 5, 2021 and the parties continue to work toward finalizing a settlement. In February 2022, the parties fully executed a settlement agreement, which requires DOE to undertake certain environmental-related projects over the coming years. On March 17, 2022, the district court administratively closed the case at the parties' request and further ordered DOE to submit status reports at six-month intervals on the progress of its settlement performance. On September 16, 2022, DOE submitted its first status report noting DOE's ongoing compliance with the settlement agreement. On March 17, 2023, DOE submitted its second status report noting DOE's ongoing compliance with the settlement agreement. On September 15, 2023, DOE submitted its third status report noting DOE's ongoing compliance with the settlement agreement.

PADUCAH AND PORTSMOUTH NATURAL RESOURCE DAMAGES

As a result of releases of hazardous substances at the Paducah and Portsmouth Sites, the States of Ohio and Kentucky have potential claims against DOE under the CERCLA for damages to natural resources (e.g., ground water) caused by such releases.

At the Paducah site, Kentucky has indicated that it desires a "tolling" agreement with respect to potential claims for natural resource damages. A tolling agreement would suspend the statute of limitations for the filing of the state's claims for a mutually agreeable period of time. As of September 30, 2023, Kentucky has not pursued executing a tolling agreement. It is possible that DOE will be liable for some natural resource damages at this site. DOE is unable to prepare an estimate of such damages and has not included a provision for damages in the consolidated financial statements.

At the Portsmouth site, DOE and Ohio EPA have executed a Director's Final Findings and Order settling the claims for natural resource damages. DOE will continue discussions with the remaining Federal trustees to resolve any potential claims for natural resource damages to be pursued by them.

PURCHASE POWER AND TRANSMISSION COMMITMENTS AND IRRIGATION ASSISTANCE

The PMAs have entered into commitments to sell expected generation for future dates. When the PMAs forecast a resource shortage they take a variety of operational and business steps to cover a potential shortage including entering into power purchase commitments. If appropriate, the PMAs will enter into long-term commitments to purchase power for future delivery. The PMAs record expenses associated with these purchases in the periods that power is received.

As directed by law, WAPA and BPA are required to establish rates sufficient to make cash distributions to the Treasury for the portion of BOR's original capital construction costs allocated to irrigation purposes, which were determined by the Secretary of the Interior to be beyond the ability of the irrigation customers to pay. These irrigation distributions do not specifically relate to power generation. In establishing power rates, particular statutory provisions guide the assumptions that WAPA and BPA make as to the amount and timing of such distributions. As a result, WAPA and BPA include a schedule of irrigation assistance costs in each respective power system's power repayment study to demonstrate repayment of principal within the allowable repayment period. These repayment amounts do not incur or accumulate interest from the date that BOR determines the irrigators' inability to pay. Future irrigation assistance payments are scheduled for BPA to total $235 million, and WAPA's payments are scheduled to total $780 million to the General Fund and $694 million to the Reclamation Fund.

Although these repayments will be recovered through power sales, they do not represent an operating cost of the individual power systems nor a liability on the consolidated balance sheets until the due date established by the Secretary of Interior.

The following table summarizes future purchase power and transmission commitments and irrigation assistance. The table includes firm purchase power agreements of known costs that are currently in place to assist in meeting expected future obligations under long-term power sales contracts. BPA has several power purchase agreements with wind-powered and other generating facilities that are not included in the table below as payments are based on the variable amount of future energy generated and as such no minimum payments required. The irrigation assistance table does not include WAPA's future irrigation assistance of $694 million due to the Reclamation fund since the Reclamation Fund is a component of WAPA and eliminated upon combination.

($ IN MILLIONS) FISCAL YEAR	PURCHASE POWER AND TRANSMISSION (ALL PMA'S)	IRRIGATION ASSISTANCE (BPA and WAPA)
2024	60	30
2025	53	98
2026	50	21
2027	5	6
2028	4	12
2029+	62	848
Total	**$ 234**	**$ 1,015**

INTEGRATED FISH AND WILDLIFE PROGRAM

The Northwest Power Act directs BPA to protect, mitigate and enhance fish and wildlife and their habitats to the extent they are affected by the Federal hydroelectric projects on the Columbia River and its tributaries from which BPA markets power. BPA makes expenditures and incurs other costs for fish and wildlife protection and mitigation that are consistent with the purposes of the Northwest Power Act and the Pacific Northwest Power and Conservation Council's Columbia River Basin Fish and Wildlife Program. In addition, certain fish and wildlife species that inhabit the Columbia River Basin are listed under the Endangered Species Act (ESA) as threatened or endangered. BPA makes expenditures and incurs other costs related to power purchases to comply with the ESA and implement certain biological opinions (BiOp) prepared by the National Oceanic and Atmospheric Administration Fisheries Service and the U.S. Fish and Wildlife Service in furtherance of the ESA (including results from the Columbia River System Operations (CRSO) Environmental Impact Statement). BPA's total commitment including timing of payments under the Northwest Power Act, ESA, and BiOp, including CRSO Environmental Impact Statement impacts, is not fixed or determinable.

As of September 30, 2023, BPA has long-term fish and wildlife agreements with estimated contractual commitments of $649 million, which are likely to result in future expenses or regulatory assets. These agreements will expire at various dates through FY 2027 and include the Columbia Basin Fish Accords extension agreements, which are described below.

BPA and its Federal partners, USACE and BOR, have signed extension agreements with current Accords partners, namely certain states and tribes, to extend the Columbia Basin Fish Accords through September 30, 2025. The Accords and associated BPA funding commitments facilitate implementation of projects that provide BPA with legal compliance actions under applicable laws, including the Northwest Power Act and ESA, and that benefit Columbia River Basin fish and wildlife. The extension agreements commit approximately $409 million for fish and wildlife protection and mitigation, which will result in future expenses or regulatory assets.

19. Dedicated Collections

	FY 2023						
($ IN MILLIONS)	NUCLEAR WASTE FUND	D&D FUND	PMAs	OTHER	TOTAL (COMBINED)	ELIMINATIONS	TOTAL (CONSOLIDATED)
BALANCE SHEET							
ASSETS							
Intragovernmental:							
Fund Balance with Treasury	$ 21	$ 100	$ 5,379	$ 1,057	$ 6,557	$ —	$ 6,557
Investments, net	47,689	1,105	1,598	—	50,392	—	50,392
Accounts receivable, net	—	—	247	—	247	(67)	180
Loans receivable, net	—	—	3,138	—	3,138	(3,138)	—
Advances and prepayments	—	1	3	—	4	(3)	1
Total intragovernmental assets	**$ 47,710**	**$ 1,206**	**$ 10,365**	**$ 1,057**	**$ 60,338**	**$ (3,208)**	**$ 57,130**
Cash	—	—	129	—	129	—	129
Accounts receivable, net	2,550	—	537	5	3,092	—	3,092
Loans receivable, net	—	—	1	—	1	—	1
Inventory, net	—	—	158	202	360	—	360
General property, plant, and equipment, net	—	9	11,516	480	12,005	—	12,005
Advances and prepayments	—	—	65	—	65	—	65
Other assets	—	—	12,384	—	12,384	—	12,384
Total Assets	**$ 50,260**	**$ 1,215**	**$ 35,155**	**$ 1,744**	**$ 88,374**	**$ (3,208)**	**$ 85,166**
LIABILITIES AND NET POSITION							
Intragovernmental:							
Accounts payable	$ —	$ —	$ 115	$ —	$ 115	$ (67)	$ 48
Debt	—	—	9,031	—	9,031	(3,138)	5,893
Advances from others and deferred revenue	—	—	5	—	5	(3)	2
Other intragovernmental liabilities	—	6	4,473	—	4,479	—	4,479
Total intragovernmental liabilities	**$ —**	**$ 6**	**$ 13,624**	**$ —**	**$ 13,630**	**$ (3,208)**	**$ 10,422**
Accounts payable	—	132	724	29	885	—	885
Federal debt and interest payable	—	—	5,130	—	5,130	—	5,130
Federal employee benefits payable	—	—	56	—	56	—	56
Environmental and disposal liabilities	—	25,769	34	—	25,803	—	25,803
Advances from others and deferred revenue	50,241	—	1,874	5	52,120	—	52,120
Other liabilities	—	19	4,438	54	4,511	—	4,511
Total liabilities	**$ 50,241**	**$ 25,926**	**$ 25,880**	**$ 88**	**$ 102,135**	**$ (3,208)**	**$ 98,927**
Unexpended appropriations	19	(3)	181	10	207	—	207
Cumulative results of operations	—	(24,708)	9,094	1,646	(13,968)	—	(13,968)
Total Liabilities and Net Position	**$ 50,260**	**$ 1,215**	**$ 35,155**	**$ 1,744**	**$ 88,374**	**$ (3,208)**	**$ 85,166**
STATEMENT OF NET COST							
Program costs	$ 15	$ 760	$ 6,114	$ 184	$ 7,073	$ (564)	$ 6,509
Less earned revenues	(12)	(636)	(6,232)	(1,590)	(8,470)	564	(7,906)
Net program costs	**$ 3**	**$ 124**	**$ (118)**	**$ (1,406)**	**$ (1,397)**	**$ —**	**$ (1,397)**
Costs not assigned	—	15	—	(2)	13	—	13
Net cost of operations	**$ 3**	**$ 139**	**$ (118)**	**$ (1,408)**	**$ (1,384)**	**$ —**	**$ (1,384)**
STATEMENT OF CHANGES IN NET POSITION							
Unexpended appropriations, beginning balance	$ 25	$ —	$ 166	$ 9	$ 200	$ —	$ 200
Appropriations received	—	—	520	7	527	—	527
Appropriations transferred - in/(out)	—	—	—	—	—	—	—
Other adjustments	—	—	(1)	1	—	—	—
Appropriations used	(6)	(3)	(504)	(7)	(520)	—	(520)
Unexpended appropriations, ending balance	**19**	**$ (3)**	**$ 181**	**$ 10**	**$ 207**	**$ —**	**$ 207**
Cumulative results of operations, beginning balance	$ —	$ (25,189)	$ 9,434	$ 2,753	$ (13,002)	$ —	$ (13,002)
Appropriations used	6	3	504	7	520	—	520
Intragovernmental non-exchange revenue	—	—	—	6	6	—	6
Transfers - (in)/out without reimbursement	(3)	617	(513)	(618)	(517)	—	(517)
Donations and forfeitures of property	—	—	19	—	19	—	19
Imputed financing	—	—	14	—	14	—	14
Other	—	—	(482)	(1,910)	(2,392)	—	(2,392)
Net cost of operations	(3)	(139)	118	1,408	1,384	—	1,384
Cumulative results of operations, ending balance	**$ —**	**$ (24,708)**	**$ 9,094**	**$ 1,646**	**$ (13,968)**	**$ —**	**$ (13,968)**
Net position, end of period	**$ 19**	**$ (24,711)**	**$ 9,275**	**$ 1,656**	**$ (13,761)**	**$ —**	**$ (13,761)**

Dedicated Collections (continued)

	FY 2022						
($ IN MILLIONS)	NUCLEAR WASTE FUND	D&D FUND	PMAs	OTHER	TOTAL (COMBINED)	ELIMINATIONS	TOTAL (CONSOLIDATED)
BALANCE SHEET							
ASSETS							
Intragovernmental:							
Fund Balance with Treasury	$ 26	$ 100	$ 4,939	$ 1,092	$ 6,157	$ —	$ 6,157
Investments, net	46,015	769	1,611	611	49,006	—	49,006
Accounts receivable, net	—	—	202	—	202	(16)	186
Loans receivable, net	—	—	2,988	—	2,988	(2,988)	—
Advances and prepayments	1	—	3	—	4	(3)	1
Total intragovernmental assets	**$ 46,042**	**$ 869**	**$ 9,743**	**$ 1,703**	**$ 58,357**	**$ (3,007)**	**$ 55,350**
Cash	—	—	128	—	128	—	128
Accounts receivable, net	2,436	—	702	672	3,810	—	3,810
Loans receivable, net	—	—	1	—	1	—	1
Inventory, net	—	—	143	183	326	—	326
General property, plant, and equipment, net	—	28	11,050	289	11,367	—	11,367
Advances and prepayments	—	—	46	—	46	—	46
Other assets	—	—	12,767	—	12,767	—	12,767
Total Assets	**$ 48,478**	**$ 897**	**$ 34,580**	**$ 2,847**	**$ 86,802**	**$ (3,007)**	**$ 83,795**
LIABILITIES AND NET POSITION							
Intragovernmental:							
Accounts payable	$ —	$ 1	$ 150	$ —	$ 151	$ (59)	$ 92
Debt	—	—	8,700	—	8,700	(2,945)	5,755
Advances from others and deferred revenue	—	—	6	—	6	(3)	3
Other intragovernmental liabilities	—	26	4,041	—	4,067	—	4,067
Total intragovernmental liabilities	**$ —**	**$ 27**	**$ 12,897**	**$ —**	**$ 12,924**	**$ (3,007)**	**$ 9,917**
Accounts payable	—	123	640	18	781	—	781
Debt	—	—	5,101	—	5,101	—	5,101
Federal employee benefits payable	1	—	56	—	57	—	57
Environmental and disposal liabilities	—	25,914	22	—	25,936	—	25,936
Advances from others and deferred revenue	48,452	—	1,601	13	50,066	—	50,066
Other liabilities	—	22	4,663	54	4,739	—	4,739
Total liabilities	**$ 48,453**	**$ 26,086**	**$ 24,980**	**$ 85**	**$ 99,604**	**$ (3,007)**	**$ 96,597**
Unexpended appropriations	25	—	166	9	200	—	200
Cumulative results of operations	—	(25,189)	9,434	2,753	(13,002)	—	(13,002)
Total Liabilities and Net Position	**$ 48,478**	**$ 897**	**$ 34,580**	**$ 2,847**	**$ 86,802**	**$ (3,007)**	**$ 83,795**
STATEMENT OF NET COST							
Program costs	$ 19	$ 916	$ 5,261	$ 196	$ 6,392	$ (371)	$ 6,021
Less earned revenues	(10)	(582)	(6,400)	(4,057)	(11,049)	371	(10,678)
Net program costs	**$ 9**	**$ 334**	**$ (1,139)**	**$ (3,861)**	**$ (4,657)**	**$ —**	**$ (4,657)**
Costs not assigned	—	(10)	1	(2)	(11)	(1)	(12)
Net cost of operations	**$ 9**	**$ 324**	**$ (1,138)**	**$ (3,863)**	**$ (4,668)**	**$ (1)**	**$ (4,669)**
STATEMENT OF CHANGES IN NET POSITION							
Unexpended appropriations, beginning balance	$ 17	$ —	$ —	$ 10	$ 27	$ —	$ 27
Appropriations received	21	—	500	6	527	—	527
Appropriations transferred - in/(out)	—	—	(1)	—	(1)	—	(1)
Other adjustments	—	—	3	(1)	2	—	2
Appropriations used	(13)	—	(336)	(6)	(355)	—	(355)
Unexpended appropriations, ending balance	**25**	**$ —**	**$ 166**	**$ 9**	**$ 200**	**$ —**	**$ 200**
Cumulative results of operations, beginning balance	$ —	$ (25,706)	$ 8,736	$ 2,966	$ (14,004)	$ —	$ (14,004)
Appropriations used	13	—	336	6	355	—	355
Non-exchange revenue	—	—	—	1	1	—	1
Transfers - (in)/out without reimbursement	(4)	841	(497)	(841)	(501)	—	(501)
Donations and forfeitures of property	—	—	16	—	16	—	16
Imputed financing	—	—	11	—	11	(1)	10
Other	—	—	(306)	(3,242)	(3,548)	—	(3,548)
Net cost of operations	(9)	(324)	1,138	3,863	4,668	1	4,669
Cumulative results of operations, ending balance	**$ —**	**$ (25,189)**	**$ 9,434**	**$ 2,753**	**$ (13,002)**	**$ —**	**$ (13,002)**
Net position, end of period	**$ 25**	**$ (25,189)**	**$ 9,600**	**$ 2,762**	**$ (12,802)**	**$ —**	**$ (12,802)**

NUCLEAR WASTE FUND

The NWPA requires the owners and generators of nuclear waste to pay their share of disposal costs into the NWF and, to that end, establishes a fee for electricity generated and sold by civilian nuclear power. A special fund within Treasury was created to account for the collection of those fees. Fees collected are invested in U.S. Treasury securities and any interest earned is available to pay expenditures related to radioactive waste disposal activities covered by the NWF. The NWPA requires preparation of annual financial statements. On December 29, 2022, the President signed into law the Consolidated Appropriations Act, 2023, which authorized $10.2 million for nuclear waste disposal activities. The funds were derived from the Nuclear Waste Fund.

DECONTAMINATION AND DECOMMISSIONING FUND

The Energy Policy Act of 1992 established the D&D Fund to pay for the costs of decontamination and decommissioning of gaseous diffusion facilities through collection of revenues derived from domestic utility assessments and government appropriations. As part of that Act, funds in excess of current needs are invested in U.S. Treasury securities and the interest earned is available to pay the costs of the environmental remediation. On December 29, 2022, the President signed into law the Consolidated Appropriations Act, 2023, which authorized the EM Program to spend $879 million in D&D activities. The law required the transfer of funds into the D&D account, of which $586 million was transferred from the Defense Environmental Cleanup account. The remaining USEC funding has been transferred to the D&D fund based on language in the Consolidated Appropriations Act, 2023.

POWER MARKETING ADMINISTRATIONS

The PMAs have been funded primarily from four sources. These have included contract authority, borrowing authority, direct receipts generated from the sale of power and transmission services, and annual appropriations. SEPA and SWPA receive an annual appropriation from Treasury's General Fund. WAPA receives an annual appropriation from a receipt fund within the Reclamation Fund. WAPA received a $500 million appropriation in FY 2022 from the General Fund related to the Infrastructure Investment and Jobs Act and received a $520 million appropriation in FY 2023 from the General Fund related to the Disaster Relief Supplemental Appropriations Act 2023. These appropriated funds are repaid to Treasury's General Fund and the Reclamation Fund from the revenues generated from power sales.

20. Program Costs and Earned Revenues by Major Program

($ IN MILLIONS)	FY 2023	FY 2022
Nuclear Security and NNSA		
Program Costs	$ 16,644	$ 14,653
Earned Revenues	(21)	(14)
Changes to environmental cleanup and disposal liability estimates	1,168	2,790
Net Cost of Nuclear Security and NNSA	**$ 17,791**	**$ 17,429**
Science		
Program Costs	$ 13,616	$ 12,270
Earned Revenues	(128)	(96)
Changes to environmental cleanup and disposal liability estimates	20,981	8,375
Net Cost of Science	**$ 34,469**	**$ 20,549**
Energy		
Program Costs	$ 14,128	$ 15,115
Earned Revenues	(11,695)	(22,648)
Changes to environmental cleanup and disposal liability estimates	743	278
Net Cost of Energy	**$ 3,176**	**$ (7,255)**
Net Cost of Major Programs	**$ 55,436**	**$ 30,723**
Other Programs		
Reimbursable programs		
Program Costs	$ 5,934	$ 5,422
Earned Revenues	(6,068)	(5,430)
Net Cost of Reimbursable Programs	**$ (134)**	**$ (8)**
Other Programs		
Program Costs	$ 2,837	$ 2,599
Earned Revenues	(514)	(467)
Net Cost of Other Programs	**$ 2,323**	**$ 2,132**
Costs applied to reduction of legacy environmental liabilities (Note 13)	$ (7,075)	$ (6,436)
Costs not assigned to programs (Note 21)	$ 23,329	$ 721
Net Cost of Operations	**$ 73,879**	**$ 27,132**

MAJOR PROGRAMS

Nuclear Security and NNSA

The general program costs and revenues related to Nuclear Security and NNSA allow the Department to strengthen national security by maintaining a safe, secure, and effective nuclear weapons stockpile that will deter any adversary and guarantee the defense of the Nation and its allies; managing the research, development, and production activities and associated infrastructure needed to meet national nuclear security requirements; accelerating and expanding efforts to reduce the global threat posed by nuclear weapons, nuclear proliferation and unsecured or excess nuclear materials; and providing safe and effective nuclear propulsion for the U.S. Navy.

For the Department's environmental cleanup and disposal liability cost estimates attributable to the Nuclear Security and NNSA program, the change between FY 2023 and FY 2022 is due to inflation adjustments to reflect constant dollars for the current year; updated estimates for the same scope of work, including changes resulting from deferral or acceleration of work; and revisions in technical approach or scope, including additional contamination (see Note 13).

Science

The general program costs and revenues related to Science enable the Department to lead the world in research in the physical, chemical, biological, and computational sciences; contribute fundamental scientific discoveries and technological solutions that support American pre-eminence in science and innovation; and lead the national effort to maintain primacy in high-performance computing.

For the Department's environmental cleanup and disposal liability cost estimates attributable to the Science program, the change between FY 2023 and FY 2022 resulted from improved and updated estimates for the same scope of work, including changes resulting from deferral or acceleration of work; revisions in technical approach or scope, including additional contamination; updated estimates of projected waste volumes; changes in the

Department's allocable percentage share of future costs; legal and regulatory changes; and cleanup activities performed (see Note 13).

Energy

The general program costs and revenues related to Energy allow the Department to lead the Nation in cutting-edge research and development of an extensive range of energy technologies and identify and promote transformational technological advances to increase energy affordability and efficiency. The Energy program also enables the Department to lead national efforts to develop technologies to modernize the electric grid to improve its reliability and resilience; enhance the security, reliability, and resilience of energy infrastructure; improve domestic fossil energy production and use; and expedite recovery from energy supply disruptions.

The earned revenues within the Energy program are primarily made up of revenues from the sale of oil at the SPR. On March 31, 2022, the President authorized a release of 180 million barrels of SPR crude oil (see Note 7). This action was taken to address the significant market supply disruption caused by Putin's war on Ukraine. The final 72 million barrels of the 180 million authorized for this sale were sold in the first quarter of FY 2023.

Additionally, in FY 2023, the SPR conducted a Mandatory Oil Sale due to the Bipartisan Budget Act of 2015 (P.L. 114-74, Section 403) authorizing the sale of 10 million barrels of SPR crude oil for FY2023 and the Fixing America's Surface Transportation Act of 2015 (P.L. 114-74, Section 32204) authorizing the sale of 16 million barrels of SPR crude oil. The amount of barrels authorized for sale in FY 2023 substantially decreased from the amount of oil authorized and sold in FY 2022.

For the Department's environmental cleanup and disposal liability cost estimates attributable to the Energy program, the change between FY 2023 and FY 2022 resulted from improved and updated estimates for the same scope of work, including changes resulting from deferral or acceleration of work; revisions in technical approach or scope, including additional contamination; updated estimates of projected waste volumes; changes in the Department's allocable percentage share of future costs; legal and regulatory changes; and cleanup activities performed (see Note 13).

OTHER PROGRAMS

Reimbursable Programs

The Department performs work for, and provides services to, other Federal agencies and private companies on a reimbursable work basis and a cooperative work basis.

For research and other activities, including the provision of materials and services for the benefit of non-DOE entities, the Department's general pricing policy is to charge full cost as defined in section 3137 of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, 42 U.S.C. § 7259a. The general pricing policy does not apply when prices or charges are otherwise established or prohibited by statute or regulation, and in some cases the full cost information provided by the Department in accordance with SFFAS 4, *Managerial Cost Accounting Concepts and Standards for the Federal Government*, may exceed revenues.

Other Programs

The Department's other programs allow the agency to employ effective management and refine operational and support capabilities to support Departmental missions. Costs included in the Other Programs line support the activities reported in all of the Department's major programs.

Costs Applied to Reduction of Legacy Environmental Liabilities

The costs applied to reduction of legacy environmental liabilities are current year operating expenditures for the remediation of contaminated facilities and wastes generated from past operations. These amounts are excluded from the current year environmental liabilities estimate since the expenses have been accrued.

21. Costs Not Assigned to Programs

($ IN MILLIONS)	FY 2023	FY 2022
Spent nuclear fuel contingency (Note 18)		
Judgment Fund payments	$ 540	$ 1,043
Change in estimate	3,121	147
Current year spent nuclear fuel contingency costs	**$ 3,661**	**$ 1,190**
Changes in contractor pension and PRB estimates	(2,039)	(7,209)
Change in unfunded safety and health liabilities (Note 14)	231	(340)
Change in occupational illness program	21,690	7,071
Other	(214)	9
Total Costs Not Assigned to Programs (Note 20)	**$ 23,329**	**$ 721**

CHANGES IN CONTRACTOR PENSION AND PRB ESTIMATES

The changes in contractor pension and PRB estimates are comprised of all the components of contractor pension and PRB net periodic costs except for service costs [i.e., interest costs; expected return on plan assets; (gain)/loss due to curtailments, settlements, or special termination benefits; net prior service cost/(credit); and net (gain)/loss including impacts of changes in actuarial assumptions]. Service costs are not included since they are recorded by program (see Notes 16 and 22).

COMPENSATION PROGRAM FOR OCCUPATIONAL ILLNESSES

The Energy Employees Occupational Illness Compensation Program Act (EEOICPA) authorized compensation for certain illnesses suffered by employees of the Department, its predecessor agencies, and contractors who performed work for the nuclear weapons program (see Note 22). EEOICPA covers illnesses associated with exposure to radiation, beryllium, or silica. In general, each eligible employee and survivors of deceased employees will receive compensation for the disability or death of that employee in the amount of $150,000 plus the costs of medical care.

The National Defense Authorization Act of 2005 amended the EEOICPA to grant workers' compensation benefits to covered employees and their families for illness and death arising from exposure to toxic substances at the Department's facilities. The amendment also makes it possible for uranium workers, as defined under Section 5 of the Radiation Exposure Compensation Act, to receive compensation for illnesses due to toxic substance exposure at a uranium mine or mill covered under that Act.

As of September 30, 2005, the law makes payments under these programs the responsibility of the DOL. Therefore, the liability is recorded by the DOL and changes in the total liability are recognized by the Department as an imputed cost and an imputed financing source.

The increase in FY 2023 is primarily due to an increase in the year-end discounted liability estimate for future EEOICPA benefit payments. This increase was largely driven by the increase in the estimated number of future Part E initial awards and the increase in home health care costs as well as a continued rise of new cases and expansion of benefits due to increase in acceptances of consequential conditions in existing cases.

22. Inter-Entity Costs

Goods and services are received from other Federal entities at no cost or at a cost less than the full cost to the providing Federal entity. Consistent with accounting standards, certain costs of the providing entity that are not fully reimbursed by the Department are recognized as imputed cost in the *Statement of Net Cost* and are offset by imputed financing in the *Statement of Changes in Net Position*. Such imputed costs and financing relate to EEOICPA payments by the Department of Labor (see Note 21), Treasury borrowing costs during construction of WAPA plant assets recoverable by the Bureau of Reclamation, employee benefits, and claims paid by the Treasury Judgment Fund (see Note 21). Unreimbursed costs of goods and services other than those identified above are not included in our financial statements.

23. Combined Statements of Budgetary Resources

The *Statements of Budgetary Resources* are presented on a combined, rather than a consolidated, basis in accordance with OMB guidance.

Net Adjustments to Unobligated Balance, Brought Forward, October 1:

($ IN MILLIONS)	FY 2023	FY 2022
Unobligated balance brought forward, Oct 1	$ 72,672	$ 8,946
Unobligated balance transferred to other accounts	(9)	(3)
Unobligated balance transferred from other accounts	18	23
Recoveries of prior year unpaid obligations	816	730
Unobligated balances applied to repay debt	(214)	(215)
Other balances withdrawn to Treasury	(8)	(21)
Recoveries of prior year paid obligations	5	17
Total Adjusted Unobligated Balance Brought Forward	**$ 73,280**	**$ 9,477**

BORROWING AUTHORITY

The Department's borrowing authority reflected in the *Combined Statements of Budgetary Resources* represents the amount of borrowing authority for the current FY's obligations, which may or may not have been converted to cash. The amount of borrowing authority available as of September 30, 2023 for the Department's loan program is $15.5 billion, WAPA is $3.2 billion, and BPA is $7.9 billion. The amounts available are authority that has not been converted to cash.

CONTRACT AUTHORITY

Congress intended BPA to operate in a businesslike manner and to carry out its mission free from the uncertainty inherent in the annual appropriations process. Therefore, Congress permitted BPA to enter into (multiyear) contracts (including when BPA received annual appropriations). The Bonneville Project Act provides the following authority:

832a(f) - "*Subject only to the provisions of this chapter, the Administrator is authorized to enter into such contracts, agreements and arrangements, including the amendment, modification, adjustment, or (cancellation) thereof and the compromise or final settlement of any claim arising thereunder, and to make such expenditures, upon, such terms and conditions and in such manner as he may deem necessary.*"

The amount of contract authority reflected as available in the *Combined Statements of Budgetary Resources* has increased from $1.3 billion as of September 30, 2022 to $1.9 billion as of September 30, 2023.

Undelivered Orders at the End of the Period:

($ IN MILLIONS)	FY 2023		FY 2022	
	Federal	Non-Federal	Federal	Non-Federal
Undelivered orders - unpaid	$ 5,155	$ 60,459	$ 2,523	$ 41,583
Undelivered orders - paid	116	536	5	429
Total Undelivered Orders	**$ 5,271**	**$ 60,995**	**$ 2,528**	**$ 42,012**

Permanent Indefinite Appropriations:

($ IN MILLIONS)	FY 2023	FY 2022
Definite appropriations	$ 50,151	$ 98,328
Permanent indefinite mandatory appropriations	—	22
Total Appropriations	**$ 50,151**	**$ 98,350**

The Department is authorized to use indefinite appropriations per the FCRA. These amounts are used to fund upward re-estimates on the FCRA loans. Permanent indefinite mandatory appropriations are appropriations that are available until expended. The permanent indefinite mandatory appropriations are attributable to the Title 17 Innovative Technology Loan Guarantee Program and the Advanced Technology Vehicles Manufacturing Loan Program.

Legal Arrangements Affecting the Use of Unobligated Balances:

($ IN MILLIONS)	FY 2023	FY 2022
Loan funds reserved for future defaults	$ 1,216	$ 944
Unapportioned amounts	633	34,423
Expired authority	120	90
Total Unobligated Balances Not Available	**$ 1,969**	**$ 35,457**

Explanation of Differences Between the SBR and the Budget of the U.S. Government:

($ IN MILLIONS)	BUDGETARY RESOURCES	NEW OBLIGATIONS AND UPWARD ADJUSTMENTS (TOTAL)	DISTRIBUTED OFFSETTING RECEIPTS	NET OUTLAYS
Combined Statements of Budgetary Resources as published	$ 134,850	$ 62,178	$ (6,521)	$ 28,130
OMB adjustments made to exclude:				
U.S. Enrichment Corporation Fund	—	—	—	17
Expired accounts	(90)	—	—	—
Other	1	—	3	(1)
Budget of the United States Government	**$ 134,761**	**$ 62,178**	**$ (6,518)**	**$ 28,146**

The FY 2022 *Combined Statements of Budgetary Resources* are reconciled to the President's Budget that was published in April 2023. Budgetary resources, new obligations and upward adjustments, and net outlays are reconciled to the Departmental balances as published in the Appendix to the Budget; distributed offsetting receipts is reconciled to the Departmental balances in the Federal

Budget by Agency and Account section of the Analytical Perspectives Volume of the President's Budget.

U.S. Enrichment Corporation Fund is reported in the SBR but is reported in the President's Budget outside DOE.

Unobligated balances in expired accounts are reported in the SBR but are not included in the President's Budget. The FY 2023 SBR will be reconciled to the President's Budget in the FY 2024 AFR.

24. Custodial Activities

POWER MARKETING ADMINISTRATIONS

The SEPA, SWPA, and WAPA are responsible for collecting and remitting to Treasury, Army Corps, and the DOI revenues attributable to the hydroelectric power projects owned and operated by the DoD, USACE; DOI, BOR; and the State, IBWC. These revenues are reported as custodial activities of the Department.

FEDERAL ENERGY REGULATORY COMMISSION

FERC is responsible for billing regulated companies annual charges as a custodian for certain Federal agencies. These include: (1) the USACE for licensees to provide maintenance and operations of dams owned by the U.S. and maintenance for operations of headwater or other navigable waters owned by the U.S.; (2) the BOR for the occupancy and use of public lands and national parks owned by the U.S. and for Indian Tribal Trust Funds from licensees for the reservation of Indian land; (3) Treasury for revenues collected based on penalties, interest, and administrative charges for overdue accounts receivables and for civil penalties; and (4) payments to states collected from licensees for the occupancy and use of national forests and public lands from development within the boundaries of any state.

25. Reconciliation of Net Cost to Net Outlays

($ IN MILLIONS)	FY 2023			FY 2022		
	Intra-governmental	Other than Intra-governmental	Total	Intra-governmental	Other than Intra-governmental	Total
Net Cost	**$ 17,129**	**$ 56,750**	**$ 73,879**	**$ 3,507**	**$ 23,625**	**$ 27,132**
Components of Net Operating Cost Not Part of the Budgetary Outlays						
Property, plant, and equipment depreciation	$ —	$ (2,105)	$ (2,105)	$ —	$ (1,998)	$ (1,998)
Property, plant, and equipment disposal & reevaluation	—	(954)	(954)	—	(942)	(942)
Cost of goods sold	—	(2,367)	(2,367)	—	(4,996)	(4,996)
Cost capitalization offset	—	379	379	—	293	293
Year-end credit reform subsidy re-estimates	274	—	274	274	—	274
President's adjustment to re-estimates	31	—	31	15	—	15
Gains/losses on all other investments	—	(3)	(3)	—	(4)	(4)
Other	—	(219)	(219)	—	265	265
Net cost for non-budgetary credit reform financing accounts	—		—	—	—	—
Increase/(decrease) in assets:						
Cash	$ —	$ 1	$ 1	$ —	$ (44)	$ (44)
Accounts receivable	32	(2,102)	(2,070)	303	2,267	2,570
Investments	40	—	40	(30)	—	(30)
Advances and prepayments	113	183	296	(8)	50	42
Other assets	—	(379)	(379)	—	(597)	(597)
(Increase)/decrease in liabilities:						
Accounts payable	$ 5	$ (1,127)	$ (1,122)	$ (3)	$ (264)	$ (267)
Loan guarantee liability (Non-FCRA)	235	—	235	5	—	5
Environmental and disposal liabilities	—	(14,653)	(14,653)	—	(4,015)	(4,015)
Federal employee and veteran benefits payable	—	132	132	—	(142)	(142)
Federal debt and interest payable	—	(29)	(29)	—	(19)	(19)
Advances from others and deferred revenue	(1,286)	(385)	(1,671)	15	(155)	(140)
Other liabilities	146	(878)	(732)	(78)	7,992	7,914
Financing sources:						
Imputed cost	$ (22,408)	$ —	$ (22,408)	$ (8,230)	$ —	$ (8,230)
Other	(115)	—	(115)	(245)	—	(245)
Total Components of Net Operating Cost Not Part of Budget Outlays	**$ (22,933)**	**$ (24,506)**	**$ (47,439)**	**$ (7,982)**	**$ (2,309)**	**$ (10,291)**
Components of the Budget Outlays Not Part of Net Operating Cost						
Acquisition of capital assets	$ 10	$ 7,969	$ 7,979	$ 61	$ 6,328	$ 6,389
Acquisition of inventory	—	2,049	2,049	—	1,330	1,330
Effect of prior year agencies credit reform subsidy re-estimate	(305)	—	(305)	(383)	—	(383)
Other	(1,695)	(114)	(1,809)	(1,728)	(17)	(1,745)
Financing sources:						
Donated revenue	$ —	$ (11)	$ (11)	$ —	$ (21)	$ (21)
Transfers out (in) without reimbursement	251	—	251	229	—	229
Total Components of the Budget outlays Not Part of Net Operating Cost	**$ (1,739)**	**$ 9,893**	**$ 8,154**	**$ (1,821)**	**$ 7,620**	**$ 5,799**
Miscellaneous Items:						
Custodial/Non-exchange revenue	$ (6)	$ (181)	$ (187)	$ (1)	$ (207)	$ (208)
Non-Entity activity	6	—	6	(87)	—	(87)
Other adjustments	—		—	78		78
Total Other Reconciling Items	**$ —**	**$ (181)**	**$ (181)**	**$ (10)**	**$ (207)**	**$ (217)**
Total Net Outlays (Calculated Total)	**$ (7,543)**	**$ 41,956**	**$ 34,413**	**$ (6,306)**	**$ 28,729**	**$ 22,423**
Related Amounts on the Statement of Budgetary Resources:						
Outlays, net (Total)			$ 39,288			$ 28,944
Distributed offsetting receipts			(4,875)			(6,521)
Agency Outlays, Net			**$ 34,413**			**$ 22,423**

This reconciliation explains the relationship between the entity's net outlays on a budgetary basis and the net cost of operations during the reporting period. It serves not only to identify costs paid for in the past, and those that will be paid for in the future, but also to assure integrity between budgetary and financial accounting. According to OMB Circular A-136, FCRA financing fund activity is excluded from this reconciliation.

The table illustrates the key reconciling items between net operating cost and net outlays which includes three sections. (1) The components of net cost not part of budgetary outlays includes proprietary accounts that do not result in net outlays during the current fiscal year. This includes items such as depreciation, cost of goods sold, credit reform items, changes to certain assets and liabilities, and imputed financing. (2) The components of the budget outlays that are not part of net operating cost accounts for budgetary outlays that do not result in proprietary costs for the current fiscal year. This includes acquisition of capitalized assets, and inventory, both of which have disbursements without associated costs, as well as the effect of prior year agencies credit reform subsidy re-estimates and transfers. (3) The miscellaneous items section includes the custodial/non-exchange revenue, non-entity activity.

26. Reclassification of Financial Statement Line Items for Financial Report Compilation Process

($ IN MILLIONS)						
FY 2023 Statement of Net Cost	**FY 2023**	**FY 2023 Reclassified**				**Line Items Used to Prepare FY 2023 Government-wide Statement of Net Cost**
Financial Statement Line	**Amounts**	**Dedicated Collections Combined**	**Dedicated Collections Eliminations**	**All Other Amounts (with Eliminations)**	**Total**	**Reclassified Financial Statement Line**
Gross Costs (Note 20)	$ 92,305	$ 6,073	$ —	$ 61,581	$ 67,654	Non-Federal Gross Cost
						Intragovernmental Costs
		$ 56	$ —	$ 489	$ 545	Benefit Program Costs
		14	—	22,394	22,408	Imputed Costs
		593	(458)	787	922	Buy/Sell Costs
		1		8	9	Purchase of Assets
		348	(106)	423	665	Borrowing and Other Interest Expense
		1	—	—	1	Borrowing Losses
		—	—	110	110	Other Expenses (w/o Reciprocals)
		$ 1,013	**$ (564)**	**$ 24,211**	**$ 24,660**	**Total Intragovernmental Costs**
Total Gross Costs	**$ 92,305**	**$ 7,086**	**$ (564)**	**$ 85,792**	**$ 92,314**	**Total Reclassified Gross Costs**
Earned Revenue (Note 20)	$ 18,426	$ 5,757	**$ —**	$ 5,537	$ 11,294	Non-Federal Earned Revenue
						Intragovernmental Revenue
		$ 796	$ (458)	$ 4,951	$ 5,289	Buy/Sell Revenue
		1		8	9	Purchase of Asset Offset
		1,804		—	1,804	Federal Securities Interest Revenue Including Associated Gains/Losses (Exchange)
		106	(106)	33	33	Borrowing and Other Interest Revenue
		6			6	Borrowing Gains
		$ 2,713	**$ (564)**	**$ 4,992**	**$ 7,141**	**Total Intragovernmental Revenues**
Total Earned Revenue	**$ 18,426**	**$ 8,470**	**$ (564)**	**$ 10,529**	**$ 18,435**	**Total Reclassified Earned Revenue**
Net Cost	**$ 73,879**	**$ (1,384)**	**$ —**	**$ 75,263**	**$ 73,879**	
Exchange Statement of Custodial Activity						
Exchange Custodial Collections from the SCA		$ 259		$ 109	$ 368	Non-Federal Earned Revenue
Total Exchange Custodial Collections		**$ 259**		**$ 109**	**$ 368**	***Total Reclassified Exchange Custodial Collections***
		$ 223	$ —	$ 95	$ 318	Custodial Collections Transferred to a TAS Other Than the General Fund - Exchange
		(6)	—	4	(2)	Accrual of Custodial Collections Yet to be Transferred to a TAS Other Than the General Fund - Exchange
Total Disposition of Exchange Custodial Collections		**$ 217**	$ —	**$ 99**	**$ 316**	***Total Reclassified Disposition of Custodial Collections***
		$ 42	**$ —**	**$ 10**	**$ 52**	**Net Custodial Activity**
		$ (1,426)	**$ —**	**$ 75,253**	**$ 73,827**	**Total Reclassified Net Cost**

($ IN MILLIONS)						
FY 2023 Statement of Changes in Net Position	**FY 2023**	**FY 2023 Reclassified**				**Line Items Used to Prepare FY 2023 Government-wide Statements of Changes in Net Position**
Financial Statement Line	**Amounts**	**Dedicated Collections Combined**	**Dedicated Collections Eliminations**	**All Other Amounts (with Eliminations)**	**Total**	**Reclassified Financial Statement Line**
UNEXPENDED APPROPRIATIONS						**UNEXPENDED APPROPRIATIONS**
Beginning Balances	$ 93,077	$ 200	$ —	$ 92,877	$ 93,077	Net Position, Beginning of Period
Appropriations Received (Note 23)	62,358	527	—	61,831	62,358	Appropriations Received as Adjusted
Appropriations Transferred In/(Out)	13	—	—	13	13	Non-Expenditure Transfers-In of Unexpended Appropriations and Financing Sources
Other Adjustments	(12,604)	—	—	(12,604)	(12,604)	Appropriations Received as Adjusted
Appropriations Used	(46,734)	(520)	—	(46,214)	(46,734)	Appropriations Used
Total Unexpended Appropriations	**$ 96,110**	**$ 207**	**$ —**	**$ 95,903**	**$ 96,110**	**Total Unexpended Appropriations**
CUMULATIVE RESULTS OF OPERATIONS						**CUMULATIVE RESULTS OF OPERATIONS**
Beginning Balances	$ (461,715)	$ (13,002)	$ —	$ (448,713)	$ (461,715)	Net Position, Beginning of Period
Appropriations Used	46,734	520	—	46,214	46,734	Appropriations Expended
Non-Exchange Revenues	7	6	—	—	6	Federal Securities Interest Revenue Including Associated Gains/Losses (Non-Exchange)
Donations and Forfeitures of Property	30	19	—	11	30	Other Taxes and Receipts
Transfers - In/(Out) Without Reimbursement	$ (519)	$ (107)	$ —	$ —	$ (107)	Appropriation of Unavailable Special/Trust Fund Receipts Transfers-Out
		4			$ 4	Non-expenditure transfers-in of unexpended appropriations and financing sources
		(8)	—	—	(8)	Non-Expenditure Transfers-Out of Unexpended Appropriations and Financing Sources
		(247)	—	—	(247)	Expenditure Transfers-Out of Financing Sources
		4	—	40	44	Transfers-In w/o Reimbursement
		(163)	—	(42)	(205)	Transfers-Out w/o Reimbursement
Total Transfers In/Out w/o Reimbursement- Other	$ (519)	$ (517)	$ —	$ (2)	$ (519)	
Other	$ (2,746)	$ (1,958)	$ —	$ (363)	$ (2,321)	Non-entity Collections Transferred to the General Fund
		83			83	Other Financing Sources with Budgetary Impact
		(538)		9	$ (529)	Other non-budgetary financing sources for debt accruals/amortization
		21	—		21	Other Non-Budgetary Financing Sources
Total Other	$ (2,746)	$ (2,392)	$ —	$ (354)	$ (2,746)	
Donations and Forfeitures of Cash	11	—	—	12	12	Other Taxes and Receipts
Imputed Financing	22,408	14	—	22,394	22,408	Imputed Financing Sources
Total Donations, Transfers, Other and Imputed Financing	$ 19,184	$ (2,876)	$ —	$ 22,061	$ 19,185	
Net Cost of Operations	$ (73,879)	$ 1,384	$ —	$ (75,263)	$ (73,879)	
Total Cumulative Results of Operations	**$ (469,669)**	**$ (13,968)**	**$ —**	**$ (455,701)**	**$ (469,669)**	**Cumulative Results of Operations**
Net Position	**$ (373,559)**	**$ (13,761)**	**$ —**	**$ (359,798)**	**$ (373,559)**	**Net Position**
					$ 52	Net Custodial Activity Reclassified from Net Cost
Non-Exchange Custodial Collections from the SCA		$ 151	$ —	$ 27	$ 179	Other Taxes and Receipts
Disposition of Non-Exchange Custodial Collections from the SCA		(20)	—	—	(20)	Collections Transferred to a TAS Other Than the General Fund
		(184)	—	(39)	(223)	Non-entity Collections Transferred to the General Fund
		10	—	2	12	Accrual for Non-entity Amounts to be Collected and Transferred to the General Fund
		$ (43)		**$ (10)**	**$ (231)**	**Total Reclassified Disposition of Non-Exchange Custodial Collections**
					$ (52)	**Net Custodial Activity**
					$ (373,559)	**Total Reclassified Net Position**

To prepare the Financial Report of the U.S. Government (Financial Report), the Department of the Treasury requires agencies to submit an adjusted trial balance, which is a listing of amounts by U.S. Standard General Ledger account that appear in the financial statements. Treasury uses the trial balance information reported in the Government-wide Treasury Account Symbol Adjusted Trial Balance System (GTAS) to develop a Reclassified Statement of Net Cost and a Reclassified Statement of Changes in Net Position for each agency, which are accessed using GTAS. Treasury eliminates all intragovernmental balances from the reclassified statements and aggregates lines with the same title to develop the Financial Report statements. This note shows the Department's financial statements and the Department's reclassified statements prior to elimination of intragovernmental balances and prior to aggregation of repeated Financial Report line items. A copy of the 2022 Financial Report can be found on the Bureau of the Fiscal Service's website and a copy of the 2023 Financial Report will be posted to Department's website as soon as it is released.

The term "intragovernmental" is used in this note to refer to amounts that result from other components of the Federal Government.

The term "non-Federal" is used in this note to refer to Federal Government amounts that result from transactions with non-Federal entities. These include transactions with individuals, businesses, non-profit entities, and State, local, and foreign governments.

Consolidating and Combining Schedules

U.S. Department of Energy Consolidating Schedules - Balance Sheets

As of September 30, 2023 and 2022

(See independent auditors' report)

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	ELIMINATIONS	CONSOLIDATED
	FY 2023				
ASSETS:					
Intragovernmental Assets:					
Fund Balance with Treasury	$ 295	$ 5,386	$ 123,620	$ —	$ 129,301
Investments, Net	—	1,598	48,795	—	50,393
Accounts Receivable, Net	—	180	902	(403)	679
Advances and Prepayments	—	—	230	(113)	117
Other Assets	—	—	10	(10)	—
Total Intragovernmental Assets	**$ 295**	**$ 7,164**	**$ 173,557**	**$ (526)**	**$ 180,490**
Other than Intragovernmental:					
Cash	$ —	$ 129	$ —	$ —	$ 129
Accounts Receivable, Net	9	545	2,635	—	3,189
Loans Receivable, Net	—	1	16,763	—	16,764
Inventory, Net	—	158	44,294	—	44,452
General Property, Plant, and Equipment, Net	59	11,516	40,516	—	52,091
Advances and Prepayments	—	65	749	—	814
Other Assets	—	12,384	977	—	13,361
Total Other than Intragovernmental	**$ 68**	**$ 24,798**	**$ 105,934**	**$ —**	**$ 130,800**
Total Assets	**$ 363**	**$ 31,962**	**$ 279,491**	**$ (526)**	**$ 311,290**
LIABILITIES:					
Intragovernmental Liabilities:					
Accounts Payable	$ 3	$ 48	$ 191	$ (113)	$ 129
Debt	—	5,893	17,091	—	22,984
Advances from Others and Deferred Revenue	—	2	1,613	(113)	1,502
Other Liabilities	5	4,486	1,191	(300)	5,382
Total Intragovernmental Liabilities	**$ 8**	**$ 10,429**	**$ 20,086**	**$ (526)**	**$ 29,997**
Other than Intragovernmental:					
Accounts Payable	$ 22	$ 724	$ 5,455	$ —	$ 6,201
Federal Debt and Interest Payable	—	5,130	—	—	5,130
Federal Employee Benefits Payable	26	56	210	—	292
Environmental and Disposal Liabilities	—	34	534,280	—	534,314
Loan Guarantee Liabilities	—	—	79	—	79
Advances from Others and Deferred Revenue	—	1,874	50,967	—	52,841
Other Liabilities	21	4,440	51,534	—	55,995
Total Liabilities Other than Intragovernmental	**$ 69**	**$ 12,258**	**$ 642,525**	**$ —**	**$ 654,852**
Total Liabilities	**$ 77**	**$ 22,687**	**$ 662,611**	**$ (526)**	**$ 684,849**
NET POSITION:					
Unexpended Appropriations - Funds from Dedicated Collections	$ —	$ 181	$ 26	$ —	$ 207
Unexpended Appropriations - Funds from Other than Dedicated Collections	99	—	95,804	—	95,903
Total Unexpended Appropriations (Consolidated)	$ 99	$ 181	$ 95,830	$ —	$ 96,110
Cumulative Results of Operations - Funds from Dedicated Collections	—	9,094	(23,062)	—	(13,968)
Cumulative Results of Operations - Funds from Other than Dedicated Collections	187	—	(455,888)	—	(455,701)
Total Cumulative Results (Consolidated)	**$ 187**	**$ 9,094**	**$ (478,950)**	**$ —**	**$ (469,669)**
Total Net Position	**$ 286**	**$ 9,275**	**$ (383,120)**	**$ —**	**$ (373,559)**
Total Liabilities and Net Position	**$ 363**	**$ 31,962**	**$ 279,491**	**$ (526)**	**$ 311,290**

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	ELIMINATIONS	CONSOLIDATED
	FY 2022				
ASSETS:					
Intragovernmental Assets:					
Fund Balance with Treasury	$ 279	$ 4,939	$ 112,447	$ —	$ 117,665
Investments, Net	—	1,611	47,394	—	49,005
Accounts Receivable, Net	—	186	822	(380)	628
Advances and Prepayments	—	—	106	(102)	4
Other Assets	—	—	—	—	—
Total Intragovernmental Assets	**$ 279**	**$ 6,736**	**$ 160,799**	**$ (512)**	**$ 167,302**
Other than Intragovernmental:					
Cash	$ —	$ 128	$ —	$ —	$ 128
Accounts Receivable, Net	19	711	4,562	—	5,292
Loans Receivable, Net	—	1	15,444	—	15,445
Inventory, Net	—	143	44,869	—	45,012
General Property, Plant, and Equipment, Net	48	11,050	35,673	—	46,771
Advances and Prepayments	—	46	584	—	630
Other Assets	—	12,767	950	—	13,717
Total Other than Intragovernmental	**$ 67**	**$ 24,846**	**$ 102,082**	**$ —**	**$ 126,995**
Total Assets	**$ 346**	**$ 31,582**	**$ 262,881**	**$ (512)**	**$ 294,297**
LIABILITIES:					
Intragovernmental Liabilities:					
Accounts Payable	$ —	$ 91	$ 221	$ (134)	$ 178
Debt	—	5,755	15,907	—	21,662
Advances from Others and Deferred Revenue	—	3	315	(102)	216
Other Liabilities	6	4,050	1,185	(276)	4,965
Total Intragovernmental Liabilities	**$ 6**	**$ 9,899**	**$ 17,628**	**$ (512)**	**$ 27,021**
Other than Intragovernmental:					
Accounts Payable	$ 23	$ 640	$ 4,412	$ —	$ 5,075
Federal Debt and Interest Payable	—	5,101	—	—	5,101
Federal Employee Benefits Payable	25	56	343	—	424
Environmental and Disposal Liabilities	—	22	519,638	—	519,660
Loan Guarantee Liabilities	—	—	89	—	89
Advances from Others and Deferred Revenue	—	1,601	49,058	—	50,659
Other Liabilities	35	4,663	50,208	—	54,906
Total Liabilities Other than Intragovernmental	**$ 83**	**$ 12,083**	**$ 623,748**	**$ —**	**$ 635,914**
Total Liabilities	**$ 89**	**$ 21,982**	**$ 641,376**	**$ (512)**	**$ 662,935**
NET POSITION:					
Unexpended Appropriations - Funds from Dedicated Collections	$ —	$ 166	$ 34	$ —	$ 200
Unexpended Appropriations - Funds from Other than Dedicated Collections	100	—	92,770	—	92,870
Total Unexpended Appropriations (Consolidated)	**$ 100**	**$ 166**	**$ 92,804**	**$ —**	**$ 93,070**
Cumulative Results of Operations - Funds from Dedicated Collections	—	9,434	(22,436)	—	(13,002)
Cumulative Results of Operations - Funds from Other than Dedicated Collections	157	—	(448,863)	—	(448,706)
Total Cumulative Results (Consolidated)	**$ 157**	**$ 9,434**	**$ (471,299)**	**$ —**	**$ (461,708)**
Total Net Position	**$ 257**	**$ 9,600**	**$ (378,495)**	**$ —**	**$ (368,638)**
Total Liabilities and Net Position	**$ 346**	**$ 31,582**	**$ 262,881**	**$ (512)**	**$ 294,297**

U.S. Department of Energy Consolidating Schedules of Net Cost

For the Years Ended September 30, 2023 and 2022

(See independent auditors' report)

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	ELIMINATIONS	CONSOLIDATED
	FY 2023				
MAJOR PROGRAMS:					
Nuclear Security and NNSA					
Program Costs	$ —	$ —	$ 17,812	$ —	$ 17,812
Less: Earned Revenues	—	—	(21)	—	(21)
Net Cost of Nuclear Security and NNSA	**$ —**	**$ —**	**$ 17,791**	**$ —**	**$ 17,791**
Science					
Program Costs	$ —	$ —	$ 35,639	$ (1,042)	$ 34,597
Less: Earned Revenues	—	—	(1,170)	1,042	(128)
Net Cost of Science	**$ —**	**$ —**	**$ 34,469**	**$ —**	**$ 34,469**
Energy					
Program Costs	$ —	$ 5,489	$ 9,387	$ (5)	$ 14,871
Less: Earned Revenues	—	(5,384)	(6,316)	5	(11,695)
Net Cost of Energy	**$ —**	**$ 105**	**$ 3,071**	**$ —**	**$ 3,176**
Net Cost of Major Programs	**$ —**	**$ 105**	**$ 55,331**	**$ —**	**$ 55,436**
OTHER PROGRAMS:					
Reimbursable Programs					
Program Costs	$ —	$ 360	$ 5,604	$ (30)	$ 5,934
Less: Earned Revenues	—	(582)	(5,516)	30	(6,068)
Net Cost of Reimbursable Programs	**$ —**	**$ (222)**	**$ 88**	**$ —**	**$ (134)**
Other programs:					
Program Costs	$ 491	$ —	$ 2,604	$ (258)	$ 2,837
Less: Earned Revenues	(490)	—	(282)	258	(514)
Net Cost of Other Programs	**$ 1**	**$ —**	**$ 2,322**	**$ —**	**$ 2,323**
Costs Applied to Reduction of Legacy Environmental Liabilities	$ —	$ —	$ (7,075)	$ —	$ (7,075)
Costs Not Assigned to Programs	—	(1)	23,330	—	23,329
Net Cost of Operations	**$ 1**	**$ (118)**	**$ 73,996**	**$ —**	**$ 73,879**

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	ELIMINATIONS	CONSOLIDATED
	FY 2022				
MAJOR PROGRAMS:					
Nuclear Security and NNSA					
Program Costs	$ —	$ —	$ 17,444	$ (1)	$ 17,443
Less: Earned Revenues	—	—	(15)	1	(14)
Net Cost of Nuclear Security and NNSA	**$ —**	**$ —**	**$ 17,429**	**$ —**	**$ 17,429**
Science					
Program Costs	$ —	$ —	$ 21,324	$ (679)	$ 20,645
Less: Earned Revenues	—	—	(775)	679	(96)
Net Cost of Science	**$ —**	**$ —**	**$ 20,549**	**$ —**	**$ 20,549**
Energy					
Program Costs	$ —	$ 4,645	$ 10,751	$ (3)	$ 15,393
Less: Earned Revenues	—	(5,728)	(16,923)	3	(22,648)
Net Cost of Energy	**$ —**	**$ (1,083)**	**$ (6,172)**	**$ —**	**$ (7,255)**
Net Cost of Major Programs	**$ —**	**$ (1,083)**	**$ 31,806**	**$ —**	**$ 30,723**
OTHER PROGRAMS:					
Reimbursable Programs					
Program Costs	$ —	$ 356	$ 5,100	$ (34)	$ 5,422
Less: Earned Revenues	—	(412)	(5,052)	34	(5,430)
Net Cost of Reimbursable Programs	**$ —**	**$ (56)**	**$ 48**	**$ —**	**$ (8)**
Other programs:					
Program Costs	$ 456	$ —	$ 2,401	$ (258)	$ 2,599
Less: Earned Revenues	(456)	—	(269)	258	(467)
Net Cost of Other Programs	**$ —**	**$ —**	**$ 2,132**	**$ —**	**$ 2,132**
Costs Applied to Reduction of Legacy Environmental Liabilities	$ —	$ —	$ (6,436)	$ —	$ (6,436)
Costs Not Assigned to Programs	—	—	721	—	721
Net Cost of Operations	**$ —**	**$ (1,139)**	**$ 28,271**	**$ —**	**$ 27,132**

U.S. Department of Energy Consolidating Schedules of Changes in Net Position

For the Years Ended September 30, 2023 and 2022

(See independent auditors' report)

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	ELIMINATIONS	CONSOLIDATED
	FY 2023				
UNEXPENDED APPROPRIATIONS:					
Beginning Balances	$ 100	$ 166	$ 92,811	$ —	$ 93,077
Appropriations Received	—	520	61,838	—	62,358
Appropriations Transferred - In/Out	—	—	13	—	13
Other Adjustments	—	(1)	(12,603)	—	(12,604)
Appropriations Used	(1)	(504)	(46,229)	—	(46,734)
Net Change in Unexpended Appropriations	**$ (1)**	**$ 15**	**$ 3,019**	**$ —**	**$ 3,033**
Total Unexpended Appropriations	**$ 99**	**$ 181**	**$ 95,830**	**$ —**	**$ 96,110**
CUMULATIVE RESULTS OF OPERATIONS:					
Beginning Balances	$ 157	$ 9,434	$ (471,306)	$ —	$ (461,715)
Other Adjustments	—	—	—	—	—
Appropriations Used	1	504	46,229	—	46,734
Non-Exchange Revenue	—	—	7	—	7
Donations and Forfeitures of Cash	—	—	11	—	11
Transfers - In/Out Without Reimbursement	—	(513)	(6)	—	(519)
Donations and Forfeitures of Property	—	19	11	—	30
Imputed Financing	20	14	22,374	—	22,408
Other	10	(482)	(2,274)	—	(2,746)
Net Cost of Operations	**$ (1)**	**$ 118**	**$ (73,996)**	**$ —**	**$ (73,879)**
Net Change in Cumulative Results of Operations	**$ 30**	**$ (340)**	**$ (7,644)**	**$ —**	**$ (7,954)**
Total Cumulative Results of Operations	**$ 187**	**$ 9,094**	**$ (478,950)**	**$ —**	**$ (469,669)**
Net Position	**$ 286**	**$ 9,275**	**$ (383,120)**	**$ —**	**$ (373,559)**

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	ELIMINATIONS	CONSOLIDATED
	FY 2022				
UNEXPENDED APPROPRIATIONS:					
Beginning Balances	$ —	$ —	$ 34,955	$ —	$ 34,955
Appropriations Received	100	500	97,907	—	98,507
Appropriations Transferred - In/Out	—	(1)	22	—	21
Other Adjustments	—	3	(280)	—	(277)
Appropriations Used	—	(336)	(39,800)	—	(40,136)
Net Change in Unexpended Appropriations	**$ 100**	**$ 166**	**$ 57,849**	**$ —**	**$ 58,115**
Total Unexpended Appropriations	**$ 100**	**$ 166**	**$ 92,804**	**$ —**	**$ 93,070**
CUMULATIVE RESULTS OF OPERATIONS:					
Beginning Balances	$ 138	$ 8,736	$ (487,472)	$ —	$ (478,598)
Other Adjustments	—	—	—	—	—
Appropriations Used	—	336	39,800	—	40,136
Non-Exchange Revenue	—	—	1	—	1
Donations and Forfeitures of Cash	—	—	21	—	21
Transfers - In/Out Without Reimbursement	—	(497)	(6)	—	(503)
Donations and Forfeitures of Property	—	16	1	—	17
Imputed Financing	14	10	8,206	—	8,230
Other	5	(306)	(3,579)	—	(3,880)
Net Cost of Operations	**$ —**	**$ 1,139**	**$ (28,271)**	**$ —**	**$ (27,132)**
Net Change in Cumulative Results of Operations	**$ 19**	**$ 698**	**$ 16,173**	**$ —**	**$ 16,890**
Total Cumulative Results of Operations	**$ 157**	**$ 9,434**	**$ (471,299)**	**$ —**	**$ (461,708)**
Net Position	**$ 257**	**$ 9,600**	**$ (378,495)**	**$ —**	**$ (368,638)**

U.S. Department of Energy Combining Schedules of Budgetary Resources

For the Years Ended September 30, 2023 and 2022

(See independent auditors' report)

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	COMBINED
	FY 2023			
BUDGETARY RESOURCES:				
Unobligated Balance from Prior Year Budget Authority, Net	$ 153	$ 1,174	$ 71,953	$ 73,280
Appropriations	3	634	49,514	50,151
Borrowing Authority	—	722	15,497	16,219
Contract Authority	—	1,933	—	1,933
Spending Authority from Offsetting Collections	509	4,400	17,832	22,741
Total Budgetary Resources	**$ 665**	**$ 8,863**	**$ 154,796**	**$ 164,324**
STATUS OF BUDGETARY RESOURCES:				
New Obligations and Upward Adjustments (Total)	$ 497	$ 6,882	$ 78,623	$ 86,002
Unobligated Balance, End of Year:				
Apportioned, Unexpired Accounts	$ 167	$ 1,516	$ 74,655	$ 76,338
Exempt from Apportionment, Unexpired Accounts	—	8	7	15
Unapportioned, Unexpired Accounts	1	457	1,391	1,849
Unexpired, Unobligated Balance, End of Year	**$ 168**	**$ 1,981**	**$ 76,053**	**$ 78,202**
Expired, Unobligated Balance, End of Year	—	—	120	120
Unobligated Balance, End of Year (Total)	**$ 168**	**$ 1,981**	**$ 76,173**	**$ 78,322**
Total Budgetary Resources	**$ 665**	**$ 8,863**	**$ 154,796**	**$ 164,324**
OUTLAYS, NET				
Outlays, Net (Total)	$ (26)	$ 396	$ 38,918	$ 39,288
Distributed Offsetting Receipts (-)	(29)	(288)	(4,558)	(4,875)
Agency Outlays, Net	**$ (55)**	**$ 108**	**$ 34,360**	**$ 34,413**
Disbursements, Net (Total)	**$ —**	**$ —**	**$ 1,326**	**$ 1,326**

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	COMBINED
	FY 2022			
BUDGETARY RESOURCES:				
Unobligated Balance from Prior Year Budget Authority, Net	$ 33	$ 887	$ 8,557	$ 9,477
Appropriations	103	600	97,647	98,350
Borrowing Authority	—	739	3,235	3,974
Contract Authority	—	1,270	—	1,270
Spending Authority from Offsetting Collections	466	2,970	18,343	21,779
Total Budgetary Resources	**$ 602**	**$ 6,466**	**$ 127,782**	**$ 134,850**
STATUS OF BUDGETARY RESOURCES:				
New Obligations and Upward Adjustments (Total)	$ 459	$ 5,297	$ 56,422	$ 62,178
Unobligated Balance, End of Year:				
Apportioned, Unexpired Accounts	$ 42	$ 838	$ 36,323	$ 37,203
Exempt from Apportionment, Unexpired Accounts	—	8	4	12
Unapportioned, Unexpired Accounts	101	323	34,943	35,367
Unexpired, Unobligated Balance, End of Year	**$ 143**	**$ 1,169**	**$ 71,270**	**$ 72,582**
Expired, Unobligated Balance, End of Year	$ —	$ —	$ 90	$ 90
Unobligated Balance, End of Year (Total)	**$ 143**	**$ 1,169**	**$ 71,360**	**$ 72,672**
Total Budgetary Resources	**$ 602**	**$ 6,466**	**$ 127,782**	**$ 134,850**
OUTLAYS, NET				
Outlays, Net (Total)	$ 8	$ (615)	$ 29,551	$ 28,944
Distributed Offsetting Receipts (-)	(14)	(556)	(5,951)	(6,521)
Agency Outlays, Net	**$ (6)**	**$ (1,171)**	**$ 23,600**	**$ 22,423**
Disbursements, Net (Total)	**$ —**	**$ —**	**$ (814)**	**$ (814)**

U.S. Department of Energy Consolidating Schedules of Custodial Activities

For the Years Ended September 30, 2023 and 2022

(See independent auditors' report)

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	ELIMINATIONS	CONSOLIDATED
	FY 2023				
SOURCES OF COLLECTIONS:					
Cash Collections:					
Power Marketing Administrations	$ —	$ 495	$ —	$ —	$ 495
Federal Energy Regulatory Commission	62	—	—	—	62
Total Cash Collections	**$ 62**	**$ 495**	**$ —**	**$ —**	**$ 557**
Accrual Adjustment	$ (1)	$ (1)	$ —	$ —	$ (2)
Total Custodial Revenue	**$ 61**	**$ 494**	**$ —**	**$ —**	**$ 555**
DISPOSITION OF REVENUE:					
Transferred to Others:					
Bureau of Reclamation	$ (8)	$ (175)	$ —	$ —	$ (183)
Department of the Treasury	(39)	(184)	—	—	(223)
Army Corps of Engineers	(12)	(149)	—	—	(161)
Others	(3)	—	—	—	(3)
Decrease/(Increase) in Amounts to be Transferred	1	14	—	—	15
Net Custodial Activity	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

($ IN MILLIONS)	FEDERAL ENERGY REGULATORY COMMISSION	POWER MARKETING ADMINISTRATIONS	ALL OTHER DOE PROGRAMS	ELIMINATIONS	CONSOLIDATED
	FY 2022				
SOURCES OF COLLECTIONS:					
Cash Collections:					
Power Marketing Administrations	$ —	$ 544	$ —	$ —	$ 544
Federal Energy Regulatory Commission	43	—	—	—	43
Total Cash Collections	**$ 43**	**$ 544**	**$ —**	**$ —**	**$ 587**
Accrual Adjustment	$ (1)	$ (1)	$ —	$ —	$ (2)
Total Custodial Revenue	**$ 42**	**$ 543**	**$ —**	**$ —**	**$ 585**
DISPOSITION OF REVENUE:					
Transferred to Others:					
Bureau of Reclamation	$ (8)	$ (154)	$ —	$ —	$ (162)
Department of the Treasury	(19)	(209)	—	—	(228)
Army Corps of Engineers	(13)	(184)	—	—	(197)
Others	(3)	—	—	—	(3)
Decrease/(Increase) in Amounts to be Transferred	1	4	—	—	5
Net Custodial Activity	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

Required Supplementary Information

Unaudited – See accompanying Auditors' Report

This section of the report provides required supplementary information for the Department on deferred maintenance, Government Land and budgetary resources by major budget account.

Deferred Maintenance

Deferred maintenance and repairs information is a requirement under Statements of Federal Financial Accounting Standards (SFFAS) No. 42, *Deferred Maintenance and Repairs (DM&R)*, which requires deferred maintenance disclosures as of the end of each FY. Deferred maintenance is defined in SFFAS No. 42 as "maintenance and repairs that were not performed when they should have been or were scheduled to be and which are put off or delayed for a future period." DM&R reporting enables the government to be accountable to citizens for the proper administration and stewardship of its assets. Specifically, DM&R reporting assists by providing an entity's realistic estimate of DM&R amounts and the effectiveness of asset maintenance practices the entities employ in fulfilling their missions.

DOE Estimated DM&R for FY 2023 (Dollars in Millions) :

Buildings and Other Structures and Facilities	$12,203
Capital Equipment	$ 207
Total	$12,410

Deferred Maintenance and Repairs – Buildings and Other Structures and Facilities

The Department owns over 20,000 buildings and structures with an estimated replacement value of $275 billion. The Department's portfolio of property, plant, and equipment (PP&E) supports preeminent Federal research laboratory campuses; user facilities; production, special purpose, and legacy clean-up activities; and facilities used predominantly for office space and warehousing. Departmental policy is to maintain real property assets in a manner that promotes operational safety, worker health, environmental protection and compliance, property preservation, and cost-effectiveness, while meeting program missions. Estimates reported include DM&R for capitalized or not capitalized, and fully depreciated and not fully depreciated buildings, structures, and heritage assets owned by the Department. The Department categorizes assets designated as a National Historic Landmark, or listed in the National Register of Historical Places, or those included in the Manhattan Project National Historic Park as a Heritage Asset or Stewardship Land. The Department does not accrue DM&R on general or stewardship land parcels.

Defining and Implementing DM&R Policies in Practice

The Department visually assesses the condition of each building and structure at least once every five years with the exception of some structures where a physical barrier prevents visual assessments (e.g., underground pipe systems). In such cases, sites may employ other methods to identify deficiencies. The inspection requirement applies to active and inactive/excess assets. Inactive assets must remain in a state safe enough to allow such inspections to occur, to protect life safety and the environment, to support eventual disposition, and so as not to endanger the mission responsibilities borne by other assets. Sites estimate the cost to address DM&R deficiencies using unit construction, maintenance, and repair cost data available from RSMeans, or other similar data sources and apply site-specific cost factors. In the time between updates, sites apply inflation factors derived from annual budget guidance published by the Department's Chief Financial Officer. Sites remove an item and its estimated cost from their backlog after resolving a deferred maintenance item or when management determines the repair is no longer needed. The National Nuclear Security Administration (NNSA) estimates DM&R costs for its sites using the BUILDER Sustainment Management System (SMS). The BUILDER SMS compares field inspection data with engineered lifecycle curves to calculate a condition score for each asset component. By weighting the component condition scores by the unit replacement costs of the components, the BUILDER SMS calculates the overall Building Condition Index (BCI) for each asset using a 0-to-100 point scale. NNSA uses standards and policies to define the acceptable condition for each asset. The NNSA BUILDER DM&R costs rely on cost data available from RSMeans, adjusted by site-specific cost factors. The BUILDER SMS calculates the cost to restore each asset component's condition to a condition standard considered acceptable in the current year. This cost includes repair and replacement of existing deficiencies and repair or replacement of components projected to fall below an acceptable condition level during the fiscal year.

Ranking and Prioritizing DM&R Activities

The Department does not rank or prioritize the maintenance and repair activities of its component programs and sites. Instead, it relies on the site manager to apply the maintenance budget based on the role each asset has in supporting the site's various missions. Ranking factors include mission dependency, status, use, ownership, and risks presented by any noted deficiencies, among other considerations. For all NNSA sites, the Office of Infrastructure established a single set of standards and policies for prioritizing maintenance and repair activities using similar factors. The Department's implementation of Office of Management and Budget (OMB) Memorandum M-20-03, *Implementation of Agency-wide Real Property Capital Planning* includes identifying projects and activities that reduce deferred maintenance in developing the President's Budget submission.

Factors Considered in Setting Acceptable Condition
The DOE Asset Management Plan identifies Asset Condition Index (ACI) as a real property portfolio performance measure. ACI compares an asset's (or portfolio's) DM&R to it Replacement Plant Value (RPV) through the following equation: (1-(DM&R÷RPV))*100. Internal reporting guidance assigns qualitative labels to ACI ranges and considers assets with an ACI equal to or greater than 95 in at least adequate condition. For this purpose, the Department equates the terms "adequate" and "acceptable." As of September 30, 2023, the percentage of active buildings in a condition at or above acceptable is approximately 79 percent (a two percent increase from 2022). Note that in 2023, the White House Office of Management and Budget established a common asset condition rating scale as part of its Federal Real Property Portfolio database. This new rating scale is based on the Condition Index (CI) measure. The CI measure is similar to the ACI described above but focused on all repair needs across an asset rather than just those that have been deferred. The equation for calculating CI is: (1-(Repair Needs ÷ RPV))*100 and the rating scale is as follows: 95 and above is Excellent Condition, 90 up to 95 is Good Condition, 70 up to 90 is Fair Condition, and below 70 is Poor Condition. Beginning next year (once we have undergone two full years under this new rating scale), this narrative will transition away from the ACI and will focus on the CI instead and will identify the percentage of assets in the good to excellent range.

Significant Changes from Prior Year and Related Events
As of September 30, 2023, the DOE had an estimated $12.2 billion in total deferred maintenance which is an increase of about $1.433 billion (or 13.3 percent) from the FY 2022 total of $10.8 billion. The Department applies a year-to-year variance threshold of 10 percent and considers overall increases or decreases beyond that threshold as significant. Nearly all (99.8 percent) of FY 2023's DM&R increases are concentrated at sites in two of DOE's Departmental Elements: the National Nuclear Security Administration ($1.2B increase), and the Office of Science ($183M increase). One of the primary drivers of the increase across all sites was the cost inflation last FY. Sites experienced a wide range of significant increases in the cost of materials, labor, and equipment. Electrical and mechanical equipment increases were most significant. Additional factors contributing to increased deferred maintenance within two Departmental Elements include the following:

National Nuclear Security Administration:
- While some increases in Deferred Maintenance (DM) for the NNSA between FY 2022-FY 2023 are attributed to natural asset degradation due to age and inability to fully fund all DM in a given year, NNSA's DM changes are primarily tied to continuous improvements to NNSA infrastructure metric calculations as a result of its on-going effort to transition its DM calculations from a Condition Assessment Information System (CAIS) methodology to a BUILDER-based methodology.
- For example, Livermore experienced significant DM increases to their 70-year-old underground utility systems during the transition due to CAIS historically only calculating costs for known deficiencies while BUILDER accounts for degradation due to age and the risk it poses to system reliability when operating beyond its intended design life. While this transition resulted in an increase to NNSA's DM backlog due to a refined calculation method, it does not reflect a change to the actual physical condition of NNSA infrastructure.
- The NNSA continues to actively implement BUILDER across its real property infrastructure portfolio with the goal of reaching full program implementation by the end of FY 2024.

Office of Science:
- Condition assessments (performed for each asset once every 5 years in accordance with DOE Order 430.1C) have increased the identification of repair needs simply due to timing. During this 5-year period, conditions change such that the assessments identify additional repair needs, some of which are deferred.

Capital Equipment
Pursuant to the cost/benefit considerations provided in SFFAS No. 42, the Department has determined that the requirements for deferred maintenance reporting on personal property (capital equipment) are not applicable to property items with an acquisition cost of less than $100,000, except in situations where maintenance is needed to address worker and public health and safety concerns.

Various methods were used for measuring deferred maintenance and determining acceptable operating condition for the Department's capital equipment, including periodic condition assessments, physical inspections, review of work orders, manufacturer and engineering specification, and other methods, as appropriate.

An amount of $207 million of deferred maintenance was estimated to be needed as of September 30, 2023, to return capital equipment assets to acceptable operating condition.

Deferred Maintenance and Repair Costs
Estimates of the beginning and ending balances of DM&R for each major category of real property for which maintenance and repairs have been deferred include:

($ IN MILLIONS)	2023 Ending Balance DM&R	2023 Beginning Balance DM&R
ACTIVE:		
General PP&E:		
Buildings	$ 6,476	$ 6,063
Structures	4,463	3,326
Subtotal - General PP&E - Active	**$ 10,939**	**$ 9,389**
Heritage Assets	$ 7	$ 27
Subtotal - All Active	**$ 10,946**	**$ 9,416**
INACTIVE AND EXCESS:		
General PP&E:		
Buildings	$ 1,049	$ 1,223
Structures	193	115
Subtotal - General PP&E - Inactive and Excess	**$ 1,242**	**$ 1,338**
Heritage Assets	$ 15	$ 16
Subtotal - All Inactive and Excess	**$ 1,257**	**$ 1,353**
Total Deferred Maintenance and Repair Cost:	**$ 12,203**	**$ 10,770**

Government Land

Federal Land reporting is a requirement under Statement of Federal Financial Accounting Standards (SFFAS) No. 59, *Accounting and Reporting of Government Land*. This standard provides requirements to report the estimated size (acres) of Federal land use by intent/purpose and ownership status. The Department uses its PP&E and Stewardship Land to support its mission activities by providing area to primarily accommodate administrative facilities, laboratory research and testing facilities, production facilities, long-term waste storage facilities, clean-up operations, and long-term legacy site management. The following tables provide the required reporting detail: **Table 1** is breakdown of all of the land the Department owns by General PP&E Land and Stewardship Land followed by a subsequent breakout into three predominant use subcategories (Conservation and Preservation, Operational, and Commercial use land); **Table 2** shows estimated land held for disposal or exchange; and **Table 3** reports land rights, whether such rights are permanent or temporary, and amounts paid during the year to maintain such rights. Bonneville Power Administration (BPA) data is excluded from these tables.

Table 1 - DOE Land

	Commercial Use (Acres)	Conservation & Preservation Use (Acres)	Operational Use (Acres)	Total (Acres)
General PP&E				
Start of Fiscal Year 2023	8,123	3,795	684,898	696,816
End of Fiscal Year 2023	8,123	7,295	684,500	699,918
Stewardship Land				
Start of Fiscal Year 2023	4,676	1,280	1,488,766	1,494,722
End of Fiscal Year 2023	4,676	1,280	1,488,766	1,494,722

Table 2 - DOE Land Held for Disposal or Exchange

Land Held for Disposal or Exchange		
Stewardship Land (Acres)	General PP&E Land (Acres)	Total Land (Acres)
—	1,555	1,555

Table 3 - DOE Land and Permanent Land Rights

	Commercial Use (Acres)	Conservation & Preservation Use (Acres)	Operational Use (Acres)	Total (Acres)
General PP&E				
Start of Prior Year 2022	36,995	4,794	696,475	738,264
Start of Fiscal Year 2023	36,995	4,794	697,198	738,987
End of Fiscal Year 2023	36,995	8,294	697,406	742,695
Stewardship Land				
Start of Prior Year 2022	4,676	1,280	1,491,004	1,497,001
Start of Fiscal Year 2023	4,676	1,280	1,488,766	1,494,722
End of Fiscal Year 2023	4,676	1,280	1,488,766	1,494,722
Held for Disposal/Exchange				
Start of Prior Year 2022				1,658
End of Fiscal Year 2023				1,555

Budgetary Resources by Major Account - IIJA Funding only

For the Year Ended September 30, 2023

($ IN MILLIONS)	Energy Efficiency and Renewable Energy	Clean Energy Demonstrations	Fossil Energy Research and Development	Electricity Delivery and Energy Reliability	Nuclear Energy
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 7,633	$ 5,067	$ 1,804	$ 1,635	$ 1,195
Appropriations	2,206	4,417	1,442	1,607	1,198
Borrowing Authority	—	—	—	—	—
Contract Authority	—	—	—	—	—
Spending Authority from Offsetting Collections	—	—	—	—	—
Total Budgetary Resources	**$ 9,839**	**$ 9,484**	**$ 3,246**	**$ 3,242**	**$ 2,393**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 3,480	$ 2,681	$ 185	$ 785	$ 3
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 6,359	$ 6,803	$ 3,061	$ 2,457	$ 2,389
Exempt from Apportionment, Unexpired Accounts	—	—	—	—	—
Unapportioned, Unexpired Accounts	—	—	—	—	1
Unexpired, Unobligated Balance, End of Year	**$ 6,359**	**$ 6,803**	**$ 3,061**	**$ 2,457**	**$ 2,390**
Expired, Unobligated Balance, End of Year	—	—	—	—	—
Unobligated Balance, End of Year (Total)	**$ 6,359**	**$ 6,803**	**$ 3,061**	**$ 2,457**	**$ 2,390**
Total Budgetary Resources	**$ 9,839**	**$ 9,484**	**$ 3,246**	**$ 3,242**	**$ 2,393**
Agency Outlays, Net	$ 205	$ 95	$ 45	$ 28	$ 4
Disbursements, Net (total)	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

	Carbon Dioxide Transportation Infrastructure Finance And Innovation Program Account	Transmission Facilitation Fund, Energy Programs, Energy	Cybersecurity, Energy Security, And Emergency Response	Construction, Rehabilitation, Operation and Maintenance, Western Area Power Administration	Colorado River Basins Power Marketing Fund, Western Area Power Administration
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 2	$ —	$ 139	$ 71	$ 55
Appropriations	2,093	—	99	—	—
Borrowing Authority	—	1,750	—	—	—
Contract Authority	—	—	—	—	—
Spending Authority from Offsetting Collections	—	—	—	—	—
Total Budgetary Resources	**$ 2,095**	**$ 1,750**	**$ 238**	**$ 71**	**$ 55**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 2	$ —	$ 91	$ 71	$ 55
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 2,093	$ 1,750	$ 147	$ —	$ —
Exempt from Apportionment, Unexpired Accounts	—	—	—	—	—
Unapportioned, Unexpired Accounts	—	—	—	—	—
Unexpired, Unobligated Balance, End of Year	**$ 2,093**	**$ 1,750**	**$ 147**	**$ —**	**$ —**
Expired, Unobligated Balance, End of Year	—	—	—	—	—
Unobligated Balance, End of Year (Total)	**$ 2,093**	**$ 1,750**	**$ 147**	**$ —**	**$ —**
Total Budgetary Resources	**$ 2,095**	**$ 1,750**	**$ 238**	**$ 71**	**$ 55**
Agency Outlays, Net	$ 1	$ —	$ 16	$ 154	$ 53
Disbursements, Net (total)	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

	Science	Office of the Inspector General	Departmental Administration	ALL OTHER	Combined Statement of Budgetary Resources Total
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 33	$ 19	$ 17	$ —	$ 17,670
Appropriations	12	13	13	—	13,100
Borrowing Authority	—	—	—	—	1,750
Contract Authority	—	—	—	—	—
Spending Authority from Offsetting Collections	—	—	—	—	—
Total Budgetary Resources	**$ 45**	**$ 32**	**$ 30**	**$ —**	**$ 32,520**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 20	$ 1	$ 12	$ —	$ 7,386
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 25	$ 31	$ 18	$ —	$ 25,133
Exempt from Apportionment, Unexpired Accounts	—	—	—	—	—
Unapportioned, Unexpired Accounts	—	—	—	—	1
Unexpired, Unobligated Balance, End of Year	**$ 25**	**$ 31**	**$ 18**	**$ —**	**$ 25,134**
Expired, Unobligated Balance, End of Year	—	—	—	—	—
Unobligated Balance, End of Year (Total)	**$ 25**	**$ 31**	**$ 18**	**$ —**	**$ 25,134**
Total Budgetary Resources	**$ 45**	**$ 32**	**$ 30**	**$ —**	**$ 32,520**
Agency Outlays, Net	$ 1	$ 1	$ 8	$ —	$ 611
Disbursements, Net (total)	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

Budgetary Resources by Major Account - IRA Funding Only

For the Year Ended September 30, 2023

($ IN MILLIONS)	Energy Efficiency and Renewable Energy	Title 17 Innovative Loan Guarantee Program	Clean Energy Demonstrations	Advanced Technology Vehicles Manufacturing Loan Program Account	Electricity Delivery and Energy Reliability
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 12,150	$ 8,600	$ 5,812	$ 3,000	$ 2,860
Appropriations	—	—	—	—	—
Borrowing Authority	—	—	—	—	—
Contract Authority	—	—	—	—	—
Spending Authority from Offsetting Collections	—	—	—	—	—
Total Budgetary Resources	**$ 12,150**	**$ 8,600**	**$ 5,812**	**$ 3,000**	**$ 2,860**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 203	$ 50	$ 13	$ 457	$ 12
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 11,947	$ 8,550	$ 5,799	$ 2,543	$ 2,848
Exempt from Apportionment, Unexpired Accounts	—	—	—	—	—
Unapportioned, Unexpired Accounts	—	—	—	—	—
Unexpired, Unobligated Balance, End of Year	**$ 11,947**	**$ 8,550**	**$ 5,799**	**$ 2,543**	**$ 2,848**
Expired, Unobligated Balance, End of Year	—	—	—	—	—
Unobligated Balance, End of Year (Total)	**$ 11,947**	**$ 8,550**	**$ 5,799**	**$ 2,543**	**$ 2,848**
Total Budgetary Resources	**$ 12,150**	**$ 8,600**	**$ 5,812**	**$ 3,000**	**$ 2,860**
Agency Outlays, Net	$ 15	$ 16	$ 1	$ 3	$ 4
Disbursements, Net (total)	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

	Nuclear Energy	Title 17 Innovative Technology Direct Loan Financing Account	Defense Production Act	Science	Isotope Production and Distribution Program Fund
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 850	$ —	$ 250	$ 250	$ —
Appropriations	—	—	—	—	—
Borrowing Authority	—	374	—	—	—
Contract Authority	—	—	—	—	—
Spending Authority from Offsetting Collections	—	14	—	—	158
Total Budgetary Resources	**$ 850**	**$ 388**	**$ 250**	**$ 250**	**$ 158**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 170	$ 374	$ 2	$ 250	$ 138
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 680	$ —	$ 248	$ —	$ 20
Exempt from Apportionment, Unexpired Accounts	—	—	—	—	—
Unapportioned, Unexpired Accounts	—	14	—	—	—
Unexpired, Unobligated Balance, End of Year	**$ 680**	**$ 14**	**$ 248**	**$ —**	**$ 20**
Expired, Unobligated Balance, End of Year	—	—	—	—	—
Unobligated Balance, End of Year (Total)	**$ 680**	**$ 14**	**$ 248**	**$ —**	**$ 20**
Total Budgetary Resources	**$ 850**	**$ 388**	**$ 250**	**$ 250**	**$ 158**
Agency Outlays, Net	$ 4	$ —	$ 1	$ 646	$ (150)
Disbursements, Net (total)	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

	Fossil Energy Research and Development	Environmental Reviews	Federal Energy Regulatory Commission	ALL OTHER	Combined Statement of Budgetary Resources Total
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 150	$ 115	$ 100	$ 95	$ 34,232
Appropriations	—	—	—	—	—
Borrowing Authority	—	—	—	—	374
Contract Authority	—	—	—	—	—
Spending Authority from Offsetting Collections	—	—	—	5	177
Total Budgetary Resources	**$ 150**	**$ 115**	**$ 100**	**$ 100**	**$ 34,783**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 5	$ 1	$ 3	$ —	$ 1,678
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 145	$ 114	$ 97	$ 94	$ 33,085
Exempt from Apportionment, Unexpired Accounts	—	—	—	—	—
Unapportioned, Unexpired Accounts	—	—	—	6	20
Unexpired, Unobligated Balance, End of Year	**$ 145**	**$ 114**	**$ 97**	**$ 100**	**$ 33,105**
Expired, Unobligated Balance, End of Year	—	—	—	—	—
Unobligated Balance, End of Year (Total)	**$ 145**	**$ 114**	**$ 97**	**$ 100**	**$ 33,105**
Total Budgetary Resources	**$ 150**	**$ 115**	**$ 100**	**$ 100**	**$ 34,783**
Agency Outlays, Net	$ —	$ 1	$ 1	$ 1	$ 543
Disbursements, Net (total)	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

Budgetary Resources by Major Account - Total Funding

For the Year Ended September 30, 2023

($ IN MILLIONS)	Energy Efficiency and Renewable Energy	Weapons Activities	Clean Energy Demonstrations	Electricity Delivery and Energy Reliability	Science
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 21,153	$ 633	$ 10,880	$ 4,553	$ 486
Appropriations	5,586	17,116	4,506	2,951	8,295
Borrowing Authority	—	—	—	—	—
Contract Authority	—	—	—	—	—
Spending Authority from Offsetting Collections	237	2,406	—	1,981	630
Total Budgetary Resources	**$ 26,976**	**$ 20,155**	**$ 15,386**	**$ 9,485**	**$ 9,411**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 7,383	$ 19,828	$ 2,729	$ 1,048	$ 9,157
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 19,571	$ 311	$ 12,657	$ 8,437	$ 253
Exempt from Apportionment, Unexpired Accounts	—	—	—	—	—
Unapportioned, Unexpired Accounts	21	13	—	—	—
Unexpired, Unobligated Balance, End of Year	**$ 19,592**	**$ 324**	**$ 12,657**	**$ 8,437**	**$ 253**
Expired, Unobligated Balance, End of Year	1	3	—	—	1
Unobligated Balance, End of Year (Total)	**$ 19,593**	**$ 327**	**$ 12,657**	**$ 8,437**	**$ 254**
Total Budgetary Resources	**$ 26,976**	**$ 20,155**	**$ 15,386**	**$ 9,485**	**$ 9,411**
OUTLAYS, NET					
Outlays, Net (Total)	$ 2,826	$ 16,792	$ 132	$ 243	$ 7,958
Distributed Offsetting Receipts (-)	—	—	—	—	—
Agency Outlays, Net	**$ 2,826**	**$ 16,792**	**$ 132**	**$ 243**	**$ 7,958**
Disbursements, Net (total)	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

	Title 17 Innovative Loan Guarantee Program	Defense Environmental Cleanup	Nuclear Energy	Advanced Technology Vehicles Manufacturing Loan Program Account	Other Budgetary Accounts
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 8,872	$ 1,134	$ 2,343	$ 5,292	$ 17,190
Appropriations	(103)	7,609	3,024	10	1,157
Borrowing Authority	—	—	—	—	2,472
Contract Authority	—	—	—	—	1,933
Spending Authority from Offsetting Collections	20	1	284	(1)	16,031
Total Budgetary Resources	**$ 8,789**	**$ 8,744**	**$ 5,651**	**$ 5,301**	**$ 38,783**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 103	$ 7,577	$ 2,218	$ 465	$ 21,080
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 8,668	$ 1,160	$ 3,425	$ 4,835	$ 17,008
Exempt from Apportionment, Unexpired Accounts	—	—	—	—	15
Unapportioned, Unexpired Accounts	15	—	—	—	584
Unexpired, Unobligated Balance, End of Year	**$ 8,683**	**$ 1,160**	**$ 3,425**	**$ 4,835**	**$ 17,607**
Expired, Unobligated Balance, End of Year	3	7	8	1	96
Unobligated Balance, End of Year (Total)	**$ 8,686**	**$ 1,167**	**$ 3,433**	**$ 4,836**	**$ 17,703**
Total Budgetary Resources	**$ 8,789**	**$ 8,744**	**$ 5,651**	**$ 5,301**	**$ 38,783**
OUTLAYS, NET					
Outlays, Net (Total)	**$ 44**	**$ 7,302**	**$ 1,787**	**$ 71**	**$ 2,133**
Distributed Offsetting Receipts (-)	—	—	—	—	(4,875)
Agency Outlays, Net	**$ 44**	**$ 7,302**	**$ 1,787**	**$ 71**	**$ (2,742)**
Disbursements, Net (total)	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**

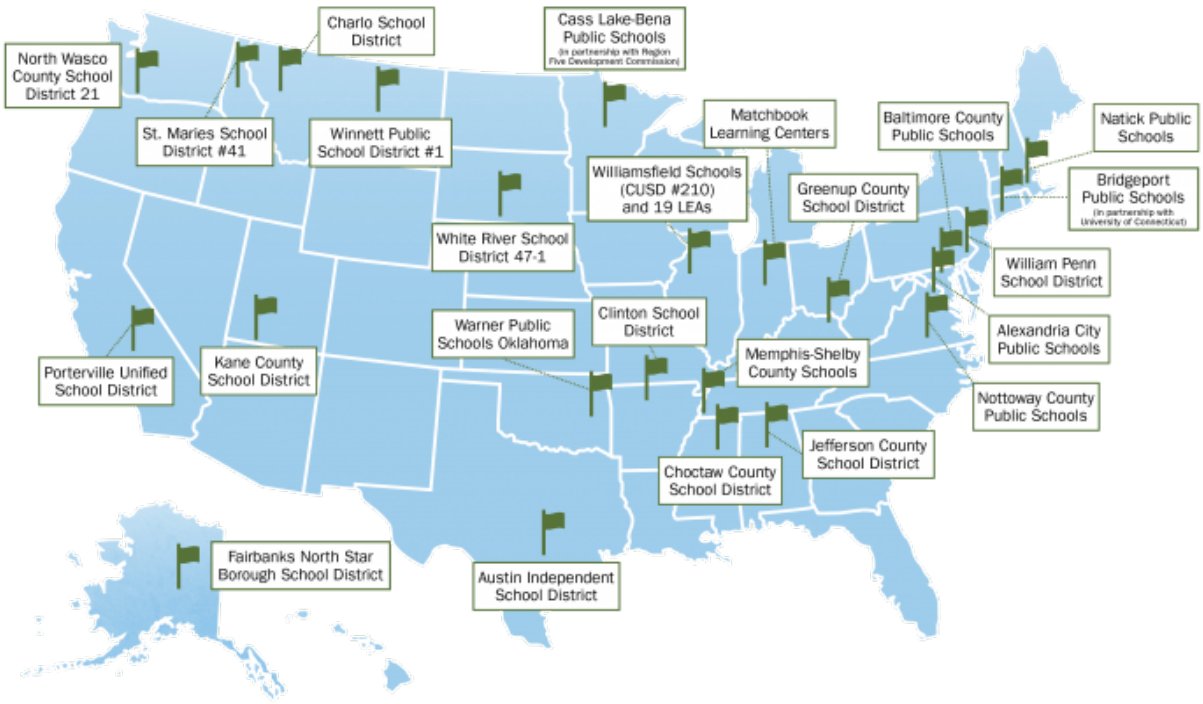
	Subtotal of Budgetary Accounts	Advanced Technology Vehicles Manufacturing Direct Loan Financing Account	Title 17 Innovative Technology Direct Loan Financing Account	All Other Financing Accounts	Combined Statement of Budgetary Resources Total
BUDGETARY RESOURCES:					
Unobligated Balance from Prior Year Budget Authority, Net	$ 72,536	$ 216	$ 418	$ 110	$ 73,280
Appropriations	50,151	—	—	—	50,151
Borrowing Authority	2,472	13,314	433	—	16,219
Contract Authority	1,933	—	—	—	1,933
Spending Authority from Offsetting Collections	21,589	478	666	8	22,741
Total Budgetary Resources	**$ 148,681**	**$ 14,008**	**$ 1,517**	**$ 118**	**$ 164,324**
STATUS OF BUDGETARY RESOURCES:					
New Obligations and Upward Adjustments (Total)	$ 71,588	$ 13,403	$ 997	$ 14	$ 86,002
Unobligated Balance, End of Year:					
Apportioned, Unexpired Accounts	$ 76,325	$ —	$ —	$ 13	$ 76,338
Exempt from Apportionment, Unexpired Accounts	15	—	—	—	15
Unapportioned, Unexpired Accounts	633	605	520	91	1,849
Unexpired, Unobligated Balance, End of Year	**$ 76,973**	**$ 605**	**$ 520**	**$ 104**	**$ 78,202**
Expired, Unobligated Balance, End of Year	120	—	—	—	120
Unobligated Balance, End of Year (Total)	**$ 77,093**	**$ 605**	**$ 520**	**$ 104**	**$ 78,322**
Total Budgetary Resources	**$ 148,681**	**$ 14,008**	**$ 1,517**	**$ 118**	**$ 164,324**
OUTLAYS, NET					
Outlays, Net (Total)	**$ 39,288**	**$ —**	**$ —**	**$ —**	**$ 39,288**
Distributed Offsetting Receipts (-)	(4,875)	—	—	—	(4,875)
Agency Outlays, Net	**$ 34,413**	**$ —**	**$ —**	**$ —**	**$ 34,413**
Disbursements, Net (total)	**$ —**	**$ 1,069**	**$ 244**	**$ 13**	**$ 1,326**

FY 2023 DOE Highlight: State and Community Energy Programs (Unaudited)

On June 29, 2023, the Office of State and Community Energy Programs at DOE announced the 24 Selectees for the first round of funding from the Renew America's Schools grant.

This competitive award is part of the $500 million Renew America's Schools program, funded by the 2021 Bipartisan Infrastructure Law, which aims to help K-12 public schools across the country make energy improvements that lower utilities costs, reduce emissions, and create healthier learning environments for students and teachers. Funded projects will increase energy efficiency, while improving indoor air quality, reducing community exposures to pollution, improving occupancy comfort, and providing better lighting. Some projects will install renewable technology packages, such as solar panels and batteries, and others will establish infrastructure to support alternative-fueled vehicles.

This funding opportunity has garnered unprecedented public interest and engagement. DOE received 236 full application submissions from local education agencies across 44 states, totaling $1.62 billion in requests. In response to high demand and overwhelming evidence of need, DOE has doubled the funds available in the first round of the competition from $80 million to $178 million. For more information, visit https://www.energy.gov/scep/slsc/articles/state-and-local-spotlight-june-2023.



Auditors' Report

Memorandum from the Inspector General

DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL

MEMORANDUM

DATE: November 15, 2023

REPLY TO ATTN OF: IG-50 (A23FN005)

SUBJECT: Audit Report on The Department of Energy's Fiscal Year 2023 Consolidated Financial Statements

TO: Under Secretary for Infrastructure, S3
Under Secretary for Science and Innovation, S4
Senior Advisor, Office of Environmental Management, EM-1
Deputy Chief Financial Officer, CF-2
Director, Office of Audits and Internal Affairs, NA-MB-1.1

The attached report presents the results of the independent certified public accountants' audit of the Department of Energy's consolidated financial statements as of September 30, 2023, and 2022, and the related consolidated statements of net costs, changes in net position, custodial activity, and combined statements of budgetary resources for the years then ended, and the related notes to the consolidated financial statements.

To fulfill the Office of Inspector General's (OIG) audit responsibilities, we contracted with the independent public accounting firm of KPMG LLP (KPMG) to conduct the audit, subject to our review. KPMG is responsible for expressing an opinion on the Department's financial statements and reporting on applicable internal controls and compliance with laws and regulations. The OIG monitored audit progress and reviewed the audit report and related documentation. This review disclosed no instances where KPMG did not comply, in all material respects, with generally accepted government auditing standards. The OIG did not express an independent opinion on the Department's financial statements.

KPMG audited the consolidated financial statements of the Department as of September 30, 2023, and 2022, and the related consolidated statements of net costs, changes in net position, custodial activity, and combined statements of budgetary resources for the years then ended, and the related notes to the consolidated financial statements. KPMG concluded that these consolidated financial statements are presented fairly, in all material respects, in accordance with U.S. generally accepted accounting principles, and KPMG had issued an unmodified opinion based on its audits and the reports of other auditors for the years ended September 30, 2023, and 2022.

Auditors also considered the Department's internal controls over financial reporting and tested for compliance with certain provisions of laws, regulations, contracts, and grant agreements that could have a direct and material effect on the consolidated financial statements. The audit did not identify any deficiency in internal control over financial reporting that is considered a material weakness.

The OIG issued notices of findings and recommendations to management throughout the audit. All findings and recommendations will be detailed in management letters that are provided to the Department. The audit disclosed no instances of noncompliance or other matters required to be reported under applicable audit standards and requirements.

We appreciated the cooperation of your staff during the audit.

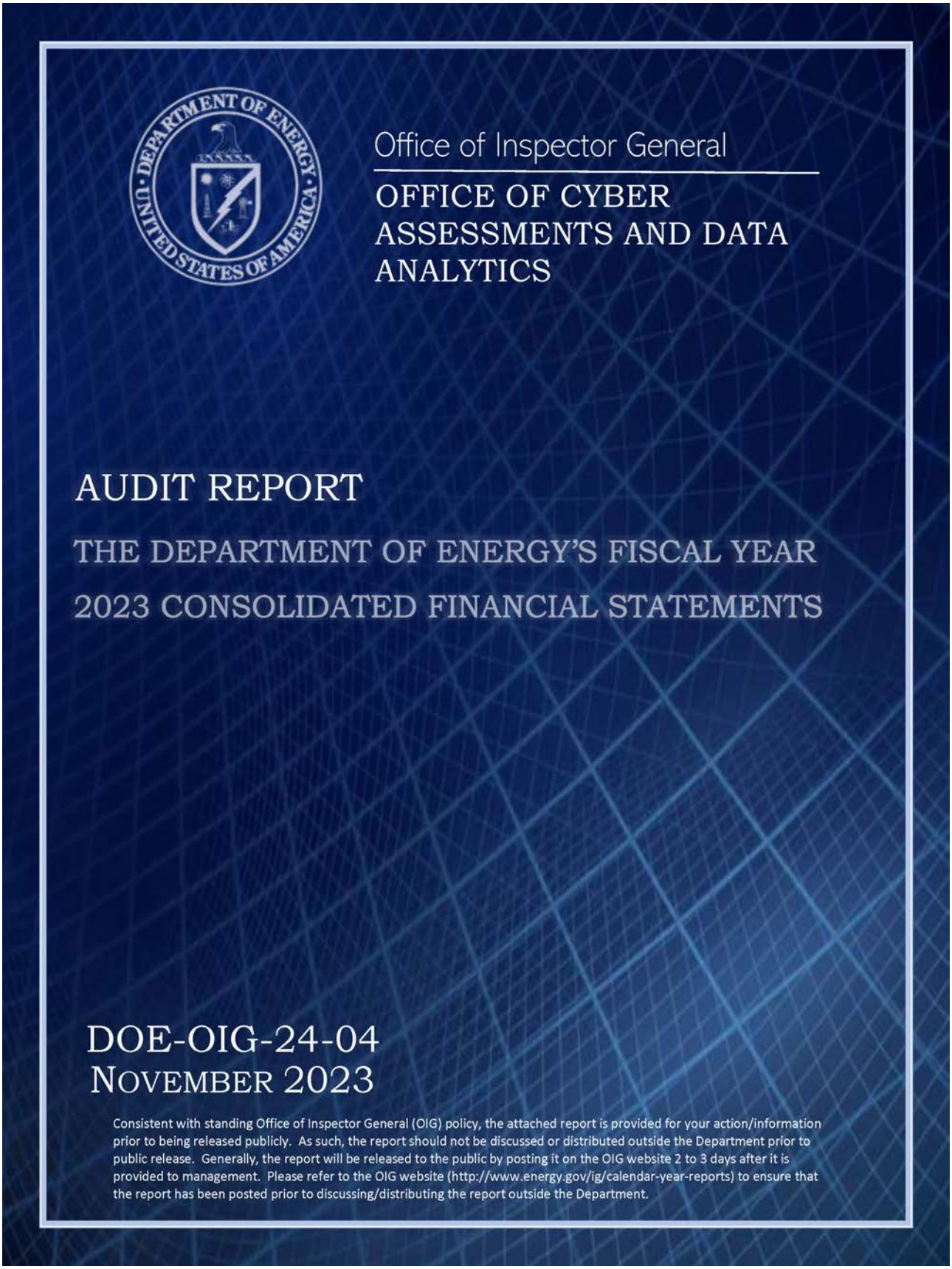
Kshemendra Paul
Assistant Inspector General
for Cyber Assessments and Data Analytics
Office of Inspector General

Attachment

cc: Director, Office of Finance and Accounting, CF-10
Director, Office of Financial Policy and Audit Resolution, CF-20
Audit Resolution Specialist, Office of Financial Policy and Audit Resolution, CF-20
Audit Liaison, Office of Under Secretary for Infrastructure, S3
Audit Liaison, Office of the Under Secretary of Science and Innovation, S4
Audit Liaison, Office of Environmental Management, EM

Auditors' Report

Independent Auditors' Report



Department of Energy
Washington, DC 20585

November 15, 2023

MEMORANDUM FOR THE SECRETARY

FROM: Teri L. Donaldson
Inspector General

SUBJECT: INFORMATION: Audit Report on The Department of Energy's Fiscal Year 2023 Consolidated Financial Statements

The attached report presents the results of the independent certified public accountants' audit of the Department of Energy's consolidated financial statements as of September 30, 2023, and 2022, and the related consolidated statements of net costs, changes in net position, custodial activity, and combined statements of budgetary resources for the years then ended, and the related notes to the consolidated financial statements.

To fulfill the Office of Inspector General's (OIG) audit responsibilities, we contracted with the independent public accounting firm of KPMG LLP (KPMG) to conduct the audit, subject to our review. KPMG is responsible for expressing an opinion on the Department's financial statements and reporting on applicable internal controls and compliance with laws and regulations. The OIG monitored audit progress and reviewed the audit report and related documentation. This review disclosed no instances where KPMG did not comply, in all material respects, with generally accepted government auditing standards. The OIG did not express an independent opinion on the Department's financial statements.

KPMG audited the consolidated financial statements of the Department as of September 30, 2023, and 2022, and the related consolidated statements of net costs, changes in net position, custodial activity, and combined statements of budgetary resources for the years then ended, and the related notes to the consolidated financial statements. KPMG concluded that these consolidated financial statements are presented fairly, in all material respects, in accordance with U.S. generally accepted accounting principles, and KPMG had issued an unmodified opinion based on its audits and the reports of other auditors for the years ended September 30, 2023, and 2022.

Auditors also considered the Department's internal controls over financial reporting and tested for compliance with certain provisions of laws, regulations, contracts, and grant agreements that could have a direct and material effect on the consolidated financial statements. The audit did not identify any deficiency in internal control over financial reporting that is considered a material weakness.

The OIG issued notices of findings and recommendations to management throughout the audit. All findings and recommendations will be detailed in management letters that are provided to the Department. The audit disclosed no instances of noncompliance or other matters required to be reported under applicable audit standards and requirements.

Attachment

cc: Deputy Secretary
Chief of Staff
Under Secretary for Infrastructure, S3
Under Secretary for Science and Innovation, S4
Under Secretary for Nuclear Security and Administrator of the National Nuclear Security Administration, S5
Senior Advisor, Office of Environmental Management, EM-1
Deputy Chief Financial Officer, CF-2

Audit Report: DOE-OIG-24-04

Department financial reports are available for download on the Office of the Chief Financial Officer Web site: https://www.energy.gov/cfo/listings/agency-financial-reports

Attachment

KPMG LLP
Suite 12000
1801 K Street, NW
Washington, DC 20006

Independent Auditors' Report

The Inspector General, United States Department of Energy, and
The Secretary, United States Department of Energy:

Report on the Audit of the Consolidated Financial Statements

Opinion

We have audited the consolidated financial statements of United States (U.S.) Department of Energy (Department), which comprise the consolidated balance sheets as of September 30, 2023 and 2022, and the related consolidated statements of net costs, changes in net position, and custodial activity, and combined statements of budgetary resources for the years then ended, and the related notes to the consolidated financial statements.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the Department as of September 30, 2023 and 2022, and its net costs, changes in net position, budgetary resources, and custodial activity for the years then ended in accordance with U.S. generally accepted accounting principles.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS), the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, and Office of Management and Budget (OMB) Bulletin No. 24-01, *Audit Requirements for Federal Financial Statements*. Our responsibilities under those standards and OMB Bulletin No. 24-01 are further described in the Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are required to be independent of the Department and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Emphasis of Matter

As discussed in Note 6 to the consolidated financial statements, the Department has total direct loans and loan guarantees, net, of $18 billion and $17 billion as of September 30, 2023 and 2022, respectively, which are issued under the *Federal Credit Reform Act of 1990*. Subsidy costs of the direct loans and loan guarantees are intended to estimate the long-term cost to the U.S. Government of its loan program and include interest rate differentials, delinquencies, defaults, fees, and other cash flow items. A subsidy re-estimate is performed annually as of September 30. Any adjustment resulting from the re-estimate is recognized as subsidy expense. Our opinion is not modified with respect to this matter.

As discussed in Note 13 to the consolidated financial statements, the cost estimates supporting the Department's environmental cleanup and disposal liabilities of $534 billion and $520 billion as of September 30, 2023 and 2022, respectively, are based upon assumptions regarding funding and other future action and decisions, many of which are beyond the Department's control. Our opinion is not modified with respect to this matter.

Attachment

As discussed in Note 18 to the consolidated financial statements, the Department is involved as a defendant in several matters of litigation relating to its inability to accept commercial spent nuclear fuel by January 1, 1998, the date specified in the Nuclear Waste Policy Act of 1982, as amended. The Department has recorded liabilities for likely damages of $34 billion and $31 billion as of September 30, 2023 and 2022, respectively. Our opinion is not modified with respect to this matter.

Other Matter - Interactive Data

Management has elected to reference to information on websites or other forms of interactive data outside the *Agency Financial Report* to provide additional information for the users of its consolidated financial statements. Such information is not a required part of the consolidated financial statements or supplementary information required by the Federal Accounting Standards Advisory Board. The information on these websites or the other interactive data has not been subjected to any of our auditing procedures, and accordingly we do not express an opinion or provide any assurance on it.

Responsibilities of Management for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with U.S. generally accepted accounting principles, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS, *Government Auditing Standards*, and OMB Bulletin No. 24-01 will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the consolidated financial statements.

In performing an audit in accordance with GAAS, *Government Auditing Standards*, and OMB Bulletin No. 24-01, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Department's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the consolidated financial statements.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

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Attachment

Required Supplementary Information

U.S. generally accepted accounting principles require that the information in the Management's Discussion and Analysis and Required Supplementary Information sections be presented to supplement the basic consolidated financial statements. Such information is the responsibility of management and, although not a part of the basic consolidated financial statements, is required by the Federal Accounting Standards Advisory Board who considers it to be an essential part of financial reporting for placing the basic consolidated financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with GAAS, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic consolidated financial statements, and other knowledge we obtained during our audits of the basic consolidated financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Management is responsible for the other information included in the *Agency Financial Report*. The other information comprises the About This Report, Table of Contents, Message from the Secretary of Energy, Message from the Deputy Chief Financial Officer, FY 2023 DOE Highlight: State and Community Energy Programs, Memorandum from Inspector General, and Other Information sections but does not include the consolidated financial statements and our auditors' report thereon. Our opinion on the consolidated financial statements does not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the consolidated financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Report on Internal Control Over Financial Reporting

In planning and performing our audit of the consolidated financial statements as of and for the year ended September 30, 2023, we considered the Department's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the consolidated financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Department's internal control. Accordingly, we do not express an opinion on the effectiveness of the Department's internal control. We did not test all internal controls relevant to operating objectives as broadly defined by the *Federal Managers' Financial Integrity Act of 1982*.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected, on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses or significant deficiencies may exist that were not identified.

Attachment

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Department's consolidated financial statements as of and for the year ended September 30, 2023 are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the consolidated financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards* or OMB Bulletin No. 24-01.

We also performed tests of the Department's compliance with certain provisions referred to in Section 803(a) of the *Federal Financial Management Improvement Act of 1996* (FFMIA). Providing an opinion on compliance with FFMIA was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances in which the Department's financial management systems did not substantially comply with the (1) Federal financial management systems requirements, (2) applicable Federal accounting standards, and (3) the United States Government Standard General Ledger at the transaction level.

Purpose of the Reporting Required by *Government Auditing Standards*

The purpose of the communication described in the Report on Internal Control Over Financial Reporting and the Report on Compliance and Other Matters sections is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Department's internal control or compliance. Accordingly, this communication is not suitable for any other purpose.

KPMG LLP

Washington, DC
November 15, 2023

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FEEDBACK

The Office of Inspector General has a continuing interest in improving the usefulness of its products. We aim to make our reports as responsive as possible and ask you to consider sharing your thoughts with us.

Please send your comments, suggestions, and feedback to OIG.Reports@hq.doe.gov and include your name, contact information, and the report number. You may also mail comments to us:

Office of Inspector General (IG-12)
Department of Energy
Washington, DC 20585

If you want to discuss this report or your comments with a member of the Office of Inspector General staff, please contact our office at 202–586–1818. For media-related inquiries, please call 202–586–7406.

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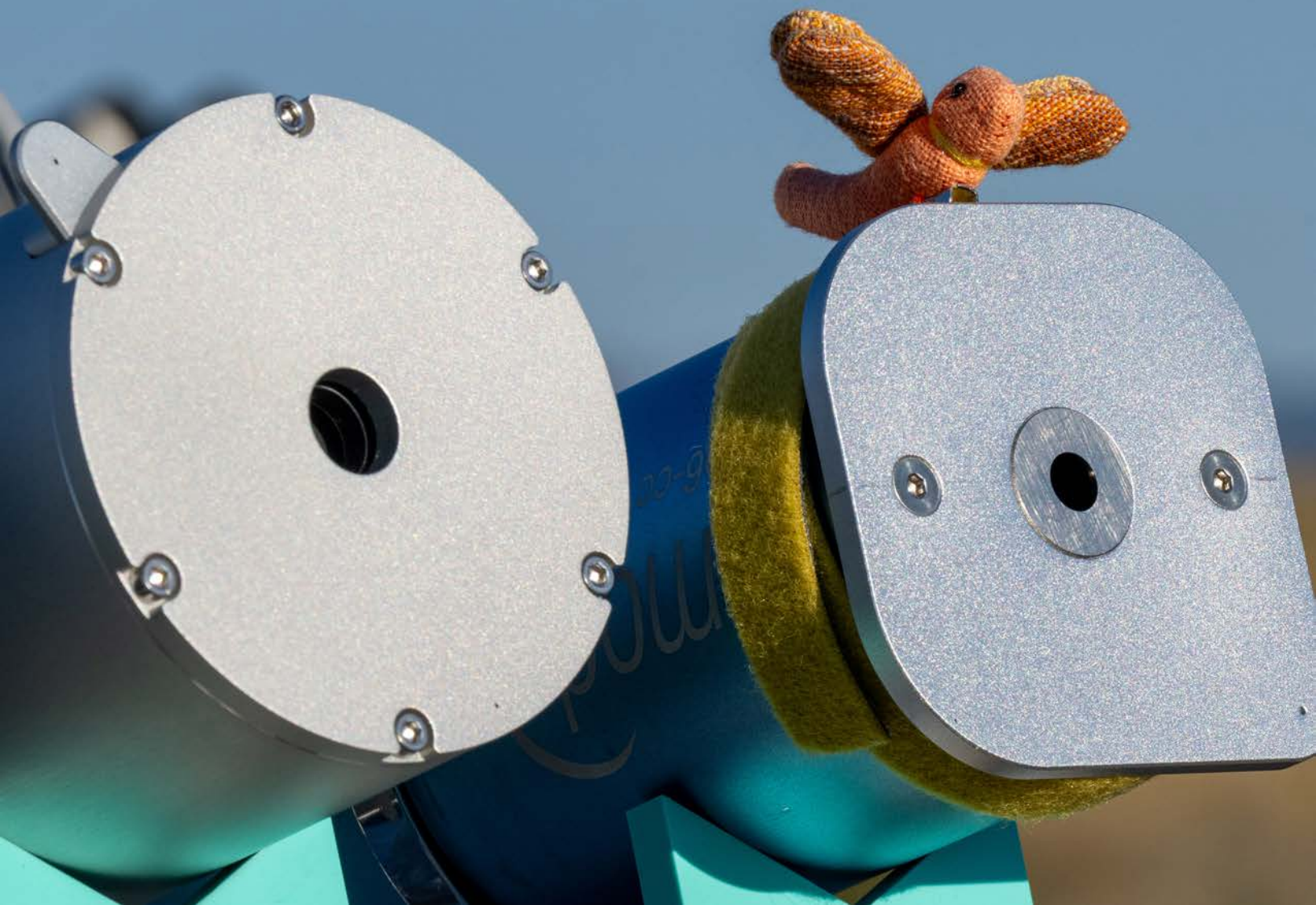
Other Information



FY 2023 Summary of Financial Statement Audit and Management Assurances

Audit Opinion	**Unmodified**				
Restatement	No				
Material Weaknesses	**Beginning Balance**	**New**	**Resolved**	**Consolidated**	**Ending Balance**
TOTAL Material Weaknesses	*0*	*0*	*0*	*0*	*0*

Effectiveness of Internal Control Over Financial Reporting (FMFIA Section II) – Statement of Assurance	**Unmodified**					
Material Weaknesses	**Beginning Balance**	**New**	**Resolved**	**Consolidated**	**Reassessed**	**Ending Balance**
TOTAL Material Weaknesses	*0*	*0*	*0*	*0*	*0*	*0*

Effectiveness of Internal Control Over Operations (FMFIA Section II) – Statement of Assurance	**Unmodified**					
Material Weaknesses	**Beginning Balance**	**New**	**Resolved**	**Consolidated**	**Reassessed**	**Ending Balance**
TOTAL Material Weaknesses	*0*	*0*	*0*	*0*	*0*	*0*

Conformance with Federal Financial Management System Requirements (FMFIA Section IV) – Statement of Assurance	Federal Systems conform to financial management system requirements					
Non-Compliance	**Beginning Balance**	**New**	**Resolved**	**Consolidated**	**Reassessed**	**Ending Balance**
TOTAL Non-Conformance	*0*	*0*	*0*	*0*	*0*	*0*

Conformance with Section 803(a) of the Federal Financial Management Improvement Act (FFMIA)		
	Agency	**Auditor**
1. Federal Financial Management System Requirements	No lack of substantial compliance noted	No lack of substantial compliance noted
2. Applicable Federal Accounting Standards	No lack of substantial compliance noted	No lack of substantial compliance noted
3. USSGL at Transaction Level	No lack of substantial compliance noted	No lack of substantial compliance noted

Department of Energy's Management Challenges – Report of the Inspector General

Congress requires that Inspectors General annually identify the most significant management challenges facing their agencies and report those challenges to Congress and the Agency head.

For fiscal year (FY) 2024, the Office of Inspector General (OIG) identified overall issues in the areas of unprecedented challenges for the Department under recent legislation and opportunities to improve the Department's use of technology. The OIG also reported on the status of management challenges addressed in previous reports.

The FY 2024 management challenge areas include:

- Overseeing the Department's Expanded Mission — the Infrastructure Investment and Jobs Act (IIJA), CHIPS and Science Act (CHIPS Act), Inflation Reduction Act (IRA), and Puerto Rico Energy Resilience Fund
- Strengthening Cybersecurity — Protecting Sensitive Data, Information Systems, National Security, and Critical National Infrastructure
- Combating the Theft of Intellectual Property — Research Security
- Modernizing Oversight and Management — Access to Data for the Purpose of Running Data Analytics
- Cooperation with the OIG to Advance the Use of Technology — Successes and Failures
- Developing and Deploying Artificial Intelligence — Artificial Intelligence and Technology Office (AITO)

Additionally, the status of other management challenges addressed in previous reports includes:

- Restoring Plutonium Pit Production Capability — National Nuclear Security Administration (NNSA)
- Managing Radioactive Liquid Waste — Office of Environmental Management
- Building a Stronger Suspension and Debarment Program — Upcoming Special Project Report
- Improving Mandatory Disclosure Reporting — Upcoming Special Project Report

I. UNPRECEDENTED CHALLENGES UNDER RECENT LEGISLATION

Overseeing the Department's Expanded Mission — the IIJA, CHIPS Act, IRA, and Puerto Rico Energy Resilience Fund

In the past 2 years, Congress passed the IIJA, CHIPS Act, IRA, and Puerto Rico Energy Resilience Fund, which collectively provided the Department with an unprecedented $99 billion in new appropriations, $30.5 billion in new authorizations and an enhanced loan authority of over $400 billion.

The current situation brings tremendous risk to the taxpayers—the combination of standing up 72 new Department programs, a real risk of funding entities owned or controlled by foreign adversaries, and a historic expansion of the Department's loan program. As you know, these loan packages are on an accelerated schedule. One category of loan guarantees worth an estimated $250 billion will expire on September 30, 2026. Another category of loan guarantees worth an estimated $40 billion will expire on the same date—$290 billion over the next 3 years or, put another way, roughly $8 billion per month over the next 36 months. There is no precedent in the Department for this level and pace of financing. To put that amount into perspective, Wells Fargo, one of the Nation's largest banks, had an outstanding domestic commercial and industrial loan balance of $292 billion as of the end of 2022.[1] Further, many of these projects are designed to promote innovation by financing projects not otherwise acceptable by private equity investors—projects the markets do not view acceptable.

These massive new risks to the taxpayer are occurring in tandem with substantial underfunding of the OIG. Underfunding oversight makes an inherently risky situation much more amenable to fraud, waste, and abuse. Without substantially increased resources, the OIG's oversight will be a fraction of what it should be, and it will not include any oversight of many key areas. Moreover, the OIG will not be able to provide the near-term audit and inspection assistance that the President specifically requested to minimize the longer-term impacts from the large-scale frauds that often plague Federal programs that provide such funding on an expediated timeline. The current level of OIG funding for oversight is both inadequate and irresponsible.

[1] https://www08.wellsfargomedia.com/assets/pdf/about/investor-relations/annual-reports/2022-annual-report.pdf. (p.18)

Additionally, without proper funding, critical pre-existing risk areas such as research security, contracting and payment integrity, stockpile stewardship, environmental cleanup, and pit production—to name a few—will not receive appropriate OIG oversight.

As the Pandemic Response Accountability Committee (PRAC) continues to identify the billions and billions of dollars lost or stolen from the pandemic-related Federal funding programs, there are lessons to be learned. Earlier this year, PRAC chairman Michael Horowitz testified about the use of over 69,000 questionable social security numbers to obtain $5.4 billion in fraudulent pandemic loans and grants.[2] PRAC estimates a total of $60.4 billion has been lost to fraud from the total $655 billion in benefits provided in response to COVID-19, and other sources place that number at over $200 billion.[3] Fast money must be balanced against the need for thoughtful and effective internal controls and independent audits.

During the FY 2024 budget cycle, the OIG requires $264.7 million to perform its statutory mission in connection with the IIJA, IRA, and Puerto Rico Energy Resilience Fund. This funding could be provided via a new appropriation. However, due to the spending caps enacted in the Fiscal Responsibility Act of 2023, the OIG is also requesting that Congress reallocate $264.7 million from the Department's unobligated balances under the IIJA, IRA, and Puerto Rico Energy Resilience Fund to provide 0.35 percent of funding in those statutes to the OIG. This can be done with no increases in appropriations.

On October 19, 2023, Department of Energy Inspector General, Teri Donaldson, testified before the Senate Committee on Energy and Natural Resources on this subject. The complete text of Ms. Donaldson's written statement addressing some of the many risks associated with the unprecedented increase in funding provided by these pieces of legislation can be found here: https://www.energy.senate.gov/services/files/A8162B6F-9A80-4AAD-BEEB-9659B409E15C.

II. OPPORTUNITIES TO IMPROVE THE DEPARTMENT'S USE OF TECHNOLOGY

Strengthening Cybersecurity — Protecting Sensitive Data, Information Systems, National Security, and Critical National Infrastructure

Significance of the Issue – Cybersecurity

The Department generates and maintains some of the Federal Government's most attractive assets to foreign adversaries, ranging from national security information to highly valuable research conducted to support both national and international goals. The Department is responsible for maintaining the Nation's nuclear deterrent, reducing the threat of nuclear proliferation, overseeing the Nation's energy supply, and generating cutting-edge science and technologies within its National Laboratories.

Cybersecurity is a crucial aspect of the Department's overall security posture. While the usual attacks by adversaries remain persistent challenges, threats are increasingly coming from state-sponsored military and intelligence organizations, terrorist groups, and international crime organizations. For example, recent reports have highlighted the increase in attacks on Federal organizations including agencies and military installations by state-sponsored adversaries, which could lead to devastating consequences in the event of a cyber breach.

Department Progress

The Department is currently developing an agency-wide cybersecurity strategy, which the Department will use to help carry out its mandated cybersecurity responsibilities and address evolving Department and energy sector cybersecurity needs. In March 2023, the Secretary issued a memorandum directing the Office of Cybersecurity, Energy Security, and Emergency Response (CESER) to lead cybersecurity plan coordination across program offices managing relevant provisions of the IIJA. CESER, in consultation with program offices, identified 44 provisions that it recommends be required in cybersecurity plans used by IIJA recipients. The Department also reports that it has implemented various mechanisms to allow cybersecurity-related collaboration across the enterprise and with international partners. For example, the Office of the Chief Information Officer (OCIO) staged its Cybersecurity and Technology Innovation Conference where various topics were discussed, including risks associated with the Nation's power grid. The National Laboratories also continue to collaborate on cybersecurity through various conferences and the National Laboratory Chief Information Officer Council. The Department also reports that cybersecurity continues to be a point of emphasis discussed by various working groups such as the Information Management Governance Board and the DOE Cyber and Information Technology/Operational Technology Executive Cyber and IT Council. Lastly, the Department reports engaging with industry and international partners to help drive technical collaboration in cyber and physical security of energy infrastructure to respond to emerging threats from adversaries and a rapidly changing climate.

Challenges

The Department continues to experience many challenges related to the implementation of an effective cybersecurity program. The Department's existing governance structure continues to inhibit its ability to respond to cybersecurity evolving risks and mandates. While the Department has a Chief Information Officer (CIO) with broad responsibilities, the Department's decentralized organizational structure may impede the CIO's ability to manage and combat cybersecurity risks facing the Department. The Department lacks a centralized organizational structure, or

[2] *Congressional Hearing, February 1, 2023, on Federal Pandemic Spending: A Prescription for Waste, Fraud, and Abuse* (Page 3): oversight.house.gov.
[3] *Pandemic Unemployment Insurance: How much has been paid to fraudsters?*: pandemicoversight.gov.

a federated mechanism, to oversee enterprise-level risks facing the Department, and to obtain, process, and correlate real-time cyber data. This impedes the CIO's ability to manage security across the enterprise.

In addition, the Department's governance structure has caused the agency to fall behind changing cybersecurity requirements and enhancements. Despite Department directives requiring implementation of the latest Federal cybersecurity guidance published by the National Institute of Standards and Technology, various contractors performing work on behalf of the Department and at Department-owned facilities continue to implement and assess their cybersecurity environments against outdated requirements. Contractors have reported that contractual requirements were not communicated to them or were not timely incorporated into their contracts. Officials have also expressed concerns that lines of authority have not been clear. Some sites are taking cybersecurity direction from the site offices overseeing them, but not taking direction from the OCIO. Some site officials have also resisted CIO efforts as so-called "unfunded mandates" and continue to pursue locally focused solutions for a problem that requires an enterprise approach. This type of dysfunction results in gaps and seams, duplicative investment, and friction that could put sensitive and potentially classified information at risk.

The Department has also been challenged to implement the various aspects of Executive Order (EO) 14028, *Improving the Nation's Cybersecurity*, issued in May 2021. For instance, the EO requires agencies to advance towards implementation of a Zero Trust Architecture to improve cybersecurity, visibility, and controls, among other things. While the Department has initiated Zero Trust Architecture actions in response to the EO, much work is needed. The EO required the Department to adopt multi-factor authentication and encryption of data at rest within 180 days of the order. However, recent correspondence from the Administration to agencies indicated a lack of progress related to these key areas of the EO. Finally, the EO directed agencies to centralize and streamline access to cybersecurity data to drive analytics for identifying and managing cybersecurity risks. However, the Department continues to be challenged with obtaining close to or real-time authoritative data, in particular from its management and operating and prime contractors, which impacts its ability to detect and respond to threats in a timely manner across the entire enterprise. Instead of having real-time or close to real-time data feeds from the various networks and systems supporting the Department's mission, it relies heavily on data calls, which are prone to errors and inconsistencies, to obtain information on the sites' security posture. The Department could substantially benefit from working toward establishing common minimum standards for a taxonomy for its cybersecurity information and leveraging sources of network information to conduct cyber analytics at the enterprise level. By performing cyber analytics at the enterprise-level, the Department would gain more visibility for making risk-based decisions and would be able to use the data to help prioritize the use of limited resources.

Another related challenge impacting the Department's ability to enhance its cybersecurity posture is the ability to obtain adequate resources. With the addition of Federal mandates, evolving threats that require the need for better tools, and shortages in the cyber workforce, the Department must continually reprioritize its investments to ensure that its systems and data are secure. Officials have indicated that while new mandates are being established and are required to be implemented, in many cases they are underfunded or not funded at all. Further, in some cases Department programs and sites need funding to close recommendations issued by the OIG. However, officials are faced with harder-than-ever choices between addressing cybersecurity weaknesses or conducting mission-specific work, such as environmental clean-up, reducing the threat of nuclear proliferation, or conducting research at one of the many National Laboratories. This challenge was evident in our report on the *Department of Energy's Unclassified Cybersecurity Program - 2022*, which noted that the Department was unable to fully address 38 of 61 (62 percent) recommendations made by the OIG in the prior year. This challenge could be addressed using authoritative data driving data analytics to identify and buy down the highest risks across the enterprise, while setting conditions to further drive down costs and risks by accelerating organizational learning and reuse of leading solutions.

While the OIG's FY 2023 evaluation is ongoing, we continue to find weaknesses similar in type and frequency across the Department. Resource challenges will continue to be exacerbated by the Federal Government's, including the Department's, significant problems in obtaining and retaining a competent cyber workforce. Without adequate staffing of key cyber positions throughout the Department, the agency lacks the necessary personnel to detect and protect its systems, critical infrastructure, and data from the evolving cybersecurity threats. Notably, the Department has established a Cyber Workforce Working Group to help develop and implement solutions for attracting top cyber talent to the agency. However, the Department's challenges related to the cyber workforce will be exacerbated by introduction of new IIJA and IRA activities to provide oversight and enforcement of stricter cybersecurity over the Nation's power grid.

We must also note that the lack of OIG resources has impacted our ability to fully evaluate the Department's cybersecurity posture and conduct assessments of high priority and/or high-risk areas, such as national security systems, high value assets, and operational technologies. In addition, the recent IIJA legislation came with additional responsibilities related to cybersecurity; however, the OIG only received a small fraction of the funding needed to conduct the additional oversight.

Combating the Theft of Intellectual Property—Research Security

Significance of the Issue – Theft by Foreign Adversaries
As reported in the FY 2022 Agency Financial Report, the Department supported $14.8 billion in total research and development.[4] The risks associated with the theft of intellectual property will only increase as the Department continues to invest heavily utilizing funds under the IIJA, CHIPS Act, and IRA. While some of this work is for fundamental research that is freely published in public, much of it is subject to intellectual property protections and/or national security considerations. These major investments remain a target for foreign governments seeking to illicitly acquire access to U.S.-funded research and technologies. This is particularly troubling given the Department's integral role in the development and maintenance of nuclear weapons systems, along with other pivotal national security missions. The economic and scientific value of the research and intellectual property developed within the Department's complex has led foreign governments and their proxies to intensify efforts to extract information from the Department's institutions.

Department Progress
Since our FY 2023 Management Challenges report, the Department's Research, Technology and Economic Security Working Group has adopted a new conflict of interest policy, released via a Financial Assistance Letter, which emphasizes combating financial conflicts of interest among Department-funded researchers, and has begun codifying this through the rulemaking process. The Department has also continued work on a new conflict of commitment policy which seeks to address the same concerns for non-financial, overlapping commitments from multiple institutions that will help enhance integrity among our grantees. The Department has begun to demonstrate a commitment to preventing theft of its intellectual property by instituting prohibitions on affiliation with foreign talent programs from countries of concern for all prospective IIJA funding recipients, and by signaling it will widen such restrictions to all financial assistance recipients for future funding opportunity announcements. The Department has also established a pilot Research, Technology, and Economic Security Vetting Center to support due diligence reviews in support of research, development, demonstration, and deployment activities to inform the Department of the potential risks to national security, economic competitiveness, and U.S. technological leadership.

Challenges
While some efforts are underway, the Department must prioritize these efforts, complete these and other tasks, and ensure that it has adequate tools and resources to effectively prevent theft of intellectual property. At the same time, these tools must be designed with sufficient clarity to facilitate timely investigations and prosecutions of individuals violating the laws intended to protect this research. For example, the challenge remains in FY 2024 for the Department to fully implement National Security Presidential Memorandum 33 by creating a standardized set of required certifications and disclosures for all funding applicants. This is especially important given the significant increase in grant funds allocated under the IIJA, CHIPS Act, and IRA. The Department must closely monitor the effective implementation of Department directives restricting employees and contractors from affiliating with any foreign state-sponsored programs from identified countries of concern.

Aside from such affiliations, the Department must also design requirements to deter and penalize individuals who have stolen valuable intellectual property owned by the U.S. and transported that property to our adversaries. The Department must ascribe resources to the Vetting Center to be able to effectively pursue its mission of proactively detecting foreign threats to our advanced technologies and strategic supply chains utilizing risk-based analytic tools and partnerships between program offices.

Given the importance of and risk associated with this topic, our Office of Inspections, Intelligence Oversight, and Special Projects has recently begun an inspection focusing on the Department's compliance with requirements of Department Order 486.1A, Foreign Government Sponsored or Affiliated Activities. The Order prohibits Department employees and contractors from participating in foreign government-sponsored talent recruitment programs and restricts other foreign government-sponsored or affiliated activities of a "foreign country of risk." Additionally, the Office of Inspections, Intelligence Oversight, and Special Projects is planning a joint project with the OIG of the Intelligence Community in FY 2024 to evaluate Department security processes in accordance with the requirements in Security Executive Agent Directives and Department Orders.

Modernizing Oversight and Management — Access to Data for the Purpose of Running Data Analytics

Significance of the Issue – Data Analytics
The significance of the potential use of data analytics within the Department cannot be overstated. The use of data analytics would improve effective and efficient management and oversight of the significant influx of funds associated with the IIJA, CHIPS Act, IRA, and Puerto Rico Energy Resilience Fund. It would further provide key support for the Department integrating authoritative data and data analytics into its management and oversight of its programs and operations, supporting the Department to reduce risk and support resolving its 33-year tenure on the General Accountability Office's (GAO) High-Risk List.

Department Progress
The Department has not kept pace with the Federal requirements pertaining to the use of data analytics. In fact, the Department is still in the early stages, despite over 10 years of Congressional direction on this subject. In

[4] https://www.energy.gov/cfo/articles/fy-2022-doe-agency-financial-report.

March 2020, the Payment Integrity Information Act of 2019 was enacted and incorporated select provisions from the Fraud Reduction and Data Analytics Act of 2015, the Improper Payments Information Act of 2002, the Improper Payments Elimination and Recovery Act of 2010, and the Improper Payments Elimination and Recovery Improvement Act of 2012 into a single subchapter in the U.S. Code. In addition, there are numerous other requirements that make up the legal framework related to the use of data analytics. For example, the 2019 Foundations of Evidence-based Policymaking Act and Federal Data Strategy published by the Office of Management and Budget (OMB), and subsequent OMB amplifying guidance and action plans, have set a comprehensive framework of internal controls for key data management, data quality, and data science requirements. These leading practices are further amplified in the GAO's report, *A Framework for Managing Fraud Risks in Federal Programs,* issued in 2015.

The Department has taken only preliminary steps toward using data analytics in its operations. For instance, to comply with the Payment Integrity Information Act of 2019, the Department has undertaken the development and implementation of a Fraud Risk and Data Analytics Framework (Framework). Officials have defined the Framework and its placement within the organization and established a leadership hierarchy to guide the effort. To assist in the continued Framework implementation, the Department established a Senior Assessment Team to provide a leadership role in reviewing the Department's fraud risk profile and direct mitigation strategies with the support of the Data Analytics Working Group.

The Department also formed a Fraud Risk Working Group that supports preparation of the annual agency fraud risk register and fraud risk profile. The working group developed a fraud risk register based on reported fraud risks, fraud risk occurrences, and internal control entity assessment data. The register was then prioritized to prepare the Department's Fraud Risk Profile. The Department's Data Analytics Working Group also collaborated with field and contractor staff to identify contractor conflicts of interest and available data sets that could be used as pilots for data analytic purposes. Finally, the Department has recently onboarded a new Chief Data Officer, with scope and responsibilities as outlined in the 2019 Foundations of Evidence-based Policymaking Act.

Challenges
While planning is very important, it is not a substitute for making operational progress. Many challenges remain. For instance, the IRA provided the Department funding for three rebate programs which will be administered by the Department's Office of State and Community Energy Programs. Initial efforts by the OIG, to be developed and published via an upcoming report, have identified shortfalls in the data being collected by recipients and a lack of information being shared across recipients, reflecting risks that could hamper the identification and prevention of fraud. Further, our prior reports on the Department's Payment Integrity Reporting in its annual agency financial report have noted that the Department could increase its use of data analytics that would allow it to move away from pay and chase toward prevention, which is a more efficient and accurate method of identifying improper payments. Additionally, a 2022 survey conducted by the Department to establish a baseline of data analytics capabilities being performed Department-wide identified widespread data literacy shortcomings across the reporting entities and found that the practice of data analytics is inconsistent and underdeveloped across the complex. For example, data analytics capabilities at some reporting entities consisted primarily of maintaining spreadsheets and manual reconciliation efforts.

The Department is also lagging on completion and integration of actions outlined in the Federal Data Strategy action plans, such as those related to establishing a framework for data management, data governance, establishing an enterprise data catalog, and assessing data management maturity.

Another significant challenge the Department faces is identifying the data systems and sources used by the Department and its contractors. While the OCIO attempted to document the data analytics activities being performed by Department elements and the data systems in use during the past year, the results of the effort were not sufficient or even usable. Further, even when systems are identified, the Department may encounter challenges accessing data, especially for systems managed by its contractors.

The OIG will soon be issuing a Special Project Report on the Department's underutilization of data analytics, and the dangers of continuing to underutilize this powerful tool.

Cooperation with the OIG to Advance the Use of Technology — Successes and Failures

Successes
The Department has cooperated with the OIG's efforts to assess and improve the Department's cybersecurity posture. As a result of this cooperation, the OIG has identified over 44,000 cybersecurity vulnerabilities across 13 sites, and the Department has acted to address many of the vulnerabilities identified.

Failures
The Department has not fully cooperated with the OIG's efforts to collect information needed to utilize data analytics to protect the Department against fraud, waste, and abuse.

In September 2021, the OIG requested payroll-related records from one Department contractor for the purpose of conducting data analytics to help identify potential fraud by contractors who work onsite at Department laboratories, including its nuclear laboratories and other Department facilities. This contractor cooperated with the OIG and provided the requested data in a timely manner

within 45 days. The OIG has since analyzed that data and uncovered numerous fraudulent activities, resulting in several active criminal investigations and indictments.

Additionally, the OIG acquired the same payroll-related data for groups of Department Federal employees, and the Department cooperated with these efforts. The OIG is currently analyzing that data and has already uncovered additional potentially fraudulent activities.

It is vitally important for the Department to be able to timely identify potential wrongdoing by individuals working in the agency's highly sensitive facilities, whether those individuals are employed by the Department directly or by one of its contractors. In addition to protecting the existing mission elements of the Department from the obvious risks of employing criminals, identifying and prosecuting these individuals is an obvious first step to protect the Department's new mission elements being funded at unprecedented levels under the IIJA, IRA, and Puerto Rico Energy Resilience Fund.

Data analytics is the most efficient and powerful tool to utilize for helping to ensure the integrity of the Department's workforce, and to timely identify any wrongdoing. For this reason, in March 2022, the OIG issued similar payroll-related data requests to 10 contractors at 5 Department sites.

For over a year, the Department did not timely comply or support the OIG's efforts to collect this data from the 10 contractors on the grounds that the contractors had advised that they would refuse to provide it. Bottom line —the Department declined to acknowledge, much less enforce, the contractual obligation of these contractors to cooperate with the OIG.

On May 12, 2023, the Inspector General elevated this matter to the Secretary at a meeting, also attended by the Deputy Secretary, the NNSA Administrator, and the General Counsels for both the Department and NNSA. Although the Inspector General was under no legal obligation to do so, she deferred one of the items on the list, with the understanding that the OIG may later request the remaining item once the OIG has an opportunity to review the other requested information. The Inspector General deferred this single item with the understanding that the additional categories of data would be provided to the OIG.

For the next six months, the Department did not request the data from its contractors. Instead of enforcing its own contractual obligations, the Department provided the OIG with incomplete and unusable employee data maintained by the General Services Administration. During the course of these protracted discussions with the Department, the OIG discovered a very troubling fact: the Department does not maintain the most basic data that would allow the Department to identify the individuals working within the Department's government-owned and often highly sensitive facilities. This fact raises serious security concerns.

In any case, the Department long ago acknowledged that it may request such identifying data from these contractors, all of which are operating federally owned facilities. However, as of the end of September 2023, the Department had declined to do so in any comprehensive way.

On October 5, 2023, the Department requested that a single contractor provide the data to the OIG within 30 days. That contractor provided data on November 3, 2023. Based on the OIG's preliminary review of this data, it appears to be largely complete. The OIG will continue to work with this contractor to complete the production.

On November 13, 2023, the Department requested that a second contractor provide the data to the OIG within 30 days.

On November 14, 2023, the Department directed that six additional contractors provide the data to the OIG within 30 days.

Also, on November 14, 2023, the Deputy Secretary informed the OIG that NNSA will be directing the last two of the contractors to provide the data.

Once the remaining data is provided, the OIG will review it and work directly with the contractors to discuss any deficiencies.

As a result of the Department's failure to timely cooperate with our oversight work, the OIG is reporting this in our *Semiannual Report to Congress* as restricted/significantly delayed access to records. Additionally, the OIG intends to issue a Special Project Report on this subject in December of 2023.

Developing and Deploying Artificial Intelligence — Artificial Intelligence and Technology Office

Significance of the Issue – Artificial Intelligence

The past year witnessed an explosion in interest regarding artificial intelligence (AI), machine learning, and large language models. The interest engenders both optimism about AI's ability to solve problems as well as concerns about AI's role in everyday life, including ensuring relevant security and ethical concerns are appropriately considered. AI also has the potential to transform many aspects of discovery and applied technology and science; manufacturing, infrastructure, finance, and commerce; Government operations; and national security.

With its research capabilities, the Department has a tremendous opportunity to provide leadership covering research principles and guidelines, processes, and technical rigor. As the custodians of the most advanced high-performance supercomputers and massive multimodal data sets stemming from diverse research, the Department and its National Laboratories are well-situated to collaborate with each other and external

partners in taking a leading role in developing and deploying AI. There is no doubt that AI properly deployed would also enhance the Department's own operations.

Department Progress
In February 2019 and December 2020, the President promulgated EOs directing the Department and other Federal agencies to pursue strategic objectives to promote and protect American advancements in AI. These objectives include, among others: sustained investment in AI research and development in collaboration with industry; enhanced access to high-quality and fully traceable Federal data, models, and computing resources; and minimized vulnerability to AI-enabled attacks from malicious actors. EO 13859, *Maintaining American Leadership in Artificial Intelligence,* states that leadership in AI will require a "whole-of-government approach" that will include meaningful contributions from Department and other Federal agencies working in partnership with experts in the private and academic sectors. In particular, EO 13859 states:

> Maintaining American leadership in AI requires a concerted effort to promote advancements in technology and innovation, while protecting American technology, economic and national security, civil liberties, privacy, and American values and enhancing international and industry collaboration with foreign partners and allies.

EO 13960, *Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government*, established guidelines and principles for the use of AI within the Federal Government. It focused on ensuring that AI technologies are reliable, transparent, and secure.

To date, the Department reports initiating the following actions to address the use of AI. AITO was established in September 2019 to foster the strategic coordination and development of AI capabilities across the Department by serving as the central point of coordination for the broad and extensive capabilities of the Department and its National Laboratory Complex. In 2021, AITO set the goal of the Department's civilian leadership in the use of AI. In consultation with the National Institute of Standards and Technology, AITO developed the *DOE AI Risk Management Playbook*. This is a reference guide for AI-risk identification and potential mitigations. More recently, the OCIO released its *Generative Artificial Intelligence Reference Guide* in August 2023 to provide guidance on gaining an understanding of key considerations, risks, and best practices associated with the use of generative AI. In addition, the Department's DOE Artificial Intelligence Exchange System captured over 1,800 AI projects across the enterprise and more than 530 use cases, of which more than 180 were publicly released.

The Department also recently announced several awards to enhance AI research including:

- $29 million for research on machine learning, AI, and data resources for fusion energy sciences;
- $16 million for research on scientific machine learning for complex systems; and
- Berkeley National Laboratory's Nuclear Science Division received two DOE funding awards for 2-year projects focused on AI and machine learning.

The President's FY 2024 budget includes a request of $730 million for cutting-edge research in AI, quantum information sciences, microelectronics, and isotope production within the Department's Office of Science. These activities will require significant Department coordination, oversight, and direction. The Department also plans to transition the AITO into the Office of Science in FY 2024 and expand the number of employees in that office to help address emerging challenges.

Challenges
While the Department reports making investments in AI, these advancements appear program specific and site specific. There is little enterprise level clarity on approaches, frameworks, guidelines, and policies that will be used to govern and coordinate the AI efforts across the complex, in line with EO 13960. Without a strong governance structure in place and common minimum standards to allow for methodical management of AI issues, the Department may be unable to keep up with the fast-changing AI landscape and related ethical, security, and use concerns.

Realizing the Department's goal of AI leadership will also require effective Department oversight to coordinate cross-cutting and enterprise-wide efforts with contributions from the Office of Science, CESER, the OCIO (including the Chief Data Officer), the Department's National Laboratories, and NNSA. The opportunities to lead in the deployment and use of advanced AI technology will also require funding and active partnerships with industry and academia.

Currently, the Department lacks focus on specific actions or a detailed roadmap to guide its path forward. Many efforts for AI and machine learning appear to focus on broad goals and objectives without a clear plan for implementation, making it difficult to assess the Department's commitment, metrics, and progress toward achieving its AI and machine learning goals.

Given their inter-relationship, clarifying and deconflicting AI governance and data analytics, cybersecurity, and IT governance will also be required.

III. STATUS OF OTHER MANAGEMENT CHALLENGES ADDRESSED IN PREVIOUS REPORTS

Restoring Plutonium Pit Production Capability — National Nuclear Security Administration

Significance of the Issue – Pit Production
NNSA is responsible for maintaining a safe, secure, reliable, and effective nuclear weapons stockpile. Plutonium pits are a vital component in all U.S. nuclear weapons. During

the Cold War, the Nation produced more than 1,000 plutonium pits per year (ppy) at the Rocky Flats Plant in Colorado. Since the closure of the Rocky Flats Plant in 1992, the U.S. has lacked the capability to produce significant quantities of new plutonium pits. NNSA is developing the capability to manufacture plutonium pits at the rate of at least 80 war-reserve[5] (WR) ppy.

Maintaining confidence in the nuclear warheads that compose our Nation's nuclear deterrent requires the Department to re-establish a plutonium pit manufacturing capability. Newly manufactured pits are required to improve warhead safety and security, mitigate the risk of erosion of confidence in the deterrent posed by plutonium/pit aging, and support potential changes to future warheads due to threats posed to the U.S. nuclear deterrent from renewed peer competition.

Department Progress
To reach the capability to produce 80 ppy, NNSA implemented a two-site solution with the objective of producing 30 WR ppy at Los Alamos National Laboratory (LANL) at the existing Plutonium Facility-4 (PF-4), while also producing 50 WR ppy at the Savannah River Site (SRS) Savannah River Plutonium Processing Facility (SRPPF). The OIG did not perform any oversight work over the last year pertaining to this challenge area; therefore, we cannot give an opinion on the Department's progress in this area. However, in July 2023, NNSA released a fact sheet that provided a status on its pit production effort.

According to the fact sheet, PF-4 currently has the ability to produce pits and has produced a total of 30 WR pits since 2000. However, to reach the capability of 30 WR ppy, decontamination and removal of old equipment is ongoing, which will allow for new equipment to be installed. PF-4 will continue to build pits throughout equipment removal and installation, and capacity and resilience will grow steadily over time. At the time the fact sheet was published, PF-4 expected to have its first fully qualified pit, the "first production unit," in the second half of 2024, and it appeared that equipment installation will not be completed until sometime between late 2027 and August 2030.

At the SRS, the fact sheet stated that design efforts are currently underway for the process equipment, the glove boxes that surround the equipment, and the many systems that connect to the gloveboxes in the main processing building. Although cost and schedule for SRPPF remained uncertain at the time the fact sheet was published, NNSA has determined that producing 50 ppy by 2030 at SRS to meet the overall 80 ppy objective is not achievable. The SRPPF assessment is based on considerations that to produce WR pits at the required rate necessitates successful completion of the following three activities: 1) completing SRPPF construction and receiving startup authorization (CD-4); 2) demonstrating a WR-quality pit manufacturing capability; and 3) demonstrating the ability to manufacture at full rate capacity while maintaining WR quality control. After construction is finished, it may still take several years for this newly constructed facility to complete the testing and gain approval to enter "hot" operations. Ramping up to full rate production will also take time.

Although NNSA will not reach the capability to produce 80 ppy by the original target date of 2030, NNSA reports working with LANL and SRS to achieve this production rate as soon as possible. The fact sheet also stated that NNSA continues to communicate pit-production schedule estimates and uncertainties to the Department of Defense and its military partners, who continue to work with NNSA to plan for a safe, secure, reliable, and effective nuclear deterrent force in the face of these uncertainties.

Challenges
The Department faces challenges in meeting its production objectives. The U.S. ceased large-scale pit production in 1989, and as a result, most pits in the U.S. stockpile are more than 30 years old. The GAO was asked to review NNSA's plutonium pit production activities and released a report in January 2023, *NNSA Does Not Have a Comprehensive Schedule or Cost Estimate for Pit Production Capability*. In the report, the GAO stated that "[r]establishing pit production likely represents NNSA's largest investment in weapons production infrastructure to date" and recommended that NNSA develop a life cycle cost estimate.

In its review, the GAO found that NNSA had not developed either a comprehensive schedule or cost estimate that met GAO best practices. It found that NNSA's schedule does not include all activities or milestones to achieve the stated 80 ppy production capability and does not assign resources to activities. An incomplete integrated master schedule increases the likelihood of disruption and delay.

Managing Radioactive Liquid Waste — Office of Environmental Management

Significance of the Issue – Radioactive Liquid Waste
The Office of Environmental Management (Environmental Management) is responsible for addressing the environmental legacy of decades of nuclear weapons production and Government-sponsored nuclear energy research. This mission includes the safe, effective, and cost-efficient management, treatment, and disposition of high-level radioactive waste (i.e., "tank waste") generated through legacy-spent nuclear fuel reprocessing and other plutonium processing activities. Environmental Management manages a total inventory of approximately 92 million gallons of tank waste, which is a primary environmental risk at most sites where it is located. At the Hanford Site (Hanford), SRS, and the Idaho National Laboratory Site (INL), the remaining tank waste is stored in aging underground tanks.

In addition to environmental risks, this waste represents a significant financial burden to the U.S. Government. The Department is the top contributor to the Federal

[5] WR pits have been certified to meet the stringent quality assurance requirements necessary to enter the U.S. nuclear weapons stockpile.

Government's overall environmental liabilities, with Environmental Management's current total environmental liability approximately $406 billion in 2021 constant dollars according to the Department's FY 2022 Agency Financial Report.

Department Progress
The OIG did not complete any oversight work over the last year in this area; therefore, we cannot opine on the Department's progress in this area. However, we are providing the following information obtained from the Department.

The Department has instituted new polices and approaches that have the potential to open new disposition pathways for tank waste. In FY 2019, the Department issued its interpretation of the statutory term, "high-level radioactive waste," as defined in the Atomic Energy Act of 1954, as amended, and the Nuclear Waste Policy Act of 1982, as amended. This interpretation allows for managing tank waste via its radioactive characteristics, not by how the waste was generated. The high-level radioactive waste (HLW) interpretation could enable the Department to manage and dispose of tank waste in a risk-based and more cost-effective manner that remains protective of human health and the environment more appropriately. Secretary Granholm committed to assessing the HLW interpretation during her Congressional confirmation hearing in January 2021. This assessment, which was completed in December 2021,[6] concluded that the HLW interpretation is consistent with the law, science and data, and the recommendations of the Blue-Ribbon Commission on America's Nuclear Future. The Department is currently in the process of evaluating a second waste stream (i.e., contaminated process equipment) at SRS for potential disposal at a licensed commercial facility under the HLW interpretation.

Hanford
At the Hanford Waste Treatment and Immobilization Plant (WTP), startup and commissioning preparations are underway. According to a WTP Project Review, in August 2023, test glass production is scheduled to begin at the Low-Activity Waste Facility, and cold commissioning is scheduled to begin in FY 2024 to support commencement of radiological operations in 2025. Additionally, according to a Hanford June 2023 report, operations of Hanford's Tank Side Cesium Removal System has processed over 500,000 gallons of low-activity tank waste in preparation to send to the Low-Activity Waste Facility.

SRS
Based on documentation from SRS, the Department initiated hot commissioning of the Salt Waste Processing Facility (SWPF) in October 2020 and began full operations of the facility in January 2021. Since the introduction of radioactive salt waste to the SWPF, SRS stated it has processed over 3 million gallons of salt waste. According to SRS, as the SWPF increases efficiency and optimizes its operations, process rates of up to 6 million gallons annually are projected with current technologies.

INL
At INL's Integrated Waste Treatment Unit (IWTU), Department officials indicated that the Department began radiological operations in April 2023 with a blend of 10 percent sodium-bearing waste and 90 percent simulant, and that in May 2023, the IWTU began treating 100 percent sodium bearing waste.

Challenges
While progress has been made in establishing its capabilities to treat tank waste for final disposition, significant work remains.

Hanford
The Department reports needing to identify and develop technically achievable, cost-effective, and viable approaches for treating the high-activity inventory of tank waste at Hanford for disposition. The current program of record calls for the WTP's Pretreatment and High-Level Waste facilities to prepare and vitrify the high-level waste for eventual final disposition.

Additionally, the Department reports needing to complete startup and commissioning of those facilities involved in the processing of low-activity waste. Further, the Department must identify additional treatment options to address Hanford's remaining low-activity inventory. A study, conducted by the Federally Funded Research and Development Center National Academies of Sciences, Engineering and Medicine, recommended the Department consider grout as an alternative to supplemental treatment of low-activity liquid waste. To that end, the Department is working with regulators to advance a Test Bed Initiative, in which it will treat 2,000 gallons of tank waste sufficiently for offsite immobilization in grout and disposal.

SRS
The Department reports needing to continue improving the DWPF's and SWPF's long-term reliability and availability. According to SRS, when the Next Generation Solvent is implemented at the SWPF, it will enable processing greater than the 6 million gallons of waste per year capability provided by the original solvent. SRS also stated that to complete the bulk of the tank waste mission at SRS in the next decade, the Department will need effective management of the spent nuclear fuel processing mission at the Savannah River H-Canyon facility, which contributes to the site's tank waste mission.

INL
Department officials at INL indicated that it will need to focus on safe operation of the IWTU and interim storage of the stainless-steel canisters until they can be permanently

[6] *Assessment of Department of Energy's Interpretation of the Definition of High-Level Radioactive Waste*, a Notice by the Department on December 21, 2021, 86 Federal Register 72220, available at https://www.federalregister.gov/documents/2021/12/21/2021-27555/assessment-of-department-of-energys-interpretation-of-the-definition-of-high-level-radioactive-waste.

disposed of in a national geologic repository. According to Environmental Management's Program Plan of FY 2022, waste treatment is expected to take from 5 to 7 years to complete. Additionally, the Department will need a pathway for the disposal of the processed waste currently stored at INL.

Building a Stronger Suspension and Debarment Program — Upcoming Special Project Report

In previous *Management Challenges Reports*, we identified opportunities to improve suspension and debarment processes at the Department. Suspension and debarment are the primary means the Government uses to mitigate risk from parties that have shown themselves not to be responsible participants in Federal procurements, grants, agreements, programs, and transactions. While these remedies typically rely upon criminal convictions or serious civil offenses, Suspension and Debarment Officials may impose these exclusions whenever evidence indicates that the individual or company is not presently responsible, and therefore presents a risk to Federal programs and operations. Historically, the Department has not operated a robust suspension and debarment program.

In the past 2 years, the OIG has created a special division to improve the referral process and better enable the Department to operate a more robust suspension and debarment program. As a result, the OIG has substantially increased the volume of more detailed referrals to the Department.

In December of 2023, the OIG will publish a Special Project Report on this subject. The Special Project Report will describe the OIG's overhaul of its own suspension and debarment practices and procedures and make specific recommendations to the Department for improving its oversight efforts.

Improving Mandatory Disclosure Reporting — Upcoming Special Project Report

The Federal Acquisition Regulation's Mandatory Disclosure Rule (MDR) contract clause requires certain Federal contractors to disclose to the OIG in a timely manner, in writing, whenever the contractor has credible evidence of violations of Federal criminal law involving fraud, conflict of interest, bribery, gratuity violations, or violations of the civil False Claims Act. Over a 2-year period, the OIG conducted inspections at several Department sites and discovered significant lapses in reporting under the MDR.

In December 2023, the OIG will publish a Special Project Report on this subject. The Special Project Report will describe the OIG's overhaul of its own MDR practices and procedures, and make specific recommendations to the Department for improving its oversight efforts.

Payment Integrity Reporting (FY 2023 Reporting of FY 2022 Payments)

The Payment Integrity Information Act of 2019 (PIIA), Public Law (PL) 116-117, enacted March 2, 2020, repeals the Improper Payments Information Act of 2002 (IPIA), PL 107-300, as amended by the Improper Payments Elimination and Recovery Act of 2010 (IPERA), and the Improper Payments Elimination and Recovery Improvement Act of 2012 (IPERIA). PIIA requires Federal agencies to annually review their programs and activities to identify those susceptible to significant improper payments and to measure and report improper payment rates and amounts for programs that are found to be susceptible to improper payments.

Detailed information on improper payments and information reported in prior Agency Financial Reports (AFR) can be found on the Payment Accuracy website: https://paymentaccuracy.gov.

Risk Assessments

When performing risk assessments, the Department evaluates eight of the Office of Management and Budget's (OMB) suggested risk assessment factors per OMB Circular A-123, Appendix C, plus five other risk factors, as determined by the Department:

1. Evaluate whether the payment process(es) over the payment category is new (OMB risk factor 1)
2. Evaluate the complexity of the payment process for each type of payment, especially with respect to determining the correct payment amounts (OMB risk factor 2)
3. Evaluate the volume and dollar amount of payments for Fiscal Year (FY) 2022 (OMB risk factor 3)
4. Evaluate whether payments or payment eligibility decisions are made by those outside of the payment reporting site (OMB risk factor 4)
5. Evaluate whether there have been any significant changes in program outlays, authorities, practices, or procedures (OMB risk factor 5)
6. Evaluate the level, experience, and quality of training of personnel responsible for determining program eligibility, certifying that payments are accurate, and conducting post-payment reviews (OMB risk factor 6)
7. Evaluate the inherent risk of improper payments due to the nature of agency programs or operations (Other risk factor 1)
8. Evaluate the results of Office of Inspector General (OIG), Government Accountability Office (GAO), Defense Contract Audit Agency (DCAA), and other external audits/reviews or management findings that might hinder accurate payment certifications (OMB risk factor 7)
9. Evaluate the results of OMB Circular A-123 assessments and other internal reviews designed to prevent or detect improper payments (Other risk factor 2)
10. Evaluate contractor payment processing oversight (Other risk factor 3)
11. Evaluate the availability of information or data systems to confirm eligibility, conduct post-payment reviews, or provide for other payment integrity needs (OMB risk factor 10)
12. Evaluate the impact of Coronavirus Aid, Relief, and Economic Security Act of 2020 (CARES Act) and/or the American Rescue Plan Act of 2021 (ARPA) funding on existing payment processes in response to the Coronavirus Disease 2019 (COVID-19) (Other risk factor 4)
13. Evaluate the impact, or anticipated impact, of the Infrastructure Investment and Jobs Act (IIJA), Inflation Reduction Act (IRA), and/or CHIPS and Science Act (CHIPS) funding/authorization from a payment integrity perspective. (Other risk factor 5)

In accordance with the requirement to perform a risk assessment at least once every three years, the Department of Energy (DOE) performed Department-wide risk assessments in FY 2021. In FY 2023, the Department's payment reporting sites were not required to perform a risk assessment unless there were significant: 1) changes in legislation, including legislation related to COVID-19 or IIJA, IRA, and CHIPS; 2) increase in site outlays (10 percent or more compared to the last FY); 3) changes to the site's payment processes that would make the site susceptible to significant improper payments; or 4) impact from natural disasters, national emergencies, or a change to site structure that increases the payment integrity risk.

Although FY 2023 is an off-cycle year for risk assessment, 41 of the 47 payment reporting sites met one or more of the four criteria and performed a risk assessment. Based on the site risk assessments performed in FY 2023 and consolidated at the departmental-level, it was determined that the Department was not susceptible to significant improper payments. DOE is considered one program for improper payment reporting and assesses its program by the payment types identified in the table on the next page.

DOE continues to maintain a <1 percent overall improper payment rate (0.09 percent). Actual improper payments plus unknown payments[1] for payments made in FY 2022 are below OMB's $100 million threshold. The Departmental improper payment rate has remained below 1 percent since the inception of its program in FY 2002.

For FY 2022 information reported in FY 2023, the Department's total payment outlays were $51.04 billion, identifying $47.2 million of improper payments and unknown payments, of which $46.02 million were

[1] Per OMB Circular A-123, Appendix C, (M-21-19), *Requirements for Payment Integrity Improvement*, an Unknown Payment is a payment that could be either proper or improper, but the agency is unable to discern whether the payment was proper or improper at the time of reporting.

overpayments identified for recapture. The remaining improper payments included underpayments of $0.82 million, lost discounts of $0.20 million, and technically improper payments[2] of $0.06 million, all of which cannot be recaptured. Unknown payments of $0.1 million were also identified.

Recapture of Improper Payments Reporting

The Department's low improper payment rate of 0.09 percent reported in FY 2023 for FY 2022 payments, and the recapture rate of 89.25 percent reported for the same period, support the Department's determination that it is not cost-effective to employ traditional payment recapture audit contracts, and the Department notified OMB of this fact in September 2015. For FY 2023, $6,269 is deemed uncollectible due to the amount being below the threshold minimum established for pursuing recapture; shipping, restocking, and associated fees for goods returned; or amounts protected by state laws that cannot be recovered.

The Department conducts site-specific reviews and analysis of accounting and financial records, supporting documentation, and other pertinent information supporting payments. These activities are detective and corrective in nature and are designed to identify and recapture overpayments. Activities include prepayment review and approval of invoices; performing quarterly prompt-payment reviews, post-payment reviews, and contractor internal audits; leveraging the results of cost allowability audits of integrated contractors and interim and close-out reviews of contracts and grants, reviews of grant credits in the Automated Standard Application for Payments (ASAP), and results from travel audits. The Department will continue to scrutinize improper payment activity and controls through its internal control program by emphasizing, evaluating, and strengthening the controls, as needed, to maintain the Department's record of low payment errors and to continue the effective stewardship of public funds.

[2] Per OMB Circular A-123, Appendix C, (M-21-19), *Requirements for Payment Integrity Improvement*, a Technically Improper Payment is a payment made to an otherwise qualified recipient for the right amount, but the payment failed to meet all regulatory and/or statutory requirements. A Technically Improper Payment is a non-monetary loss type of improper payment.

Table 1 identifies FY 2022 overpayments identified and recaptured outside of payment recapture audits reported in FY 2023, and **Table 2** identifies root causes of overpayments identified for recapture in FY 2022.

Table 1

FY 2022 Overpayments Identified and Recaptured Outside of Payment Recapture Audits Reported in FY 2023 ($ in millions)[1]						
Program/ Payment Type	**Amounts Identified for Recapture of Payments Made in FY 2022**	**Amounts Identified For Recapture of Payments Made in FY 2021 and Prior Years**	**Total Amounts Identified for Recapture of Payments Made in FY 2022 and Prior Years**	**Amount Recaptured for FY 2022 and Reported in FY 2023**	**Amount Recaptured for FY 2021 and Prior Year and Reported in FY 2023[2]**	**Total Amounts Recaptured for FY 2022 and Prior and Reported in FY 2023[2]**
Vendors/Contracts	$34.69	$6.20	**$40.89**	$31.15	$5.68	**$36.83**
Benefits - Payroll	$4.64	$1.42	**$6.06**	$3.25	$1.36	**$4.60**
Benefits - Travel	$0.38	$0.13	**$0.51**	$0.36	$0.13	**$0.50**
Grants	$6.18	$1.56	**$7.74**	$6.18	$0.57	**$6.74**
Loans	$0.00	$0.00	**$0.00**	$0.00	$0.00	**$0.00**
Other	$0.13	$0.16	**$0.29**	$0.13	$0.16	**$0.29**
TOTAL	**$46.02**	**$9.47**	**$55.49**	**$41.07**	**$7.89**	**$48.97**

[1] DOE reports prior-year payment activity in its current year AFR, per OMB approval received on May 25, 2011. In addition, DOE is considered one program for improper payment reporting, and assesses the payment types included in this table for its 47 payment reporting sites, per OMB approval received on August 10, 2011.

[2] In FY 2022, a total of $48.97 million was recaptured, including $41.07 million associated with FY 2022 payments and $7.89 million associated with payments made in FY 2021 and prior years.

Table 2

Root Causes of Overpayments Identified for Recapture in FY 2022 ($ in millions)	
Root Cause of Improper Payments	**Total Identified for Recapture**
Confirmed Fraud	**$2.39**
Duplicate Payment	**$12.51**
Funds used for Purposes other than allowed by law or Departmental Policies	**$0.11**
Goods or Services Not Received	**$3.59**
Incorrect Amount	**$11.19**
Ineligible Good or Service	**$4.04**
Ineligible Recipient	**$13.26**
Insufficient Documentation	**$1.67**
Other Reason	**$2.71**
Settlement as the Result of Litigation	**$0.77**
Unallowable Cost	**$3.25**
TOTAL	**$55.49**

Grants Programs

All reporting entities with grant programs must submit a brief high-level summary of expired, but not closed, grants. A summary table of the total number of Federal grant and cooperative agreement awards and balances for which closeout has not yet occurred, but for which the period of performance has elapsed by two years or more prior to September 30, 2023, appears on the right.

Thirty-three grants/cooperative agreements remain open for the following reasons:

- Four grant/cooperative agreements are under management review and will be closed when the review is completed.
- Two cooperative agreements are undergoing an audit and will be closed after the audit is complete.
- One cooperative agreement remains open pending review of outstanding questioned costs and will close when resolved.
- Seven grant/cooperative agreements remain open due to ongoing litigation with the awardee and the U.S. Government and will close when the litigation is resolved.
- Nineteen grant/cooperative agreements remain open due to waiting on documentation from the awardee necessary to close out the award prior to closing and will close when the issue is resolved.

CATEGORY	2-3 Years	3-5 Years	>5 Years
Number of Grants/ Cooperative Agreements with Zero Dollar Balances	15	5	0
Number of Grants/ Cooperative Agreements with Undisbursed Balances	12	1	0
Total Amount of Undisbursed Balances (Dollars in Millions)	**$2.22**	**$0.28**	**$0.00**

Climate-Related Risks

In response to the climate crisis and recent Administration climate requirements, DOE developed and released the *2021 Climate Adaptation and Resilience Plan*. The plan provided an implementation framework to ensure that DOE's mission and operations were resilient to climate change and extreme weather. The Department is in the process of updating the plan and will be submitting it to OMB and Council on Environmental Quality (CEQ) in February 2024, with public release expected in the spring of 2024.

For more information, see Climate Change in the Management Priorities section.

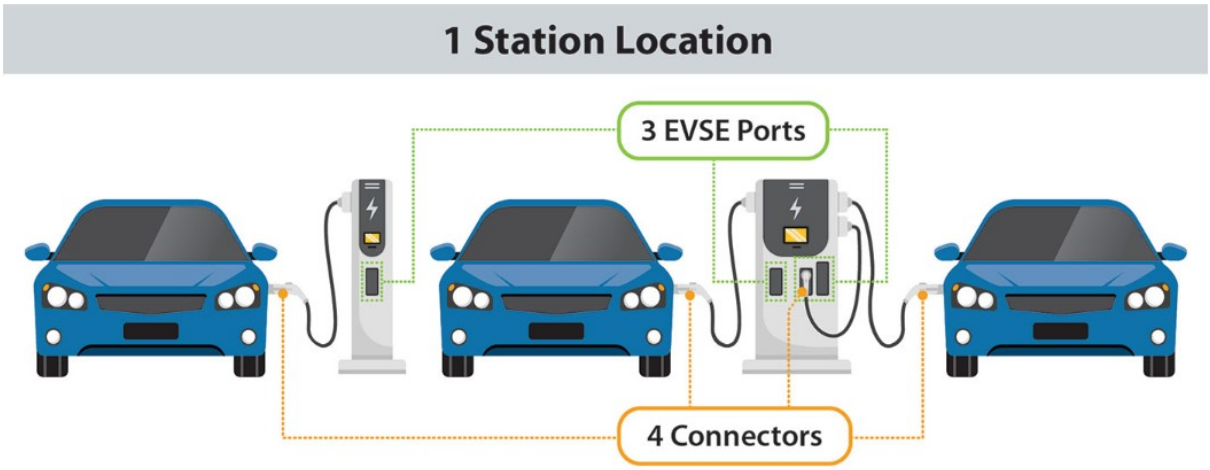
FY 2023 DOE Highlight: Alternative Fuels Data Center

Charging the growing number of electric vehicles (EV) in use requires a robust network of stations for both consumers and fleets. The Alternative Fueling Station Locator allows users to search for public and private charging stations. For more information, visit https://afdc.energy.gov/fuels/electricity_infrastructure.html.

Charging Infrastructure Terminology

The charging infrastructure industry has aligned with a common standard called the Open Charge Point Interface (OCPI) protocol with this hierarchy for charging stations: location, electric vehicle supply equipment (EVSE) port, and connector. The Alternative Fuels Data Center and the Station Locator use the following charging infrastructure definitions:

- **Station Location:** A station location is a site with one or more EVSE ports at the same address. Examples include a parking garage or a mall parking lot.
- **EVSE Port:** An EVSE port provides power to charge only one vehicle at a time even though it may have multiple connectors. The unit that houses EVSE ports is sometimes called a charging post, and it can have one or more EVSE ports.
- **Connector:** A connector is the part plugged into a vehicle to charge it. Multiple connectors and connector types (such as CHAdeMO and CCS) can be available on one EVSE port, but only one vehicle will charge at a time. Connectors are sometimes called plugs.



Charging Equipment

Charging equipment for EVs is classified by the rate at which the batteries are charged. Charging times vary based on how depleted the battery is, how much energy it holds, the type of battery, and the type of charging equipment (e.g., charging level, charger power output, and electrical service specifications). The charging time can range from less than 20 minutes to 20 hours or more, depending on these factors. When choosing equipment for a specific application, many factors, such as networking, payment capabilities, and operation and maintenance, should be considered.

Civil Monetary Penalty Adjustment for Inflation

Federal Energy Regulatory Commission (FERC)

FERC Civil Monetary Penalty Adjustment for Inflation						
Statutory Authority	**Description of Penalty**	**Year Enacted**	**Latest Year of Adjustment**	**Current Penalty Level**	**Sub-Agency/ Bureau/Unit**	**Location for Penalty Update: Federal Register Vol. 88, No. 8 (January 12, 2023) Rules and Regulations pages 1989-1991**
16 U.S.C. § 825o-1(b), Sec. 316A of the Federal Power Act	Violation of any provision of Part II of the FPA or related rule or order.	2005	2023	$1,496,035 per violation, per day	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments
16 U.S.C. § 823b(c), Sec. 31(c) of the Federal Power Act	Violation of or failure/ refusal to comply with any rule or regulation issued under Part I of the FPA or any related order or term of a license, permit, or exemption.	1986	2023	$27,017 per violation, per day	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments
16 U.S.C. § 825n(a), Sec. 315(a) of the Federal Power Act	Violation of or willful failure to comply with any order of the Commission; file any report required under the FPA; or submit any information or document or respond to subpoena required by the Commission in the course of an investigation conducted under the FPA.	1935	2023	$3,529 per violation	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments
15 U.S.C. § 717t-1, Sec. 22 of the Natural Gas Act	Violation of any provision of the NGA or any related rule, regulation, restriction, condition, or order.	2005	2023	$1,496,035 per violation, per day	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments
15 U.S.C. § 3414(b)(6)(A)(i), Sec. 504(b)(6)(A)(i) of the Natural Gas Policy Act of 1978	Violation of any provision of the NGPA or any related rule or order.	2005	2023	$1,496,035 per violation, per day	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments
49 App. U.S.C. § 6(10) (1988), Sec. 6(10) of the Interstate Commerce Act	Violation of or failure/ refusal to comply with regulations or orders concerning posting and filing rate schedules issued by the Commission under section 6 of the ICA.	1910	2023	$1,566 per offense and $78 per day after the first day	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments
49 App. U.S.C. § 16(8) (1988), Sec. 16(8) of the Interstate Commerce Act	Violation of or failure to comply with orders issued by the Commission under sections 3, 13, or 15 of the ICA.	1910	2023	$15,662 per violation, per day	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments
49 App. U.S.C. § 19a(k) (1988), Sec. 19a(k) of the Interstate Commerce Act	Violation of or failure to comply with Commission's requirements to provide information in connection with the Commission's valuation of a pipeline carrier's property under section 19(a) of the ICA.	1913	2023	$1,566 per offense, per day	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments
49 App. U.S.C. § 20(7)(a) (1988), Sec. 20(7)(a) of the Interstate Commerce Act	Violation of or failure to keep or submit certain accounts, records, or memoranda required by the Commission under authority granted in section 20 of the ICA.	1940	2023	$1,566 per offense, per day	Federal Energy Regulatory Commission/Office of Enforcement	https://www.federalregister.gov/documents/2023/01/12/2023-00513/civil-monetary-penalty-inflation-adjustments

Civil Monetary Penalty Adjustment for Inflation

U.S. Department of Energy (DOE)

DOE Civil Monetary Penalty Adjustment for Inflation						
Authority	**Description of Penalty**	**Year Enacted**	**Latest Year of Adjustment**	**Current Penalty Level**	**Sub-Agency/ Bureau/Unit**	**Location for Penalty Update: Federal Register Vol. 88, No. 9 (January 13, 2023) Rules and Regulations pages 2190-2194**
Energy Supply and Environmental Coordination Act of 1974, 10 CFR 207.7	Enforcement/Sanctions	1974	2023	$12,531	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Energy Policy and Conservation Act, 10 CFR 218.42	Enforcement/Sanctions	1975	2023	$27,140	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Energy Policy and Conservation Act, 10 CFR 429.120	Enforcement/Maximum civil penalty	1975	2023	$542	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Energy Policy and Conservation Act, 10 CFR 431.382	Enforcement/Prohibited Acts	1975	2023	$542	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Energy Policy Act of 1992, 10 CFR 490.604	Enforcement/Penalties and Fines	1992	2023	$10,506	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Powerplant and Industrial Fuel Use Act of 1978, 10 CFR 501.181	Civil penalties/Sanctions	1978	2023	$111,031; $9/mcf; $44/bbl	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
31 U.S.C. 1352(c), 10 CFR 601.400 and App A	Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions/Penalties	1989	2023	$23,727 (minimum); $237,268 (maximum)	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Price-Anderson Amendments Act of 1988, 10 CFR 820.81	Civil monetary penalties for violation of DOE safety regulations/Amount of penalty	1988	2023	$247,929	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Atomic Energy Act of 1954, 10 CFR 824.1 and App A	Civil monetary penalties for violations of DOE Regulations regarding security of classified or sensitive information or data/Purpose and scope	1999	2023	$177,174	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Atomic Energy Act of 1954, 10 CFR 824.4 and App A	Civil monetary penalties for violations of DOE Regulations regarding security of classified or sensitive information or data/Civil penalties	1999	2023	$177,174	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Atomic Energy Act of 1954, 10 CFR 851.5 and App B	Worker health and safety rules for DOE nuclear facilities/Enforcement	2002	2023	$115,061	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Program Fraud Civil Remedies Act of 1986, 10 CFR 1013.3	False claims and statements; liability/ Basis for civil penalties and assessments	1986	2023	$13,508	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
Atomic Energy Act of 1954, 10 CFR 1017.29	Dissemination of unclassified information/Civil penalty	1981	2023	$319,067	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
5 U.S.C. 7342(h), 10 CFR 1050.303	Receipt and disposition of foreign gifts and decorations/Enforcement	1977	2023	$24,189	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
42 U.S.C. 2282(a)	Violations of licensing requirements	2018	2023	$120,816	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf
50 U.S.C. 2731(b)(2)	Worker protection at nuclear weapons facilities	1991	2023	$10,846	N/A	https://www.govinfo.gov/content/pkg/FR-2023-01-13/pdf/2023-00401.pdf

Other Statutory Reporting – Management's Response to Audit Reports

Pursuant to the Inspector General (IG) Act Amendments of 1988 (Public Law 100-504), agency heads are required to report to Congress on the status of final action taken on IG audit recommendations. This report complies with the requirements of the IG Act and complements a separate report prepared by the Department's IG that provides: 1) information on audit reports issued during the period; 2) the status of management decisions made on previously issued IG audit reports; and 3) information on the disposition of funds put to better use and questioned costs. The IG report is available at http://www.ig.energy.gov.

This report also contains information on the closure of Government Accountability Office (GAO) audits. There are no unresolved GAO audit reports as of September 30, 2023, according to the definition of resolution in Office of Management and Budget (OMB) Circular A-50, *Audit Follow Up*.

Inspector General Audit Reports
The Department resolves IG audit reports by evaluating the recommendations they contain, formally responding to the IG, and implementing agreed-upon corrective actions. In some instances, DOE takes corrective action immediately, and in others, longer-term action plans are developed and implemented. Actions taken by management on audit recommendations increase the efficiency and effectiveness of operations and strengthen standards of accountability.

At the beginning of FY 2023, there were **44** IG reports awaiting final action. In FY 2023, the Department received **38** IG reports, of which **26** contained recommendations for corrective actions and **12** had no recommendations. Thus, there were **70** reports pending final action during FY 2023, of which the Department took final action on **31**. **Six** of the reports for which the Department took final action identified cost impacts, including questioned contract or grant costs and recommended cost avoidance (funds put to better use). At the end of FY 2023, **39** IG reports awaited final action. Taking final action on a report includes the development of an agreed-upon management decision and completion of the corrective actions.

Government Accountability Office Audit Reports
GAO audits also are included in the Department's audit follow-up program. At the beginning of FY 2023, there were **63** GAO reports awaiting final action. In FY 2023, the Department received **60** additional final GAO audit reports, of which **17** contained recommendations for corrective actions by the DOE and **43** had no recommendations to the Department. Thus, there were **80** GAO reports pending final action during FY 2023; the Department completed its planned corrective actions for **10** audits during FY 2023, leaving **40** GAO reports awaiting final action at year-end.

Status of Final Action on Inspector General and Government Accountability Office Audit Reports for Fiscal Year 2023
The following chart provides a summary of closure actions for IG and GAO audit and inspection reports during FY 2023.

AUDIT REPORTS	NUMBER OF IG REPORTS	NUMBER OF GAO REPORTS
Reports Pending Final Action at the End of FY 2022*	**44**	**63**
Reports Issued in FY 2023 Requiring Corrective Actions	**26**	**17**
Total Reports Pending Final Action During FY 2023	**70**	**80**
Reports Closed During FY 2023	**31**	**10**
Total Reports Pending Final Action as of the End of FY 2023	**39**	**70**

*Reflects adjustments to previously reported amounts for GAO reports pending final actions at the end of FY 2022. During FY 2023, the Department reopened 14 reports after meeting with GAO to discuss disagreement with the closing of audit recommendations.

Glossary of Acronyms and Abbreviations

2012 REP Settlement Agreement	2012 Residential Exchange Program Settlement Agreement
A&A	Assessment & Authorization
AANAPISI	Asian American and Native American Pacific Islander Serving-Institutions
AAPIN	Asian American Pacific Islander Network
AC	Alternating Current
AC-225	Actinium-225
ACAI	Arms Control Advancement Initiative
ACI	Asset Condition Index
ACT	Advanced Cybersecurity Technology
ADOPTTM	Advanced Doped Pellet Technology
AE	Arctic Energy Office
AFR	Agency Financial Report
AGR	Advanced Gas Reactor
AGS	Alternating Gradient Synchrotron
AI	Artificial Intelligence
AIS	Automated Indicator Sharing
AITO	Artificial Intelligence and Technology Office
Alt	Alteration
AMD	Acid Mine Drainage
AMEGO	All-sky Medium Energy Gamma-ray Observatory
ANC	Alaska Native Corporations
ANL	Argonne National Laboratory
ANVC	Alaska Native Village Corporations
AODR	Authorizing Official Designated Representative
APEC	Asia Pacific Economic Cooperation
APPA	American Public Power Association
APPR	Annual Performance Report/Annual Performance Plan
ARC	Analysis and Referral Center
ARO	Asset Retirement Obligation
ARPA	American Rescue Plan Act of 2021
ARPA-E	Advanced Research Projects Agency-Energy
ARRA	American Recovery and Reinvestment Act of 2009
ASAP	Automated Standard Application for Payments
ASC	Advance Simulation and Computing; Accounting Standards Codification
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASU	Air Separation Unit; Accounting Standards Update
ATAAPS	Automated Time and Attendance Production System
ATVM	Advanced Technology Vehicles Manufacturing
AUI	Associated Universities, Inc.
BCI	Building Condition Index
BDP	Big Data Platform
BER	Biological and Environmental Research
BFADS	Budget Formulation and Distribution System
BFS	Bureau of the Fiscal Service
BIL	Bipartisan Infrastructure Law
BiOp	Biological Opinion
BNL	Brookhaven National Laboratory
BOR	Bureau of Reclamation
BOSS	Black Owners of Solar Services
BPA	Bonneville Power Administration
CACTI	Collaborative Alignment for Critical Technology Industries
CAIS	Condition Assessment Information System
CarbonSAFE	Carbon Storage Assurance Facility Enterprise
CARES Act	Coronavirus Aid, Relief, and Economic Security Act
CARP	2021 Climate Adaptation and Resilience Plan
CBP	Community Benefit Plan
CBS	Corporate Business Systems
CCRSD	Columbia-Class Reactor Systems Development
CCS	Carbon Capture and Storage
CD	Critical Decision
CD-3A	Critical Decision-3A
CDM	Continuous Diagnostics and Mitigation
CDOEC	Chief Diversity Officer Executive Council

CDR	Carbon Dioxide Removal
CEC	Clean Energy Corps
CEJST	Climate and Economic Justice Screening Tool
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act
CESER	Office of Cybersecurity, Energy Security, and Emergency Response
CETC	Clean Energy Training Centers
CFE	Carbon-Pollution Free Electricity
CFPP	Carbon Free Power Project
CFR	Code of Federal Regulations
CGS	Columbia Generating Station
CHIPS Act	CHIPS and Science Act
CHP TAP	Combined Heat and Power Technical Assistance Partnership
CHRIS	Corporate Human Resource Information System
CI	Condition Index
CIFIA	Carbon Dioxide Transportation Infrastructure Financing and Innovation Act
CINR	Consolidated Innovative Nuclear Research
CIO	Chief Information Officer
CIP	Critical Infrastructure Protection
CISA	Cybersecurity & Infrastructure Security Agency
CISF	Consolidated Interim Storage Facility
CLIMR	Core Laboratory Infrastructure for Market Readiness
CM	Category Management
CMRA	Climate Mapping for Resilience and Adaptation
CO2	Carbon Dioxide
CoE	Center of Excellence
Commission	Atomic Energy Commission
ComPair	Compton Pair
CoP	Community of Practice
COVID-19	Coronavirus Disease 2019
CPP	Cooperative Protection Program
CRQ	Cyber Risk Quantification
CRSO	Columbia River System Operations
CSAT	Cybersecurity Awareness and Training
CSBI	Climate Smart Buildings Initiative

C-SCRM	Cyber Supply Chain Risk Management
CSI	Climate Smart Infrastructure
CSRS	Civil Service Retirement System
CST	Candidate Status Tracker
CSWG	Control Systems Working Group
CTI	Cyber Threat Intelligence
CUAS	Counter Unmanned Aircraft Systems
Cures Act	21st Century Cures Act of 2015
CV	Continuous Vetting
CyTRICS	Cyber Testing for Resilient Industrial Control System
D&D	Demonstration and Deployment; Deactivation and Decommissioning; Decontamination and Decommissioning
D/A	U.S. Departments and Agencies
DAC	Direct Air Capture
DATA Act	Digital Accountability and Transparency Act of 2014
DBE	Disadvantaged Business Enterprise
DBT	Design Basis Threat
DC	Direct Cast
DCA	Data Call Application
DCAA	Defense Contract Audit Agency
DDAB	Demonstration and Deployment Advisory Board
DE	Departmental Elements
DE CIO	Departmental CIOs
DEIA	Diversity, Equity, Inclusion, and Accessibility
DEMO	Demonstration
DER	Distributed Energy Resources
DFAS	Defense Finance and Accounting Service
DFLAW	Direct Feed Low-Activity Waste
DHS	Department of Homeland Security
DICARC	Department Internal Control and Assessment Review Council
DLCS	Departmental Lifecycle Spending
DM&R	Deferred Maintenance and Repairs
DNN	Office of Defense Nuclear Nonproliferation
DNN R&D	Defense Nuclear Nonproliferation Research and Development
DoD	Department of Defense
DOE	Department of Energy (or Department)
DOE IP	DOE Isotope Program

DOI	Department of the Interior
DOJ	Department of Justice
DOL	Department of Labor
DOME	Demonstration of Microreactor Experiments
DOS	Department of State
DP	Office of Defense Programs
DRUM	Defense-Related Uranium Mine
DSS	Decontaminated Low Level Salt Waste Stream
DTRA	Defense Threat Reduction Agency
DUF6	Depleted Uranium Hexafluoride
DWPF	Defense Waste Processing Facility
DWX	DEFENSEWERX
e.g.	For Example
E3A	EINSTEIN 3 Accelerated
E3SM	Energy Exascale Earth System Model
EA	Office of Enterprise Assessments
EAP	Equity Action Plan
EBCHM	Electron Beam Cold Hearth Melting
EBR-II	Experimental Breeder Reactor-II
ECFM	Exascale Computing Facility Modernization
ECIWG	Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization
ECQ	Executive Core Qualification
ECRM	Enterprise Cybersecurity Risk Management
ED	Office of Economic Impact and Diversity; Economic Diversity
EEEJ	Equity, Energy and Environmental Justice
EEI	Edison Electric Institute
EEOICPA	Energy Employees Occupational Illness Compensation Program Act
EERE	Office of Energy Efficiency and Renewable Energy
EHSS	Office of Environment, Health, Safety, and Security
EIA	U.S. Energy Information Administration
EIR	Energy Infrastructure Reinvestment
EJ	Environmental Justice
EJ TCTACs	Environmental Justice Thriving Communities Technical Assistance Centers

EM	Office of Environmental Management; Environmental Management
EM MSIPP	EM's Minority Serving Institutions Partnership Program
EM VISION	EM Strategic Vision 2022-2032
Energy Communities IWG	Interagency Working Group on Coal & Power Plant Communities & Economic Revitalization
EO	Executive Order
EOC	Emergency Operations Center
EOD	Entry on Duty
EPA	Environmental Protection Agency
EPAct05	Energy Policy Act of 2005
EPIC	Energy Program for Innovation Clusters
ERA	Energy Improvements in Rural or Remote Areas
ERG	Employee Resource Groups
ERICA	Energy Resilient Infrastructure and Climate Adaptation
ERISA	Employee Retirement Income Security Act
ES&H	Environment, Safety, and Health
ESA	Endangered Species Act
ESCO	Energy Service Company
ESPC	Energy Savings Performance Contract
ETI	Energy Transitions Initiative
ETTP	East Tennessee Technology Park
EV	Electric Vehicles
Evidence Act	Foundations for Evidence-Based Policymaking Act of 2018
EVSE	Electric Vehicle Supply Equipment
EWA	Enterprise-Wide Agreements
FA	Federal Agents
FAA	Federal Aviation Administration
FABIA	Fieldable Atomic Beam Isotopic Analyzer
FAIR	Factor Analysis of Information Risk
FAPAC	Federal Asian Pacific American Council
FAR	Federal Acquisition Regulation
FASAB	Federal Accounting Standards Advisory Board
FASB	Financial Accounting Standards Board
FASB ASC	Financial Accounting Standards Board's Accounting Standards Codification

FAST	Fixing America's Surface Transportation Act of 2015
FBI	Federal Bureau of Investigation
FBWT	Fund Balance with Treasury
FCRA	Federal Credit Reform Act of 1990
FCRPS	Federal Columbia River Power System
FECA	Federal Employees' Compensation Act
FECM	Fossil Energy and Carbon Management
FedRAMP	Federal Risk and Authorization Management Program
FEED	Front End Engineering Design
FEMP	Office of Federal Energy Management Programs
FEOC	Foreign Entity of Concern
FERC	Federal Energy Regulatory Commission
FERS	Federal Employees Retirement System
FEVS	Federal Employee Viewpoint Survey
FFB	Federal Financing Bank
FFMIA	Federal Financial Management Improvement Act of 1996
Financial Report	Financial Report of the U.S. Government
FIPP	Financial Institution Partnership Program
FISMA	Federal Information Security Modernization Act
FITARA	Federal Information Technology Acquisition Reform Act
FMFIA	Federal Managers' Financial Integrity Act of 1982
FOA	Funding Opportunity Announcement
FPDS	Federal Procurement Data System
FPDS-NG	Federal Procurement Data System – Next Generation
Framework	Fraud Risk and Data Analytics Framework
FRPC	Federal Real Property Council
FTE	Full-Time Equivalents
FUSRAP	Formally Utilized Sites Remedial Action Program
FY	Fiscal Year
GAAP	Generally Accepted Accounting Principles
GAO	Government Accountability Office
GC	General Counsel

GDO	Grid Deployment Office
GDP	Gaseous Diffusion Plants
GeV	Electron Volts
GHG	Greenhouse Gas
GMRA	Government Management Reform Act of 1994
GMS	Global Material Security
GPRA	Government Performance and Results Act of 1993
GPRAMA	Government Performance and Results Act Modernization Act of 2010
GRIP	Grid Resilience and Innovation Partnership
GSA	General Services Administration
GSFC	Goddard Space Flight Center
GTAS	Government-wide Treasury Account Symbol Adjusted Trial Balance System
GWSB	Glass Waste Storage Building
H2	Hydrogen
H2HUBS	Hydrogen Hubs
HALEU	High Assay Low-Enriched Uranium
HBCU	Historically Black Colleges and Universities
HBCU-MSI	Historically Black Colleges and Universities & Other Minority Serving Institutions
HC	Office of the Chief Human Capital Officer
HCF	Human Capital Framework
HCMAP	Human Capital Management Assessment Program
HCOP	HC Operating Plan
HESEF	High Explosive Science and Engineering Facility
HEU	Highly Enriched Uranium
HLW	High-level Waste
HMO	Health Maintenance Organization
HPC	High Performance Computing
HQ	Headquarters
HR	Human Resources
HRP	Human Reliability Program
HRSC	Human Resource Specialist Center
HVA	High Value Asset
i.e.	That Is
IA	Office of International Affairs
IAC	Industrial Assessment Centers
IAE	Integrated Award Environment

IAEA	International Atomic Energy Agency
IAM	Identity and Access Management
ICF	Inertial Confinement Fusion
ICT	Information Communications Technology
ICT-C-SCRM	Information Communications Technology C-SCRM
IDIQ	Indefinite Delivery Indefinite Quantity
IDW	Integrated Data Warehouse
IE	Office of Indian Energy Policy and Programs
IG	Inspector General
IHE	Insensitive High Explosives
IIJA	Infrastructure Investment and Jobs Act
iJC3	Integrated Joint Cybersecurity Coordination Center
IN	Office of Intelligence and Counterintelligence
INL	Idaho National Laboratory
IOC	Initial Operational Capability; Indicators of Compromise
IOU	Investor-owned Utilities
IPERA	Improper Payments Elimination and Recovery Act of 2010
IPERIA	Improper Payments Elimination and Recovery Improvement Act of 2012
IPsec	Internet Protocol Security
IPT	Integrated Project Team
IRA	Inflation Reduction Act of 2022
IRP	Integrated Research Project
IRS	Internal Revenue System
ISFSI	Independent Spent Fuel Installation
ISM	Integrated Safety Management
ISSO	Information System Security Officer
IT	Information Technology
ITP	Insider Threat Program
IV&V	Independent Verification and Validation
IWG	Interagency Working Group
IWTU	Integrated Waste Treatment Unit
JCESR	Joint Center for Energy Storage Research
Justice40	Justice40 Initiative
kWh	Kilowatt Per Hour
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC

LANSCE	Los Alamos Neutron Science Center
LBNL	Lawrence Berkeley National Laboratory
LCA	Life-Cycle Assessment
LCLS	Linac Coherent Light Source
LDES	Long Duration Energy Storage
LEA	Local Education Agencies
LEP	Life Extension Program
LGBTQI+	Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex
Li-ion	Lithium-Ion
LLNL	Lawrence Livermore National Laboratory
LLW	Low-Level Waste
LM	Office of Legacy Management
LMI	Low-Moderate Income
LMS	Learning Management System
LOTUS	Laboratory for Operations and Testing in the United States
LPO	Loan Programs Office
LTS	Long Term Stewardship
LTS&M	Long–Term Surveillance and Maintenance
LULAC	League of United Latin American Citizens
LW	Liquid Waster
LYNM	Low Yield Nuclear Monitoring
M&O	Management and Operating
M3	Material Management and Minimization
MA	Office of Management
MAKE IT	Manufacture of Advanced Key Energy Infrastructure Technologies
MARVEL	Microreactor Applications, Research Validation, and Evaluation
MBB	Microgrid Building Block
MBE	Minority Business Enterprises
MDR	Mandatory Disclosure Rule
MESC	Office of Manufacturing and Energy Supply Chains
MFA	Multifactor Authentication
Mgal	Million Gallons
MGT	Mobile Guardian Transporter
ML	Machine Learning
MLEF	Mickey Leland Energy Fellowship
MNS	Mission Need Statement
MOU	Memorandum of Understanding
MOX	Mixed Oxide

MPPB	Main Plant Process Building
MRV	Measurement, Reporting, and Verification
MSI	Minority-Serving Institutions
MSIPP	Minority-Serving Institutions Partnership Program
MT	Metric Tons
MTU	Metric Tons of Uranium
MWe	Megawatts Electric
NARUC	National Association of Regulatory Utility Commissioners
NASA	National Aeronautics and Space Administration
NAV	Net Asset Value
NBIS	National Background Investigations Service
NCA	National Climate Assessment
NE	Office of Nuclear Energy
NERC	North American Reliability Corporation
NEST	Nuclear Emergency Support Team
NETL	National Energy Technology Laboratory
NEUP	Nuclear Energy University Program
NG	Next Generation
NGS	Next Generation Solvent
NHPI	Native Hawaiians and Pacific Islanders
Ni	Nickel
NICE	National Initiative for Cybersecurity Education
NIF	National Ignition Facility
NIST	National Institute for Science and Technology
NMED	New Mexico Environmental Department
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NOAA	National Oceanic and Atmospheric Administration
Northwest Power Act	Pacific Northwest Electric Power Planning and Conservation Act
NPAC	Nonproliferation and Arms Control
NPC	National Renewable Energy Laboratory Pyrheliometer Comparisons
NRC	Nuclear Regulatory Commission
NRECA	National Rural Electric Cooperative Association
NREL	National Renewable Energy Laboratory
NSE	Nuclear Security Enterprise
NSF	National Science Foundation
NSUF	Nuclear Science User Facilities
NTC	National Training Center
NWF	Nuclear Waste Fund
NWPA	Nuclear Waste Policy Act of 1982
OA	Ongoing Authorization; Occupancy Agreement
OAM	Office of Acquisition Management
OCED	Office of Clean Energy Demonstrations
OCFO	Office of the Chief Financial Officer
OCHCO	Office of the Chief Human Capital Officer
OCIO	Office of the Chief Information Officer
OCPI	Open Charge Point Interface
ODEIA	Office of Diversity, Equity, Inclusion, and Accessibility
OE	Office of Electricity
OHROC	Office of HR Operations and Compensation
OIG	Office of the Inspector General
OMB	Office of Management and Budget
OP	Office of Policy
OPM	Office of Personnel Management
ORAS	Office of Recruitment and Advisory Services
ORNL	Oak Ridge National Laboratory
OSDBU	Office of Small and Disadvantaged Business Utilization
OSTP	Office of Science and Technology Policy
OT	Operational Technology
OTA	NNSA OT Assurance
OTD	Old Town Demolition
OTT	Office of Technology Transitions
P.L.	Public Law
P2IP	Phase 2 Implementation Plan
P3	Public-Private Partnership
PACE	Partnership to Advance Clean Energy
PAR	Position Allocation Reports
PDP	Prescription Drug Plan
PE-1	Physics Experiment-1
PF-4	Plutonium Facility-4

PFAS	Per- and Polyfluoroalkyl Substances
PI	Partnership Intermediary
PIA	Partnership Intermediary Agreement
PIIA	Payment Integrity Information Act of 2019
PM	Project Management
PMA	Power Marketing Administration
PMF	Presidential Management Fellow
PM-HIP	Powder Metallurgy with Hot Isostatic Pressing
PMIAA	Program Management Improvement Accountability Act of 2016
PMIO	Program Management Improvement Officer
PMO	Program Management Office
PMPC	Program Management Policy Council
PNNL	Pacific Northwest National Laboratory
PP&E	Property, Plant and Equipment
PPO	Preferred Provider Organization
PPY	Pits Per Year
PRAC	Pandemic Response Accountability Committee
PRB	Postretirement Benefits Other Than Pensions
PR-ERF	Puerto Rico Energy Resilience Fund
PX/Y-12	Pantex Plant and Y-12 National Security Complex
QIS	National Quantum Information Science
R&D	Research and Development
RA	Reasonable Accommodation
Rap Back	Report of Arrest and Prosecution Background
RCRA	Resource Conservation and Recovery Act of 1976
RDD&D	Research, Development, Demonstration and Deployment
REE	Rare Earth Element
Refinancing Act	BPA Refinancing Section of the Omnibus Consolidated Rescissions and Appropriations Act of 1996
RENEW	Reaching a New Energy Sciences Workforce
REP	Residential Exchange Program
RFI	Request for Information
RPA	Robotic Process Automation
RPV	Replacement Plant Value

RSI	Required Supplementary Information
S3	Office of the Undersecretary for Infrastructure
SAM	System for Award Management
SBIR	Small Business Innovation Research
SBR	Statements of Budgetary Resources
SBW	Sodium Bearing Waste
SC	Office of Science
SCEP	State and Community Energy Programs
SCI	Societal Considerations and Impacts
SciDAC	Scientific Discovery of Advanced Computing
SCIP	Safety Culture Improvement Panel
SCRM	Supply Chain Risk Management
SCRS	Sustainable Climate-Ready Sites
SCWE	Safety Culture Work Environment
SDU	Saltstone Disposal Unit
SEPA	Southeastern Power Administration
SES	Senior Executive Service
SFFAS	Statement of Federal Financial Accounting Standards
SFHP	Spent Fuel Handling Recapitalization Project
SLAC	SLAC National Accelerator Laboratory
SMM	Small- and Medium-Sized Manufacturing Firms
SMR	Steam Methane Reforming; Small Modular Reactor
SMS	Sustainment Management System
SNF	Spent Nuclear Fuel
SNL	Sandia National Laboratory
SNM	Special Nuclear Material
SOGI	Sexual Orientation and Gender Identity
SOP	Standard Operating Procedures
SP	Special Publication
SPL	Sample Preparation Laboratory
SPO	Sustainability Performance Office
SPP	Strategic Partnership Projects
SPR	Strategic Petroleum Reserve
SRPPF	Savannah River Plutonium Processing Facility
SRRL	Solar Radiation Research Laboratory
SRS	Savannah River Site

SRT&E	Stockpile Research, Technology, and Engineering
SSBN 826	USS District of Columbia Submarine
SSDF	Secure Software Development Framework
SSP	Stockpile Stewardship Program
STA	Secure Transportation Asset
STARS	Standard Accounting and Reporting System
STEM	Science, Technology, Engineering, and Math
STRIPES	Strategic Integrated Procurement Enterprise System
STTR	Small Business Technology Transfer
SUM	Spend Under Management
SWPA	Southwestern Power Administration
SWPF	Salt Waste Processing Facility
T2H	Time to Hire
TA	Technical Area; Technical Assistance
TA2	Test Article 2
TA-55	Technical Area 55
TAL	Triacetic Acid Lactone
TCCU	Tribally Controlled Colleges and Universities
TCE	Trichloroethylene
TCF	Technology Commercialization Fund
TCO	Total Cost of Ownership
TEDCO	Tribal Energy Development Organization
TELGP	Tribal Energy Loan Guarantee Program
TEPP	Tribal Education Partnership Program
TESC	Tribal Energy Steering Committee
TFP	Transmission Facilitation Program
THETA	Thermal Hydraulic Experimental Test Article
Title XVII	Title XVII Loan Guarantee Program for Innovative Technologies
TPBARS	Tritium-Producing Burnable Absorber Rods
Treasury	U.S. Department of the Treasury
TRU	Transuranic
TSCR	Tank-Side Cesium Removal
TSP	Thrift Savings Plan
TVA	Tennessee Valley Authority
TW	Trusted Workforce
U.S.	United States
U.S.C.	United States Code
UAM	User Activity Monitoring
UESC	Utility Energy Service Contracts
UF6	Uranium Hexafluoride
UIC	Underground Injection Control
UIN	University Isotope Network
UNECE	United Nations Economic Commission for Europe
UNLP	University Nuclear Leadership Program
UPF	Uranium Processing Facility
USACE	U.S. Army Corps of Engineers
USEC	U.S. Enrichment Corporation Fund
USG	U.S. Government
USSGL	U.S. Standard General Ledger
UTF	Ukraine Task Force
UTR	University Training and Research
VARP	Vulnerability Assessments and Resilience Plans
VDP	Vulnerability Disclosure Program
WAC	World Astatine Community
WAP	Weatherization Assistance Program
WAPA	Western Area Power Administration
WHIAANHPI	White House Initiative on Asian Americans, Native Hawaiians, and Pacific Islanders
WIPP	Waste Isolation Pilot Plant
WMD	Weapons of Mass Destruction
WR	War Reserve
WRR	World Radiometric Reference
WSE	Wafer-Scale Engine
WTP	Waste Treatment and Immobilization Project
Y-12	Y-12 National Security Complex
ZEV	Zero-Emission Vehicles
ZTA	Zero Trust Architecture

Photo Captions

Front Cover and Back Cover

- **Front Cover –** To create fusion ignition, the National Ignition Facility's(NIF) laser energy is converted into **X-rays inside the hohlraum**, which then compress a fuel capsule until it implodes, creating a high-temperature, high-pressure plasma. For more information, visit https://www.llnl.gov/news/national-ignition-facility-achieves-fusion-ignition.
- **Back Cover –** A **modern 3D printer** is printing a metal turbine at Sandia National Laboratories**.** Photo credit Michal-Rojek.

Table of Contents

Department of Energy's (DOE) **James V. Forrestal Building** in Washington, D.C.

Agency Highlights

- **Top Photo –** Historical photo: The **card reader** sorted keypunched cards for data entry to the first mainframe computer at Fernald, an IBM1620, located in the Accounting Division. Photo posted at https://www.flickr.com/photos/departmentofenergy/29242374641/in/photostream/.
- **Bottom Photo –** Historical photo: Inspecting **pilot magnet C#1** of Brookhaven's Alternating Gradient Synchrotron (AGS) is shown being inspected. The AGS became the world's premiere accelerator when it reached its design energy of 33 billion electron volts (GeV) on July 29, 1960. Until 1968, the AGS was the highest-energy accelerator in the world. Photo posted at https://www.flickr.com/photos/brookhavenlab/8495311598/in/album-72157611796003039/.

FY 2023 DOE Highlight: Achieving Fusion Ignition

Continuing the story from the Agency Financial Report's (AFR) cover photo, this is a color-enhanced image of the inside of a **NIF preamplifier support structure**. Photo by Damien Jemison/LLNL. For more information, visit https://www.llnl.gov/news/ignition.

Management's Discussion and Analysis

Supernovae

Researchers are using cutting-edge computers to build models of **supernovae** to understand these huge explosions. This image is a computer simulation of a supernova's assumed heat signature, with projections shown at left, right, and bottom. Image courtesy of Scientific Discovery of Advanced Computing (SciDAC). For more information, visit https://www.energy.gov/science/doe-explainssupernovae.

FY 2023 DOE Highlight: Newton's Gravity Apple Tree

DOE's "gravity tree" is planted at DOE headquarters in Washington, D.C., at the James V. Forrestal Building (see photo at the bottom of the Table of Contents page). For more information, visit: https://www.energy.gov/articles/doe-receives-newtons-gravity-tree.

Financial Results

Artificial Synapses

Los Alamos National Laboratory researchers designed new **artificial synapses for neuromorphic computing**. Tested against a dataset of handwritten images from the Modified National Standards and Technology database, the interface-type memristors realized a high image recognition accuracy of 94.72 percent. For more information, visit https://discover.lanl.gov/news/0601-artificial-synapses/. Photo posted at https://twitter.com/energy.

FY 2023 DOE Highlight: State and Community Energy Programs

On June 29, 2023, the Office of State and Community Energy Programs at DOE announced the 24 Selectees for the first round of funding from the **Renew America's Schools grant**. For more information, visit https://www.energy.gov/scep/slsc/articles/state-and-local-spotlight-june-2023.

Other Information (Unaudited)

NREL Pyrheliometer Comparisons

Joined by a dragonfly mascot on one device, scientists and researchers from around the world take part in the 24th **National Renewable Energy Laboratory (NREL) Pyrheliometer Comparisons (NPC)** at the NREL's Solar Radiation Research Laboratory (SRRL). The purpose of the NPC is to provide participants with current World Radiometric Reference (WRR) reduction factors for their absolute cavity radiometers and other reference pyrheliometers. Accurate measurements of direct normal (beam) solar irradiance from pyrheliometers are important for developing and deploying solar energy conversion systems, for improving our understanding of Earth's energy budget for climate change studies, and for other science and technology applications involving solar flux. (Photo by Werner Slocum/NREL). Photo posted at https://www.flickr.com/photos/nrel/.

FY 2023 DOE Highlight: Alternative Fuels Data Center

Charging the growing number of electric vehicles (EV) in use requires a robust network of stations for both consumers and fleets. The Alternative Fueling Station Locator allows users to search for public and private charging stations. For more information, visit https://afdc.energy.gov/stations/#/find/nearest.

Additional Information

For additional information and hyperlinks, please see page 2, About This Report.