U.S. DEPARTMENT OF ENERGY

Transition 2020

Corporate Overview

Table of Contents

Department of Energy Overview

Introduction

The United States Department of Energy (DOE) is entrusted with a broad and diverse portfolio across its major mission areas of nuclear security, science, energy, and environmental remediation. At its core, DOE is a science and technology powerhouse with an unparalleled network of 17 National Laboratories. DOE spearheads innovation to successfully address national security challenges, promote energy independence, create jobs, increase economic prosperity, and boost U.S. manufacturing competitiveness. The Laboratory network provides a unique capability to the Nation in that it serves not only DOE's missions but also provides research and development support to multiple other Federal departments and agencies (e.g., Department of Defense; Intelligence Community; National Aeronautics and Space Administration; and National Institutes of Health), as well as numerous universities and industry partners.

A Rich History

The Department of Energy has a rich and diverse history; one that is inextricably linked with the history of the National Laboratories and the evolution of science-based public policy. DOE's origins start with the Manhattan Project and the race to develop the atomic bomb during World War II. Some of the world's foremost scientists from the University of California, Berkeley, including Ernest O. Lawrence and J. Robert Oppenheimer, led the theoretical research that became the basis for the design of the atomic bomb. Both Lawrence and Oppenheimer went on to become the leading scientists of the Manhattan Project and, along with Brigadier General Leslie Groves, established a laboratory at an isolated site in Los Alamos, New Mexico, where the atomic bomb was designed and developed.

Following the war, Congress engaged in a vigorous and contentious debate on whether authority over atomic power should reside with the civilian or military branches of government. *The Atomic Energy Act of 1946* settled the debate by creating the civilian Atomic Energy Commission (AEC), which took over the Manhattan Engineer District's sprawling scientific and industrial complex. The Los Alamos site later became DOE's Los Alamos National Laboratory (LANL). In 2015, parts of LANL were included in the newly-established Manhattan Project National Historical Park along with other DOE sites that were integral to the development of the atomic bomb at Hanford, Washington and Oak Ridge, Tennessee.

The government had a clear interest in controlling the production of fissionable materials while continuing to benefit from the kind of academic scientific expertise and industry capabilities that were brought to bear for the Manhattan Project. To address these competing interests, the government developed a flexible agreement for managing government-owned, contractor-operated (aka "GoCo") scientific, engineering, and production facilities, later known as Management and Operating (M&O) contracts. With few exceptions, DOE still uses the M&O contract model to manage its National Laboratories, sites, and facilities, and this model is credited with being an important reason for the sustained vitality of the DOE National Laboratories.

In 1953, President Eisenhower gave his famous "Atoms for Peace" speech to the United Nation's General Assembly to promote the peaceful use of nuclear energy. Shortly thereafter, the President asked Congress to pass legislation "making it possible for American atomic energy development, public and private, to play a full and effective part in leading mankind into a new era of progress and peace." The result was the *Atomic Energy Act of 1954,* which ended exclusive government use of the atom and began the growth of the commercial nuclear power industry, to be regulated by the AEC. This also added an international dimension to the AEC's responsibilities in that nuclear technology was to be advanced globally for peaceful purposes. Much of DOE's authority today is still based on this Act.

In response to changing needs in the mid-1970s, in particular the oil embargoes, the AEC was abolished and, in its place, the *Energy Reorganization Act of 1974* created two new agencies: the Nuclear Regulatory Commission (NRC) to regulate the nuclear power industry and the Energy Research and Development Administration (ERDA) to manage the nuclear weapons, naval reactor, and energy development programs.

BACK TO TABLE OF CONTENTS

The extended energy crisis of the 1970s soon demonstrated the need for more coherent governmental organization and planning around energy. The *Department of Energy Organization Act* created DOE in 1977 by bringing together several Federal agencies and programs. The Department of Energy, activated on October 1, 1977, as the 12th Cabinet agency, assumed the responsibilities of the Energy Research and Development Administration, the Federal Energy Administration, the Federal Power Commission, and parts of several other agencies. The Federal Energy Regulatory Commission (FERC) was also established within the Department as an independent commission to regulate the natural gas, electricity, oil, and hydropower industries.

The Department of Energy brought many Federal energy activities under one umbrella and provided the framework for a comprehensive and balanced national energy plan. The Department undertook responsibility for long-term, high-risk scientific research and development of energy technologies, Federal power marketing, energy conservation, the nuclear weapons and non-proliferation programs, naval reactors, some energy regulatory programs, and central energy data collection and analysis. The Department also acted on its new energy emergency response authorities to create the Strategic Petroleum Reserve. Most notably, the establishment of the Department brought Cabinet-level support to a unique and growing system of National Laboratories that today serves as the backbone of the Nation's scientific research enterprise and the most comprehensive research network of its kind in the world. Like the Nation's energy infrastructure itself, a resource on the scale of the National Laboratories would be virtually impossible to build from scratch today, making support and maintenance of this system all the more critical.

While there have been several amendments to the DOE Organization Act that have changed the makeup of DOE, including one to establish the Office of Environmental Management (EM), the most significant amendment took place in 1999. The *National Defense Authorization Act for Fiscal Year 2000* amended the DOE Organization Act by establishing the National Nuclear Security Administration (NNSA) as a semi-autonomous organization within the Department. The amendment (known as the *NNSA Act*), which took effect on March 1, 2000, provides the guidance and authority necessary for the NNSA Administrator to carry out NNSA's various missions under the direction of the Secretary and Deputy Secretary.

In the first decades of the 2000's, Congress has continued to reshape the Department's profile. This has included legislation such as the *Energy Policy Act of 2005,* which authorized what is now the Office of Technology Transitions and the "Title XVII" Loan Guarantee program, and the *Energy Independence and Security Act of 2007*, which established the Advanced Technology Vehicles Manufacturing Loan Program.

The *America COMPETES Act of 2007* authorized the Advanced Research Projects Agency – Energy (ARPA–E), and the *American Recovery and Reinvestment Act of 2009* provided DOE with an unprecedented level of funding for energy research, development, demonstration, and deployment (RDD&D) programs. DOE was also given additional authorities and responsibilities for energy emergency response in the *Bipartisan Budget Act of 2015* and the 2015 *FAST Act*.

More recently, the *DOE Research and Innovation Act of 2018* was passed to strengthen DOE efforts to support technology transfer for early stage and pre-commercial technology demonstration activities and to promote strategic opportunities for collaborative RDD&D of innovative science and technologies. The *Nuclear Energy Innovation Capabilities Act (NEICA)* and the *Nuclear Energy Innovation and Modernization Act (NEIMA)* were passed in 2018 and 2019, respectively, in an effort to facilitate reactor licensing and expedite the creation of the Versatile Test Reactor.

While remaining focused on its primary missions, DOE has continued to evolve to meet the pressing challenges and emerging threats facing our Nation, as well as promote opportunities for growth and prosperity. Most importantly, DOE has proactively launched initiatives and taken actions to ensure our national security and promote American energy independence. For example:

- To achieve energy independence, DOE has championed energy policies and programs that lower costs and maximize the use of energy resources while maintaining responsible stewardship of the environment.

BACK TO TABLE OF CONTENTS

- To defend against potential threats to our Nation's energy infrastructure, in February 2018, DOE established the Office of Cybersecurity, Energy Security, and Emergency Response (CESER), which is dedicated to protecting against disruptions to our energy infrastructure caused by cyber threats, physical attacks, and natural disasters.
- To showcase the vast research and development portfolio of DOE's National Laboratories and catalyze private-public partnerships, DOE launched a series of Innovation XLab summits that facilitate the exchange of information and ideas among industry, universities, and investors with innovators and experts from the National Laboratories.
- To propel the United States to the forefront of the global quantum race, DOE unveiled a strategy for the development of a national quantum internet which will usher in a new era of communications as part of the *2018 National Quantum Initiative Act.*
- To keep our Nation safe and protect our national interests, DOE and NNSA have collaborated with the Department of Defense to maintain and modernize our Nation's nuclear weapons stockpile.
- To address the global COVID-19 crisis, DOE labs have established an unprecedented high performance computing consortium with universities and the private sector to discover promising treatments to ensure the health and safety of our citizens.

Today, as in the past, the Department of Energy is called upon to tackle some of the most significant and daunting energy, nuclear security, economic, and environmental challenges facing the United States. The Department will continue to leverage its long history and its unique scientific resources to meet these challenges to help ensure our Nation's peace and prosperity for generations to come.

DOE Leadership and Management Structure

The Department of Energy's leadership and management structure is designed to address the evolving science, energy, security, and environmental challenges facing the Nation. The enterprise is comprised of the Office of the Secretary, including the Deputy Secretary, which provides leadership and strategic direction to achieve the Department's missions, and three Under Secretariats, which manage the core functions that carry out DOE missions. For information about the current leadership team, visit: https://www.energy.gov/leadership.

DOE has approximately 13,000 Federal employees and over 95,000 National Laboratory staff and contractor employees at DOE's nuclear security plants and environmental clean-up sites at 85 field locations throughout the United States. To coordinate the vast array of mission areas for which DOE has responsibility, the Department also uses boards, councils, and committees to address issues that cut across organizational lines.

The organizational chart on page 9 (Figure 1) depicts the Department's structure, and descriptions of each DOE organization are included in the Organization Overviews.

Office of the Secretary

The *Department of Energy Organization Act,* as amended, establishes the Secretary, Deputy Secretary, and Under Secretaries as the principal officers of the Department.

The Secretary (S1) leads the Department of Energy across all of its missions and serves as a member of the President's Cabinet and fourteenth in the line of Presidential succession. In accordance with the April 4, 2017, *National Security Presidential Memorandum,* the Secretary serves as a permanent member of both the National Security Council, which advises the President on the integration of domestic, foreign, and military policies relating to national security, and the Homeland Security Council, which advises the President on homeland security issues. In addition to attending regular meetings of each Council, which are chaired by the President, the Secretary participates in Principals Committee meetings, led by the National Security Advisor. As a key member of the President's national security team, the Secretary also represents the United States at international forums on energy policy, energy security, and national security matters, and engages in bilateral and multilateral negotiations with heads of foreign governments.

The Deputy Secretary (S2) serves as the chief advisor to the Secretary and is a permanent member of the National Security Council's Deputies Committee, an interagency forum chaired by the Deputy National Security Advisor, which addresses policy issues affecting national security interests.

The Deputy Secretary also is the Department's Chief Operating Officer. In that role, the Deputy Secretary leads major DOE initiatives in several priority areas, including cyber security, project management, and emergency preparedness and response. The Deputy Secretary also chairs a number of corporate councils, including, but not limited to, the Energy Systems Acquisition Advisory Board (ESAAB), which provides the Deputy Secretary with recommendations on DOE's major construction projects (over $750 million); and the Cyber Council, which is the principal forum for coordinating cyber-related activities across DOE.

Several organizations report directly to the Secretary, including, for example, the Office of the General Counsel (GC); the Office of Congressional and Intergovernmental Affairs (CI); and the Office of Public Affairs (PA). Other organizations are unique to DOE and play a vital role in supporting the Secretary's and Deputy Secretary's efforts to achieve the Department's strategic policy goals. They are also instrumental in ensuring an enterprise-wide approach, resulting in greater consistency across the DOE complex. These organizations include:

- **Office of Strategic Planning and Policy (SP)** was created to streamline the formulation, development, and advancement of Departmental and Secretarial energy policy. SP shapes long-term strategic planning and policy consistent with the Secretary's vision for DOE. SP also leads cross-program working groups to address long-standing challenges in such areas as critical minerals and collaborates with other agencies

BACK TO TABLE OF CONTENTS

to leverage DOE expertise in advancing national priorities such as expanding space exploration. In addition, the National Laboratory Operations Board (LOB) reports to SP in order to coordinate DOE strategic planning and policy development efforts with the National Laboratories, as needed.

- **Office of the Chief Financial Officer (CF)** ensures the Department's priorities are reflected in the annual budget, which the CFO has primary responsibility for developing. The budget is a key strategic tool for planning and shaping initiatives in support of the Department's major mission areas, including those that cut across organizational lines, such as cyber security, energy storage, and artificial intelligence.
- **Office of International Affairs (IA)** advances United States objectives in energy security and represents the Department in intergovernmental forums and bilateral and multilateral proceedings that address the development and implementation of energy and economic strategies. IA advises the Secretary, Deputy Secretary, and other DOE leadership on strategic implementation of United States' energy policy. IA works closely with the State Department and the National Security Council in pursuit of Administration objectives.
- **Office of Intelligence and Counterintelligence (IN)** identifies and mitigates threats to DOE personnel, facilities, technology, and information; and also provides scientifically sound technical analysis on intelligence challenges. IN is an integral part of DOE's national security mission and is well-integrated into the Intelligence Community (IC), allowing the IC to rely on DOE's vast technical expertise.
- **Office of Enterprise Assessments (EA)** provides objective assessments on behalf of the Secretary and Deputy Secretary in the areas of nuclear and industrial safety; cyber and physical security; and other critical functions as directed by the Secretary and Deputy Secretary. The results of EA's assessments provide valuable insights that are used to strengthen DOE operations, especially those involving security and worker safety.
- **Advanced Research Project Agency – Energy (ARPA-E)** invests in high-risk, high-impact technologies until the technologies attract investment for continued development from the private sector. ARPA-E focuses exclusively on early-stage technologies that could fundamentally change the way Americans receive, use, and store energy.
- **Energy Information Administration (EIA)** is a statistical and analytical agency within the Department that collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment. EIA is the Nation's premier source of energy information and, by law, its data, analyses, and forecasts are independent of approval by any other officer or employee of the United States government. EIA prepares informative energy analyses, monthly short-term forecasts of energy market trends and long-term United States and international energy outlooks. Its *Annual Energy Outlook* provides vital information that is used by both United States government policymakers and energy industry leaders.

In addition, several other offices that perform mission support functions report directly to the Secretary and Deputy Secretary. This alignment strengthens lines of authority for these functions and promotes a coordinated approach to business operations across DOE. These offices include the Office of the Chief Human Capital Officer (HC); Office of Management (MA); Office of the Chief Information Officer (IM); Office of Small and Disadvantaged Business Utilization (SB); Office of Hearings and Appeals (HG); and the Office of Economic Impact and Diversity (ED).

The Under Secretaries

The Department of Energy's three Under Secretaries lead the Department's critical mission areas and advise the Secretary and Deputy Secretary on policy matters to advance the Department's strategic priorities and address complex challenges facing the Department. The Under Secretary organizations are integral to ensuring that DOE line management has the resources and support needed to achieve their mission objectives. For example, the Under Secretary organizations coordinate the development of budget proposals with line management and advocate for those proposals. They also represent line organizations on various policy and operations councils, including

BACK TO TABLE OF CONTENTS

the LOB and Cyber Council. In addition, the Under Secretaries provide oversight to ensure effective program execution.

The Under Secretary of Energy (S3) serves as the principal Under Secretary and the Department's principal advisor on energy policy, energy security, and applied technology research and development. To position the Nation to become more energy independent and develop energy policies and programs that lower costs and maximize the use of resources, the Under Secretary of Energy is focused on applied technologies that pertain to the operation and reliability of our Nation's energy infrastructure. The Under Secretary of Energy has management responsibility for DOE's three applied research laboratories as well as DOE's four Power Marketing Administrations (PMAs). In addition, the Under Secretary of Energy is responsible for policy and oversight of safety, security, and project management across the DOE complex.

The Office of Cybersecurity, Energy Security, and Emergency Response (CESER), which was established in 2018, reports to the Under Secretary of Energy. CESER was formed to better position the Department to protect the energy infrastructure from emerging threats, especially cyber threats, and natural disasters. In addition, the Arctic Energy Office, which was recently established, reports to the Under Secretary of Energy to coordinate Arctic-related DOE initiatives in the areas of energy, science and national security.

Other organizations reporting to the Under Secretary include the Assistant Secretary for Energy Efficiency and Renewable Energy (EE); Assistant Secretary for Fossil Energy (FE); Assistant Secretary for Nuclear Energy (NE); Assistant Secretary for Electricity (OE), which has responsibility for the four PMAs; Office of Indian Energy Policy and Programs (IE); Associate Under Secretary for Environment, Health, Safety and Security (AU); Loan Programs Office (LP); and Office of Project Management (PM).

The Under Secretary for Science (S4) serves as the Department's principal advisor on fundamental energy research, energy technologies, and science. The Under Secretary drives this mission through programs, including nuclear and high energy particle physics; basic energy; science; advanced computing; fusion; and biological and environmental research. In executing the Department's scientific mission, the Under Secretary for Science manages ten of the Department's National Laboratories.

In addition, the Under Secretary for Science manages the vast environmental remediation and legacy management missions of the Department, addressing the U.S. legacy of nuclear weapons production and government-sponsored nuclear energy research, including management of a DOE National Laboratory dedicated to research and development in support of the Department's environmental remediation mission. The Under Secretary for Science also leads the Department's expanding role in technology commercialization, especially for DOE's National Laboratories.

In 2019, the Artificial Intelligence and Technology Office (AI), which reports to the Under Secretary for Science, was established to coordinate DOE's vast artificial intelligence research portfolio. Other offices reporting to the Under Secretary for Science include the Office of Science (SC); Office of Technology Transitions (TT); Assistant Secretary for Environmental Management (EM); and Office of Legacy Management (LM).

The Under Secretary for Nuclear Security (S5) also serves as the NNSA Administrator (NA-1). The Administrator's responsibilities in leading the NNSA are outlined in the NNSA Act, most recently updated in February 2020. These responsibilities are operationally represented by NNSA's three core missions: maintaining the safety, security and effectiveness of the nuclear deterrent; preventing, countering and responding to proliferation and terrorism threats; and providing operational support for naval nuclear propulsion.

NNSA continues to make great strides in executing its missions in the face of the COVID-19 pandemic, meeting major milestones on-time and within budget. Efforts are now underway to institutionalize the many lessons learned from operating during the pandemic to ensure NNSA's ability to operate with minimal disruption in future emergency situations.

As NNSA's mission scope continues to grow to meet national security requirements, NNSA's workforce has adopted an enterprise-wide approach, instilling a culture of safety, efficiency, and effectiveness across all core mission areas.

BACK TO TABLE OF CONTENTS

Within NNSA, and with the Secretary's support, the Agency has implemented numerous improvements in management and governance which are producing tangible results. This has been recognized in the recent findings of the National Academy of Sciences and National Academy of Public Administration under their congressionally-mandated independent study assessing the governance and management of the Nuclear Security Enterprise.

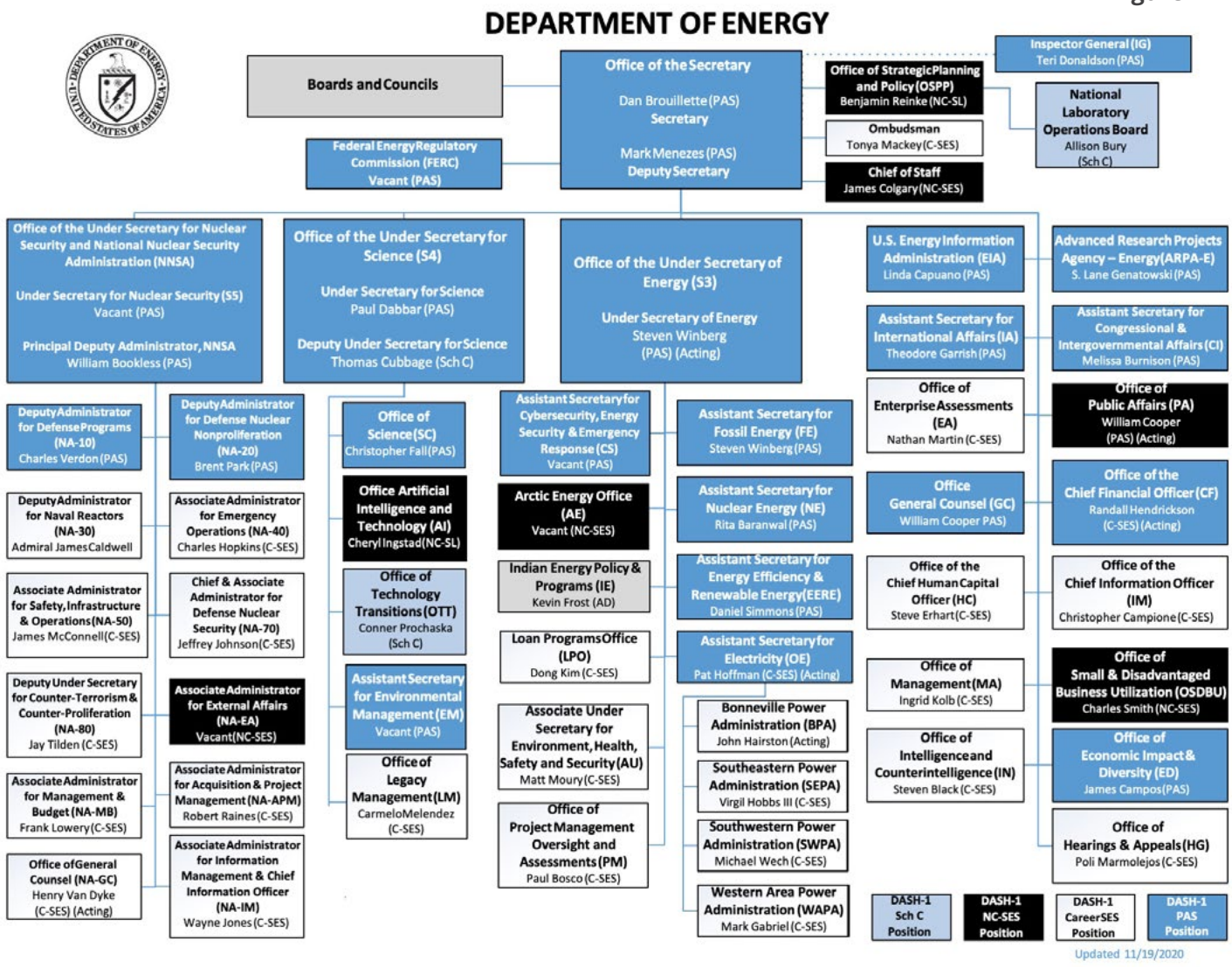
In addition to the Federal workforce, the Administrator is responsible for the oversight of three National Laboratories, two laboratories managed by Naval Reactors, several production sites, and the Nevada Nuclear Security Site.

Independent Organization

The Federal Energy Regulatory Commission (FERC) is an independent regulatory commission within the Department that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines. These functions are not carried out by delegation from the Secretary; instead, these authorities are vested in the Commission itself. By statute, employees of FERC are not responsible or subject to the supervision or direction of any employee of any other part of the Department, including the Secretary. However, the Secretary may delegate functions to the Commission.

DOE Organizational Chart

Figure 1



BACK TO TABLE OF CONTENTS

DOE Installations and Operations

At its core, the Department is a science and technology organization that advances critical missions for the American people, including nuclear security; scientific leadership and discovery; clean energy innovation; environmental remediation; and energy security. Meeting these challenges requires a geographically dispersed presence, complex facilities, and highly-trained workforce. The map on page 12 (Figure 2) shows the location of DOE's National Laboratories, production facilities, and other field sites.

National Laboratories

Founded as part of an immense national investment in scientific research during and following World War II, DOE's system of National Laboratories is comprised of 17 world-class research institutions that constitute the most comprehensive research network of its kind. For more than seventy years, the National Laboratories have brought deep science and technology innovation to bear against major challenges in the United States, and they continue to serve as an integral component of the U.S. research enterprise and invaluable strategic partners for DOE in evolving with its modern-day missions.

DOE's National Laboratories each have distinct but complementary resources and capabilities, with scientists, engineers, technicians, and analysts collaborating throughout the system, as well as with academia and industry, to ensure the best solutions are pursued without regard to organizational boundaries. The labs operate one-of-a-kind national scientific user facilities that are used annually by over 32,000 researchers from universities, federal laboratories, and the private sector.

The National Laboratories fill a critical gap in the Nation's energy innovation ecosystem. Universities emphasize early discovery and tend to focus on research associated with small groups of faculty members, while companies respond to market needs and typically focus their R&D on near-term solutions or the integration of multiple technologies. National Laboratories tackle multidisciplinary problems with a long-time horizon, often joining fundamental discovery research, technology development, and demonstration projects. In addition, the National Laboratories conduct R&D in areas that are not pursued by either universities or companies, such as safeguarding and managing the Nation's nuclear stockpile.

Specifically, the National Laboratories conduct activities across several main mission areas:

- Advance United States energy independence and leadership in clean energy technologies to ensure the ready availability of clean, secure, reliable, and affordable energy.
- Deliver discovery and innovation in physical, chemical, biological, engineering, and computational and information sciences that advance our understanding of the world around us.
- Enhance global, national, and homeland security by ensuring the safety and reliability of the United States nuclear deterrent, helping to prevent the proliferation of weapons of mass destruction, and securing the Nation's borders.
- Develop deployable technologies for the safe cleanup of the environmental legacy from five decades of nuclear weapons development, production, and testing.
- Design, build, and operate distinctive scientific instrumentation and facilities, and make these resources available to the research community.
- Serve the national interest not only as leaders in science and technology, but also as quickly mobilized national assets in times of national need.
- Move innovation to the marketplace and strengthen United States competitiveness.
- Train the next generation of scientists and engineers, particularly in DOE core mission areas.

DOE's National Laboratories have a substantial record of accomplishment and demonstrated return on investment for the American taxpayer. For example, the DOE National Laboratories have:

- Driven U.S. leadership in supercomputing, including exascale and quantum computing, and led application of supercomputing to address complex problems.

BACK TO TABLE OF CONTENTS

- Developed energy efficiency technologies and standards that have saved United States taxpayers over $1 trillion.
- Conducted the fundamental and applied research that enabled the shale gas revolution and the development of nuclear, photovoltaics, and energy storage for transportation industries.
- Made scientific discoveries, from new chemicals and new states of matter to an improved understanding of the origins of the universe.
- Sustained confidence in the Nation's nuclear weapons stockpile in the absence of nuclear testing, identifying and dealing with arising issues in weapon systems through life extension programs.
- Provided to the DOE Office of Environmental Management purpose-built technical capabilities and process improvements that have achieved life cycle savings of over $5 billion.
- Served as an "on call" resource for tackling unprecedented challenges—from the threat of unsecured nuclear materials as the Soviet Union collapsed, to the Macondo oil spill in the Gulf of Mexico, to the Fukushima nuclear disaster, to the COVID-19 global health crisis.

For more information on the National Laboratories please visit page 51 of this book.

Weapons Plants and Remediation Sites

In addition to its National Laboratories, DOE performs its nuclear security mission at multiple sites around the country. These government-owned sites are typically operated by management and operating (M&O) contractors who employ the bulk of personnel at the sites, performing highly technical and often hazardous work.

In addition to its three national security laboratories, NNSA operates four nuclear weapons production facilities and the Nevada National Security Site. The NNSA nuclear security enterprise's M&O workforce consists of over 50,000 contractor employees.

EM, with an annual budget of about $7 billion, uses over 30,000 contractor employees at 16 sites in 11 states to perform vital cleanup work resulting from legacy nuclear weapons production, including the deactivation, decommissioning, decontamination and demolition of thousands of aging facilities; safe management and disposition of radioactive and hazardous liquid and solid wastes; and remediation of contamination in soil and groundwater. Many of the contractor employees performing NNSA and EM work are represented by trade unions.

Power Marketing Administrations

The Power Marketing Administrations (PMAs) are agencies within DOE whose primary mission is to market hydroelectric power produced at Federal dams. These multipurpose water projects are owned and operated primarily by the Department of Interior's Bureau of Reclamation and the U.S. Army Corps of Engineers. There are four PMAs—Bonneville Power Administration (BPA), Southeastern Power Administration (SEPA), Southwestern Power Administration (SWPA), and Western Area Power Administration (WAPA)—each operating in a different geographic region. In FY 2019, DOE's four PMAs marketed power primarily from 133 Federal hydro power plants with maximum operating capabilities of 38,613 megawatts, approximately three percent of the Nation's power plant capacity. The PMAs report to the Assistant Secretary for Electricity.

BACK TO TABLE OF CONTENTS

Figure 2

DOE Laboratories, Plants, and other Field Sites

Alabama
1. Power Systems Development Facility

Alaska
2. Arctic Energy Office

California
3. Energy Technology Engineering Center
4. Lawrence Berkeley National Laboratory*
5. Lawrence Livermore National Laboratory*
6. Sandia National Laboratories
7. SLAC National Accelerator Laboratory*

Colorado
8. LM Grand Junction Office
9. National Renewable Energy Laboratory*
10. Western Area Power Administration
11. LM Westminster Office

Connecticut
12. Northeast Home Heating Oil Reserves

District of Columbia
13. DOE Headquarters – Forrestal Building

Georgia
14. Southeastern Power Administration

Idaho
15. Idaho National Laboratory*
16. Radiological Environmental Sciences Laboratory

Illinois
17. Argonne National Laboratory*
18. SC Consolidated Service Center
19. Fermi National Accelerator Laboratory*

Iowa
20. Ames Laboratory

Kentucky
21. Paducah Gaseous Diffusion Plant
22. Portsmouth/Paducah Project Office

Louisiana
23. Strategic Petroleum Reserve - West Hackberry Site
24. Strategic Petroleum Reserve - Bayou Choctaw Site
25. Strategic Petroleum Reserve Project Management Office
26. Strategic Petroleum Reserve - St. James Terminal

Maine
27. Northeast Gasoline Supply Reserve

Maryland
28. DOE Headquarters – Germantown Campus

Massachusetts
29. Northeast Gasoline Supply Reserve
30. Northeast Home Heating Oil Reserve

Mississippi
31. SPR Emergency Equipment Warehouse

Missouri
32. Kansas City National Security Campus

Nevada
33. Nevada National Security Site

New Jersey
34. Northeast Home Heating Oil Reserve
35. Princeton Plasma Physics Laboratory*

New Mexico
36. Inhalation Toxicology Research Institute
37. Los Alamos National Laboratory*
38. National Training Center
39. NNSA Albuquerque Complex
40 Sandia National Laboratories*
41. Waste Isolation Pilot Plant*

New York
42. Separations Process Research Unit
43. Northeast Gasoline Supply Reserve
44. Brookhaven National Laboratory*
45. Knolls Atomic Power Laboratory
46. West Valley Demonstration Project

Ohio
47. EM Consolidated Business Center
48. Portsmouth Gaseous Diffusion Plant

Oklahoma
49. Southwestern Power Administration

Oregon
50. Bonneville Power Administration
51. National Energy Technology Laboratory – Albany

Pennsylvania
52. Bettis Atomic Power Laboratory
53. National Energy Technology Laboratory – Pittsburgh

South Carolina
54. Savannah River National Laboratory*
55. Savannah River Site

Tennessee
56. East Tennessee Technology Park
57. Oak Ridge National Laboratory*
58. Office Scientific and Technical Information
59. Y-12 Plant

Texas
60. Strategic Petroleum Reserve - Big Hill Site
61. Strategic Petroleum Reserve - Bryan Mound Site
62. Pantex Plant*
63. National Energy Technology Laboratory - Houston

Utah
64. Moab UMTRA Project

Virginia
65. Thomas Jefferson National Accelerator Facility*

Washington
66. Hanford
67. Pacific Northwest National Laboratory*

West Virginia
68. National Energy Technology Laboratory – Morgantown
69. LM Business Center

Wyoming
70. Rocky Mountain Oil Field Testing Center

* EFFECTIVE DATE: OCTOBER 2020

BACK TO TABLE OF CONTENTS

Boards, Councils, and Committees

Given its diverse, complex missions, DOE has established several high-level boards, councils, and committees to: identify issues and challenges requiring attention; facilitate collaborative, decision-making; and offer recommendations on challenges facing the Department. In most cases, these groups are comprised of senior leaders from headquarters program and mission support offices; field organizations; and laboratories. They have been essential to building stronger relationships and developing strategies to achieve DOE's goals.

In addition, DOE has twenty-one advisory committees that are managed in accordance with the *Federal Advisory Committee Act.* These committees are comprised of experts in specific disciplines and represent the users, industries, and organizations in the public and private sectors that could be directly affected by the work of the committees. The committees provide relevant, objective advice to DOE and their proceedings are open to the public. DOE manages two of these advisory committees in support of the President.

Internal DOE Boards, Councils and Committees

The following includes boards, councils, and committees that are internal to DOE, most of which are chaired by the Deputy Secretary.

Research and Technology Investment Committee (RTIC), chaired by the Deputy Secretary, convenes key elements of the Department that support research and development activities to share and coordinate their strategic research priorities, identify potential cross-cutting opportunities in both basic and applied science and technology, and ensure key upcoming decisions are effectively leveraged. The RTIC membership includes the Under Secretaries, ARPA-E Director, and other senior officials. The RTIC is supported by the RTIC Working Group, which is comprised of senior level staff representing the RTIC members. RTIC initiatives have focused on increased transparency and collaboration across programs, especially on specific technologies, including energy storage, artificial intelligence, critical materials, STEM, biotechnology, polymers, and integrated energy systems.

Cyber Council, chaired by the Deputy Secretary, is the principal forum for coordination of cyber-related activities across the Department and serves as an advisory body to the Deputy Secretary. DOE is engaged in three categories of cyber-related activities: (1) protecting the DOE enterprise – including government-owned, contractor-operated sites and facilities – from a range of cyber threats that can adversely impact mission capabilities; (2) bolstering the United States Government's capabilities to address cyber threats; and (3) supporting energy sector efforts to strengthen cybersecurity. Membership includes the Under Secretaries and other senior leadership with responsibilities for cyber security. The Council meets quarterly or as required by the Chair.

Energy Systems Acquisition Advisory Board (ESAAB), chaired by the Deputy Secretary, supports the Department's objective of achieving and maintaining excellence in project management, advises the Deputy Secretary on enterprise-wide project management policy and issues, and supports decision-making on critical decision (CD) milestones for major system projects greater than $750 million. The ESAAB also reviews other projects of lessor value to raise awareness of problems and solutions. Recent highlights include: the approval of a project alternative (CD-1) of a new $5.8 billion Versatile Test Reactor (VTR) at the Idaho National Lab; a mission need approval (CD-0) for a new $4.2 billion Science Electron Ion Collider (EIC); and the project completion (CD-4) of a new, $2.34 billion nuclear chemical processing facility, the Salt Waste Processing Facility (SWPF) at the Savannah River Site.

Emergency and Incident Management Council (EIMC), chaired by the Deputy Secretary, serves as a forum to promote coordination across the Department to prepare for, mitigate, respond to, and recover from emergency situations. Most recently, for example, the EIMC has played a significant role in ensuring a coordinated Departmental response to COVID-19. The Council, made up of senior leaders from across the Department, addresses strategic-level aspects of the emergency management enterprise and identifies department-wide capabilities that can be utilized, as appropriate, in response, consultation, and technical assistance and restoration activities.

Credit Review Board (CRB), chaired by the Deputy Secretary, is charged with ensuring full consideration

BACK TO TABLE OF CONTENTS

of credit management, debt collection, and policy issues, to make recommendations to the Secretary of Energy prior to the Secretary's granting final approval for any conditional commitment for a loan guarantee or loan, and to participate in the oversight of the Loan Program's portfolio. The CRB seeks to confirm the commercial viability of a project receiving a loan or loan guarantee; thoroughly examine the project or activities benefitting from the program in light of DOE's objectives, including the portfolio objectives for the program; and oversee the development of a strategy for managing risks taken on by the Department in association with its loans, loan guarantees, and portfolio.

Laboratory Operations Board (LOB) was chartered in 2013 to strengthen the partnership between the Department and the National Laboratories, and to improve management and performance in order to more effectively and efficiently execute the missions of the Department and the National Laboratories. The LOB holds monthly meetings and is chaired by the Director, Office of Strategic Planning and Policy. Its membership includes senior program and staff office officials; National Laboratory Chief Operating Officers (COOs) and Chief Research Officers (CROs); a representative from the Field Office Managers; and a representative from the Lab M&O contractor group. Most recently, the LOB has focused on developing the 2020 State of the DOE National Laboratories Report and preparing a strategic response to the Secretary of Energy Advisory Board's recommendations on investing in people to retain, grow and inspire top talent.

Security Committee was established by the Secretary and is comprised of Chief Security Officers (CSOs) across DOE. The Security Committee identifies corporate security strategies, guides security policy development, and provides a forum for cross-organizational issues. The Committee oversaw the development of a Design Basis Threat policy, further refining previous threat assessment processes. In addition, the Committee provides guidance for security of special nuclear material, including addressing aging security infrastructure, and material control and accountability. The Committee has also led the Department's efforts to develop counter-unmanned-aerial system security policies and pursue special airspace designations and engagement authorities to best protect DOE assets.

DOE Federal Advisory Committees

The following includes Federal Advisory Committees managed by the Department.

President's Council of Advisors on Science and Technology (PCAST) advises the President on matters involving science, technology, education, and innovation policy. The Council also provides the President with scientific and technical information that is needed to inform public policy relating to the American economy, the American worker, national and homeland security, and other topics.

National Quantum Initiative Advisory Committee (NQIAC) provides advice to the President and the Secretary of Energy on the National Quantum Initiative Program. The committee also provides advice to the National Science and Technology Council Subcommittee on Quantum Information Science. The NQIAC conducts independent assessments of trends and developments in quantum information science and technology and tracks the progress and activities of the Program, including the extent to which the Program is helping to maintain United States leadership in quantum information science and technology.

Secretary of Energy Advisory Board (SEAB) provides the Secretary with timely, balanced, external advice on issues concerning DOE. Comprised of technical experts, business executives, academics, and former government officials, SEAB provides recommendations to the Secretary on DOE's basic and applied research and development activities; economic and national security policy; educational issues; operational issues; and any other issues as directed by the Secretary. Most recently, four SEAB working groups have been established to provide recommendations on maximizing artificial intelligence and machine learning to support DOE's mission; promoting innovation in DOE policies and practices; optimizing DOE efforts to support space exploration; and elevating the profile of DOE's vital missions through improved branding.

DOE's Office of Energy Efficiency and Renewable Energy

The following four Federal advisory committees that support its activities:

Appliance Standards and Rulemaking Advisory Committee (ASRAC), was established to use negotiated rulemaking to engage all interested parties, gather data, and attempt to reach consensus on establishing energy efficiency standards.

BACK TO TABLE OF CONTENTS

Biomass Research and Development Advisory Committee (BIOAC), provides expert advice to help craft recommendations on the direction of biomass research and development at DOE.

Hydrogen and Fuel Cell Technical Advisory Committee (HTAC), provides technical and programmatic advice on DOE's hydrogen research, development, and demonstration efforts.

State Energy Advisory Board (STEAB), develops recommendations regarding initiation, design, implementation, and evaluation of federal energy efficiency and renewable energy programs to help integrate and provide consistency between federal, state, and local activities.

DOE's Office of Electricity

The following Federal advisory committee supports its activities:

Electricity Advisory Committee (EAC), provides expert advice on implementing the *Energy Policy Act of 2005*; executing the *Energy Independence and Security Act of 2007*; and modernizing the nation's electricity delivery infrastructure.

DOE's Office of Fossil Energy

has the following three Federal advisory committees that support its activities:

National Coal Council (NCC), provides advice and recommendations on coal policy, technology and markets.

National Petroleum Council *(NPC),* was established to advise, inform, and make recommendations with respect to any matter relating to oil and natural gas or to the oil and gas industries.

Methane Hydrate Advisory Committee (MHAC), advises DOE on the potential applications of methane hydrate; assists in developing recommendations and priorities for the methane hydrate research and development program; and submits to Congress one or more reports on an assessment of DOE's research program.

DOE's Office of Nuclear Energy

The following Federal advisory committee supports its activities:

Nuclear Energy Advisory Committee (NEAC), advises on national policy and scientific aspects of nuclear issues of concern to DOE.

DOE's Office of Science

The following six advisory committees all provide independent advice on specific technological areas:

Advanced Scientific Computing Advisory Committee (ASCAC)

Basic Energy Science Advisory Committee (BESAC)

Biological and Environmental Research Advisory Committee (BERAC)

Fusion Energy Sciences Advisory Committee (FESAC)

High Energy Physics Advisory Panel (HEPAP)

Nuclear Science Advisory Committee (NSAC)

DOE's Office of Environmental Management

The following two Federal advisory committees supports its activities:

Environmental Management Advisory Board (EMAB), provides independent and external advice, information, and recommendations to the Assistant Secretary for Environmental Management on corporate issues relating to accelerated site cleanup and risk reduction.

Environmental Management Site-Specific Advisory Board (EMSSAB), was created to involve stakeholders more directly in environmental cleanup discussions, federal decision-making and cleanup activities.

National Nuclear Security Administration

The following Federal advisory committee supports its activities:

Defense Programs Advisory Committee (DPAC), provides advice and recommendations on the stewardship and maintenance of the Nation's nuclear deterrent.

BACK TO TABLE OF CONTENTS

Department of Energy's Upcoming Critical Decisions and Events

The following includes the Department's high-visibility critical decision points and events, by program, for January 20, 2021 through April 30, 2021.

January 2021 (Post-Inauguration)

Office of Congressional and Intergovernmental Affairs will begin preparing incoming nominees for confirmation hearings, including Congressional courtesy visits.

Energy Information Administration will issue the Annual Energy Outlook (AEO), an integrated long-term projection of U.S. energy consumption, supply, prices, and energy-related carbon dioxide emissions.

National Nuclear Security Administration will provide an annual report (developed jointly with the Department of Defense) to the Secretary of Energy and the Secretary of Defense on the safety, reliability, performance and military effectiveness of the U.S. nuclear weapons stockpile. The Secretaries must submit the report to the President by February 1, 2021.

National Nuclear Security Administration. Will announce the awardees for a new university consortium under the $25 million Integrated University Program (IUP) Funding Opportunity Announcement (FOA) to establish basic research and development capabilities at U.S. universities and enable a pipeline of students who have performed nuclear engineering and nuclear physics research into the national laboratory system.

National Nuclear Security Administration will participate in the Treaty on the Nonproliferation of Nuclear Weapons (NPT) 2021 Review Conference, which is tentatively scheduled for January 2021.

Office of the Chief Financial Officer will develop, if needed, a revised FY 2021 budget request and COVID/stimulus supplemental proposals for Congressional consideration.

Office of Electricity will seek approval to construct the Grid Storage Launchpad (GSL) Research Facility at the Pacific Northwest National Laboratory, which is needed to accelerate vital research and validate the performance of battery technologies for grid applications.

Office of Energy Efficiency and Renewable Energy will select financial assistance awardees for the Critical Materials FOA: Next-Generation Technologies and Field Validation, which will provide $30 million for research and development focused on field validation and demonstration, as well as next-generation extraction, separation, and processing technologies for critical materials.

Office of Energy Efficiency and Renewable Energy will select financial assistance awardees for the Water Security FOA: Research and Development for Advanced Water Resource Recovery Systems, which will provide $20 million to develop technology innovations that strengthen America's water infrastructure and enable advanced water resource recovery systems that have the potential to be net energy positive.

Office of Energy Efficiency and Renewable Energy will select financial assistance awardees for the Perovskite FOA, which will provide $20 million to further advance perovskite research and development in accordance with FY 2020 Congressional direction.

Office of Science will make critical decisions regarding the Nanoscale Science Research Centers (NSRC) Recapitalization at Brookhaven National Laboratory, including determinations on the selected approach for the project, the project's final design, and authorization to release funds for the first phase of construction.

February 2021

Energy Information Administration will issue the February edition of the Short-Term Energy Outlook (STEO), which provides a monthly forecast of U.S. energy consumption, supply, and prices through the end of 2022.

BACK TO TABLE OF CONTENTS

< previous page | next page >

Office of the Chief Financial Officer will develop, if appropriate, a DOE FY 2022 budget request based on new Administration guidance.

Office of Congressional and Intergovernmental Affairs will prepare senior leadership for potential meetings with intergovernmental groups that are scheduled to hold their annual meetings in February and March.

Office of International Affairs will prepare senior leadership for the Munich Security Conference, scheduled for February 2021, and associated bilateral and multilateral meetings.

Office of Management the Government Accountability Office (GAO) will issue its bi-annual High Risk List, which includes Federal government activities considered to be at high-risk. The National Nuclear Security Administration and Office of Environmental Management's major projects and contracts (over $750 million) are expected to continue to be on the list, primarily due to challenges in completing large construction projects.

March 2021

Energy Information Administration will issue the March edition of the Short-Term Energy Outlook (STEO), which provides a monthly forecast of U.S. energy consumption, supply, and prices through the end of 2022.

National Nuclear Security Administration the President issues the annual assurance on the safety, security, reliability, and military effectiveness of the nuclear weapons stockpile based on an assessment conducted by DOE and the Department of Defense.

Office of Energy Efficiency and Renewable Energy will down select from three awardees funded under the FY 2018 Generation 3 Contracting Solar Power (CSP) Systems FOA to one awardee that will build a test facility that allows diverse teams of researchers, laboratories, developers, and manufacturers to test components and systems through a wide range of operating conditions necessary to advance the next generation of CSP technology.

Office of Energy Efficiency and Renewable Energy expects to announce plans to revise the appliance standards for showerheads and manufactured housing, which will likely draw significant interest from a diverse set of stakeholders, including members of Congress and the media.

Office of Environmental Management expects to award a new contract to manage and operate the Savannah River National Laboratory, which will enhance and expand the laboratory's research and development capacity.

Office of Fossil Energy to support the $1.4 billion Strategic Petroleum Reserve Modernization Program's Life Extension 2 (LE2) Project, FE must conclude the fourth and final Energy Security and Infrastructure Modernization (ESIM) Fund crude oil sale to raise the final $450 million for construction contract commitments prior to June 2021. The Secretary determines whether to authorize the sale.

Office of International Affairs will participate in the International Energy Agency (IEA) Governing Board Meeting scheduled for March 24-25, 2021.

Office of Science will make a decision regarding the High-Luminosity Large Hadron Collider (HL-LHC) ATLAS Upgrade Project at Fermi National Accelerator Laboratory on the approval of the preliminary design of the project as well as consideration of the scope, cost, and schedule.

April 2021

Energy Information Administration will issue the April edition of the Short-Term Energy Outlook (STEO), which provides a monthly forecast of U.S. energy consumption, supply, and prices through the end of 2022.

Office of Electricity will seek resolution regarding an expiring designation (May 1, 2021) in Executive Order 13920, *Securing the United States Bulk-Power System,* which declares threats to the bulk-power system by foreign adversaries to constitute a national emergency. Absent legislation, the national emergency declaration would need to be renewed annually.

Office of Science will host the annual National Science Bowl (NSB), where teams of middle school and high school students across the country compete in the NSB Finals. The President, First Lady, and the Secretary are traditionally invited to address the students or host the finals. All 2021 regional competitions will be virtual (from mid-January to late March). A determination on the location of the National Finals will be made in March 2021.

BACK TO TABLE OF CONTENTS

< previous page | next page >

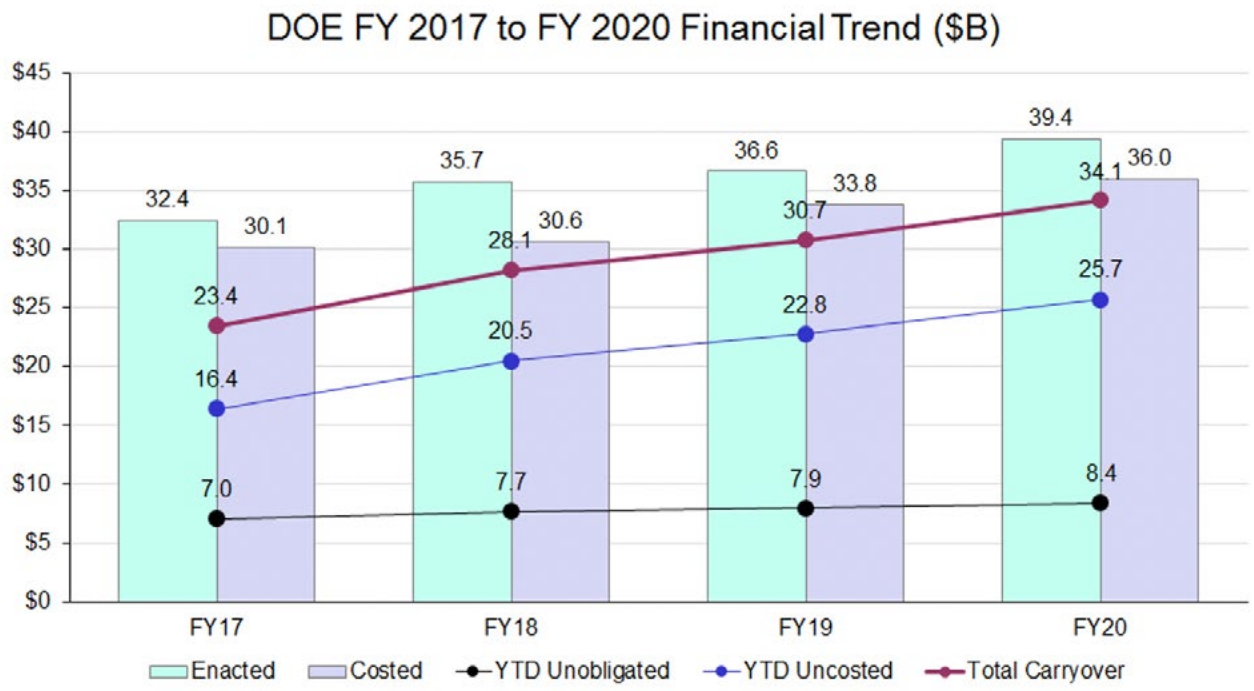
Budget Overview

This document provides an overview of the Department of Energy (DOE) budget, including highlights of the FY 2021 Budget Request focusing on the funding profiles of the important issues presented in these transition materials, and provides summary tables presenting the FY 2021 request by program office and appropriation, and appropriations by state and by national laboratory. The accompanying FY 2021 Budget in Brief provides more information about the FY 2021 request and funding for individual program offices and their activities.

The DOE budget supports a broad portfolio of energy, science, and national security programs, including support for the 17 national laboratories which carry out critical responsibilities for America's security and economy in three areas:

- Promoting Energy Independence
- Progressing Scientific Research
- Protecting the Nation

The DOE budget is divided into two categories – Defense (budget function 050) and Non-Defense (non-050). The Defense 050 category funds the National Nuclear Security Administration (NNSA); defense environmental cleanup, approximately 82% of the environmental management program; and several other smaller programs. The DOE non-defense category funds energy, science, non-defense environmental cleanup, and management and departmental administration programs.

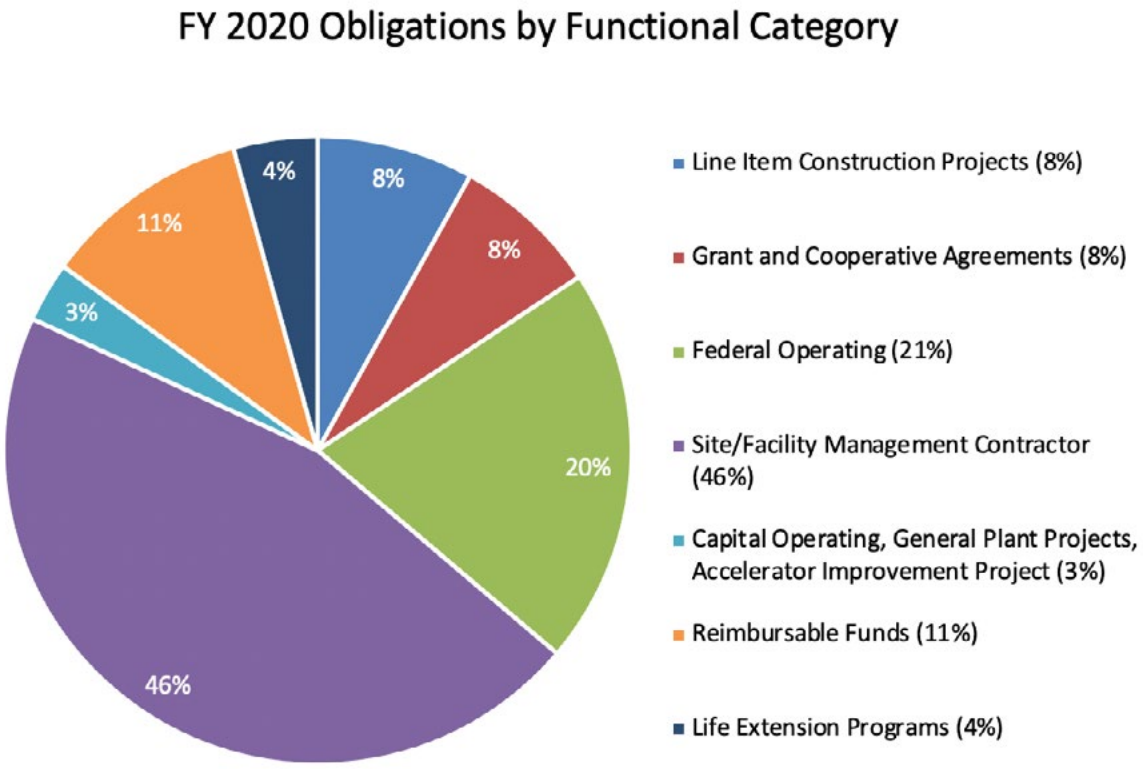


Execution and Status of Funds

The graph illustrates a high-level trend of Department of Energy's (DOE) financial execution over the past four years. DOE's discretionary Enacted Budget Authority increased steadily from $32.4B to $39.4B between FY 2017 to FY 2020, which is a +7% compounded annual growth rate (CAGR). Over the same time period, DOE's total carryover increased from $23.4B to $34.1B, equating to a +13% CAGR. DOE's total carryover is comprised of both unobligated funds (i.e., funds yet to be placed on awards) and uncosted funds (i.e., funds placed on awards, yet to be spent (costs accrued and paid)). The +$10.7B increase in total carryover in the graph is due primarily by increases in DOE's uncosted balances (+$9.3B, +16% CAGR).

BACK TO TABLE OF CONTENTS

This pie chart illustrates DOE's obligations by functional category. Nearly half of DOE's FY 2020 obligations were issued to the site facility contractors which lead work at DOE's National Laboratories and field sites.



Departmental Summary

The following is excerpted from the ***Department of Energy FY 2021 Congressional Budget Request.*** *It was submitted to the U.S. Congress in February 2020 and is available on the website at: https://www.energy.gov/sites/prod/files/2020/02/f72/doe-fy2021-budget-in-brief_0.pdf. Throughout the overview, we have provided updates from the FY 2021 House Energy and Water Development Appropriations (HEWD) bill. The Senate Energy and Water Subcommittee has not yet released a bill for FY 2021.*

The mission of the Department of Energy (DOE) is to advance U.S. national security and economic growth through transformative science and technology innovation that promotes affordable and reliable energy through market solutions, and meets nuclear security and environmental cleanup challenges. DOE's Fiscal Year (FY) 2021 Budget Request provides for research, emerging energy technologies, and nuclear capabilities to support DOE's mission, activities, and policies.

Overview

The President's Budget for FY 2021 requests $35.4B for the Department of Energy to meet today and tomorrow's challenges by promoting energy independence, progressing scientific research, and protecting the Nation. The Budget highlights crosscutting, early-stage applied research in energy storage, grid integration, critical minerals, and harsh environment materials for a secure, resilient, affordable, and integrated energy system. The Budget maintains global leadership in scientific and technological innovation in part through 17 National

BACK TO TABLE OF CONTENTS

Laboratories, including basic research to support Industries of the Future. DOE remains committed to managing and cleaning up nuclear waste. The Budget also supports aggressively modernizing the nuclear security enterprise for the safety and security of America.

House Action: *The FY 2021 House Energy and Water Development Appropriations (HEWD) bill would fund the Department of Energy at over $40B; $1.5B above the FY 2020 enacted level and $4.7B above the FY 2021 request. The bill prioritizes funds to mitigate and adapt to climate change, and strengthen national security.*

The FY 2021 Budget Request provides:

- $3.6B for technologies that will make the Nation's energy supply more affordable, reliable, and efficient promoting energy independence and dominance.
- $5.9 B to progress cutting-edge scientific R&D, including support for Industries of the Future, such as quantum information science (QIS) and AI. The Budget also funds key technologies such as microelectronics, advanced manufacturing, biotechnology, and technology transfer. The Budget also supports state-of-the art scientific tools and facilities keeping U.S. researchers at the forefront of scientific innovation.
- 26.9B to support national security, and includes:
  - $6.1B to continue cleanup of sites resulting from six decades of nuclear weapons development and production and Government-sponsored nuclear energy research.
  - $19.8B to sustain and modernize the U.S. nuclear stockpile and aging infrastructure, reduce global nuclear threats, and propel the nuclear Navy.

DEPARTMENT OF ENERGY
FY 2021

DOE	$M
• Energy	3,603
• Science	5,856
• National Security	26,891
• Administration and Oversight	215
• Savings and Receipts	-722
• Reduction for Loan Programs and ARPA-E	-480
DOE Total	**35,363**

The Budget also emphasizes coordinated crosscutting research of technologies for energy storage, critical minerals, harsh environment materials, grid integration, advanced manufacturing, exascale computing, and microelectronics.

The Budget seeks innovations and includes $190M for Advanced Energy Storage Initiative (AESI) to support the Energy Storage Grand Challenge (ESGC), a holistic approach to accelerate the development, commercialization, and utilization of next-generation energy storage technologies. The Department integrated the existing dispersed storage efforts from the Office of Science (SC), Grid Modernization Initiative, AESI, Beyond Batteries, and others into ESGC, an integrated, comprehensive DOE- wide strategy. The vision for the ESGC is to create and sustain global leadership in energy storage utilization and exports, with a secure domestic manufacturing supply chain that is independent of foreign sources of critical materials, by 2030.

To promote efficiency and maximize impact, the Budget maintains momentum on the Harsh Environment Materials Initiative (HEMI) launched in FY 2020. The Budget provides approximately $58.5M for HEMI, including $6.5M from the Office of Energy Efficiency and Renewable Energy (EERE), up to $22M from the Office of Fossil Energy (FE), and $30M from the Office of Nuclear Energy (NE). The initiative exploits synergies in materials and component manufacturing process research for advanced thermoelectric power plants. Building on current applied energy programs, this initiative leverages activities related to advanced reactor technologies and high efficiency low emission modular coal plants to align R&D of novel materials, integrated sensors, and manufacturing processes.

The Budget also establishes a $131M Critical Minerals Initiative (CMI) to coordinate research across the Department. Funds will come from program offices including, EERE with $53M, FE with $32M, NE with $1M, and SC with $45M, to initiate a National Laboratory-led team approach modeled after the Grid Modernization Laboratory Consortium to elevate and coordinate research activities.

To maintain U.S. leadership in supercomputing, the Budget provides almost $710M from SC ($475M) and the National Nuclear Security Administration

BACK TO TABLE OF CONTENTS

(NNSA) ($235M). In FY 2021, funding will support continued development of two SC-supported exascale systems. The first of these two exascale systems will be deployed calendar year 2021 at Argonne National Laboratory, with the second coming online in the 2021 – 2022 timeline at Oak Ridge National Laboratory. In addition, the FY 2021 Request will provide support for the procurement of and site preparation for a third exascale system delivered to NNSA at Lawrence Livermore National Laboratory in FY 2023. The SC and NNSA partnership will bolster America's national security by strengthening the nuclear stockpile and next generation of science breakthroughs not possible with today's fastest computing systems.

In FY 2021, the Budget provides $249M from SC ($237M) and NNSA ($12M) in support of QIS research. Supporting the National Quantum Initiative and the Administration's Industries of the Future initiative, the Budget provides funding for research activities including strategic partnerships in quantum computing and data intensive applications, development of quantum sensors based on atomic-nuclear interactions, and development of quantum computing algorithms, and early stage research associated with the initial steps to establish a dedicated Quantum Network.

To support fiscal responsibility and streamline DOE activities, the Budget eliminates the Advanced Research Projects Agency—Energy (ARPA-E) program, the Title XVII Innovative Technology Loan Guarantee Program, the Advanced Technology Vehicle Manufacturing Loan Program, and the Tribal Energy Loan Guarantee Program. ARPA-E elimination facilitates opportunities to integrate the positive aspects of ARPA-E into DOE's applied energy research programs including through changes to the implementation of the Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) program. Loan programs are eliminated because the private sector is better positioned to finance deployment of commercially viable projects. To further achieve fiscal discipline and reduce taxpayer risk, the request proposes to repeal the Western Area Power Administration's (WAPA) borrowing authority that finances the construction of electricity transmission projects. Investments in transmission assets are best carried out by the private sector with appropriate market and regulatory incentives.

House Action: *The FY 2021 HEWD bill funds ARPA-E at $435M, increasing funding $10M over FY 2020 enacted. The bill also maintains FY 2020 funding levels for the Loan Guarantee Programs, providing $29M for the Title 17 Innovative Technology Loan Guarantee Program, $5M for the Advanced Technology Vehicles Manufacturing, and $10.5M for the Tribal Energy Loan Guarantee programs. Finally, the bill retains WAPA's borrowing authority.*

Promoting Energy Independence

Recognizing that the U.S. has among the most abundant and diverse energy resources in the world, including oil, gas, coal, nuclear, and renewables, the FY 2021 Budget Request supports a variety of efforts that emphasize and strengthen that unique advantage, including establishing a uranium reserve, to promote energy independence. The Budget provides $3.6B for energy and related programs and funds basic research while continuing the Administration's support of early-stage applied R&D, and targeted later-stage R&D to address unique challenges. DOE is committed to supporting energy initiatives that will attract investments, safeguard the environment, and strengthen energy security.

Highlights include:

- $719.6M for EERE prioritizing core lab activities, particularly in renewables and energy efficiency. The Budget also maintains funding at the National Renewable Energy Laboratory. EERE invests in early- stage research to spur private-sector research, development, and commercialization of critical energy technologies such as: sustainable transportation technologies to increase fuel diversity and improve efficiency across the transportation sector ($161M); renewable power generation technologies to compete with other electricity sources without subsidies ($160M); and energy efficiency to improve affordability, energy productivity, and resiliency of homes, buildings, and manufacturing sectors ($164M). The Budget invests in the Plastics Innovation Challenge and continues to support AESI in support of ESGC, HEMI, CMI, and other cross- cutting activities. The Budget divests from Weatherization and State Energy subprograms which are more appropriately funded at the state level.

BACK TO TABLE OF CONTENTS

House Action: *The FY 2021 HEWD bill includes a net appropriation of $2.85B for EERE, which is $58 million above the FY 2020 enacted level and $2.1 billion above the FY 2021 request. This funding provides for clean, affordable, and secure energy and supports American leadership in the transition to a global clean energy economy. The bill rejects the Administration's proposal to eliminate the Weatherization Assistance Program and provides $310M for the program.*

ENERGY
FY 2021

Energy Programs	$M
• Energy Efficiency and Renewable Energy	720
• Cyber Security, Energy Security, & Emergency Response	185
• Electricity	195
• Nuclear Energy	1,180
• Interim Storage and Nuclear Waste Fund Oversight	28
• Uranium Reserve	150
• Fossil Energy Research and Development	731
• Petroleum Reserves	200
• Energy Information Administration	129
• Indian Energy	8
• Power Marketing Administrations	79
Energy Total	**3,603**

- $184.6M for Cybersecurity, Energy Security, and Emergency Response (CESER) to invest in an all hazards approach to energy- sector cybersecurity. The Budget supports development of capabilities to identify, prevent, protect against, mitigate, and respond to cybersecurity threats during an emergency event that pose risk to energy delivery operations. The Budget funds R&D, public and private-sector partnerships, and emergency preparedness and response.

  House Action: *The FY 2021 HEWD bill includes a net appropriation of $160M for CESER. This is an increase of $4 million above the FY 2020 enacted level and is $24M below the request. This funding provides for efforts to secure the nation's energy infrastructure against all hazards, reduce the risks of and impacts from cybersecurity events, and assist with restoration activities, including not less than $90M for the Grid Modernization Initiative.*

- $195M for the Office of Electricity to support the mission of secure and resilient sources of electricity. The investment addresses the challenges of increased threats to energy infrastructure, increased demand, changes in supply mix and location of the Nation's generation portfolio, and increased variability and uncertainty of supply and demand. The Budget will support four priorities: develop and implement an integrated North American Energy Resiliency Model; pursue a megawatt-scale storage; revolutionize sensing technology; and pursue transmission permitting and technical assistance.

  House Action: *The FY 2021 HEWD bill includes $195 million for the Office of Electricity, which is an increase of $5 million above the FY 2020 enacted level and flat with the budget request. This funding will advance technologies to increase the resiliency and efficiency of the nation's electricity delivery system with capabilities to incorporate growing amounts of clean energy technologies. For the Grid Modernization Initiative, the bill requires not less than $172M. The bill also includes $15.5M for the Grid Storage Launchpad.*

- $1.2B for Office of Nuclear Energy to fund a diverse set of programs to advance nuclear energy technologies that are critical to the Nation's energy mix. The Budget supports early-stage R&D and targeted later-stage R&D to address unique challenges. The Budget provides for the Reactor Concepts R&D, Fuel Cycle R&D, and Nuclear Energy Enabling Technologies as critical laboratory infrastructure and safeguards needed to support nuclear energy R&D. Of the $1.2B, $295M is for the Versatile Test Reactor (VTR) project, one of the Department's highest priorities. The VTR is a first-of-a-kind fast reactor that would assist the private sector to develop and demonstrate new energy technologies. The Budget request reinforces the Administration's commitment to re-energize the U.S. nuclear sector with funds to support design and construction of the VTR.

  House Action: *The FY 2021 HEWD bill includes $1.43b for Nuclear Energy, which is $60M below the FY 2020 enacted level and $250M above the request. The bill supports the development of next generation nuclear reactors and improving the safety and economic viability of the current reactor fleet. The Department is directed to continue allocating up to 20 percent of funds appropriated to Nuclear Energy Research and Development programs and fund university-led research and development. Within available funds, the recommendation also provides $10M to support new or previously awarded hydrogen demonstration project in the Light Water Reactor*

BACK TO TABLE OF CONTENTS

Sustainability program within Reactor Concepts Research, Development and Demonstration. The Committee continued to include additional control points established in the FY 2020 enacted bill.

- $27.5M for the Interim Storage and Nuclear Waste Fund Oversight program to fund the development and implementation of a robust interim storage program, DOE's fiduciary responsibility for Yucca Mountain, and oversight of the Nuclear Waste Fund. Coupled with DOE's funding for storage, transportation, and disposal R&D, the Budget supports the development of a durable, predictable yet flexible plan that addresses more efficiently storing waste temporarily in the near term, followed by permanent disposal, and the Administration will establish an interagency working group to develop this plan in consultation with States.

  House Action: *The FY 2021 HEWD bill includes $27.5M for interim storage of nuclear waste and oversight of the Nuclear Waste fund. No funds were provided for this purpose in the FY 2020 enacted bill. The FY 2021 HEWD bill directs the Department to move forward under existing authority to identify a site for a federal interim storage facility. The Department is further directed to use a consent-based approach.*

- $150M to establish a Uranium Reserve that provides assurance of availability of uranium in the event of a market disruption and supports strategic U.S. fuel cycle capabilities. This action addresses the immediate challenge to the production of domestic uranium and reflects the Administration's Nuclear Fuel Working Group priorities.

  House Action: *No funding was provided in the FY 2021 HEWD bill for the establishment of a Uranium Reserve and no funds can be spent on activities related to the establishment of a Uranium Reserve other than the development of a required plan. The committee asked that a plan include the legal authorities in place or needed to establish and operate a uranium reserve, including the purchase, conversion, and sale of uranium; a ten-year implementation plan of the activities for establishment and operations of a uranium reserve; and a ten-year cost estimate.*

- $730.6M for Fossil Energy R&D to conduct research that supports the clean, affordable, and efficient use of domestic fossil energy resources. The program funds early-stage R&D with academia, National Laboratories, and the private sector to generate knowledge that industry can use to develop new products and processes. Funding is also provided to support competitive awards with industry, National Laboratories and academia focused on innovative early-stage R&D to improve the reliability, availability, efficiency, and environmental performance of advanced fossil-based power systems.

  House Action: *The FY 2021 HEWD bill provides $727.5M for Fossil Energy, which is $22.5M below the FY 2020 enacted level and $3.1M below the request. The funding provides for research, development, and demonstration activities for the safe, efficient, and environmentally sound use of fossil energy resources. The committee encouraged the Department to continue to support the Clean Energy Research Consortium and recognized continue investment in research and development of unconventional fossil energy technologies.*

- $200M net amount for the Office of Petroleum Reserves, with $187M for the Strategic Petroleum Reserve (SPR). The SPR provides strategic and economic security against potential interruptions in U.S. petroleum supplies. The Budget supports the programs operational readiness and drawdown capabilities. Consistent with prior budget requests, the Administration is re-proposing the sale and closure of the Northeast Gasoline Supply Reserve (NGSR), which has not been used since establishment. Proceeds from the sale from the NGSR will be contributed to deficit reduction. Additionally, the Department is proposing to close the Northeast Home Heating Oil Reserve which has also never been used for intended purposed and is not a good use of taxpayer funds. The Budget further proposes a sale of 15 million barrels of SPR crude oil to raise funds for other Departmental priorities, including $242M needed to fund the completion of remediation work at the NPR-1 site. The Naval Petroleum and Oil Shale Reserves will be funded at $13M.

  House Action: *The FY 2021 HEWD bill includes $202.5M for the Strategic Petroleum Reserve and Account, which is $2.5M below FY 2020 enacted and $15M above the request. Of these funds, $195M is included for the SPR. The recommendation includes funding to address facilities development and operations, including physical security and cavern integrity. The recommendation provides $20M to maintain 1 million barrels of gasoline blendstock in the Northeast Gasoline Supply Reserve.*

BACK TO TABLE OF CONTENTS

- $128.7M for the Energy Information Administration (EIA) to continue supporting the collection, analysis, and dissemination of independent and impartial energy information and analysis to promote sound policymaking, efficient markets, and public understanding. EIA will also begin a multi-year effort to modernize energy modeling capabilities. Expected benefits include greater agility in EIA's modeling system to address key current and emerging trends. The Budget also supports EIA to continue planned cybersecurity initiatives to bolster information security.

  House Action: *The FY 2021 HEWD bill provides $126.8M for the Energy Information Administration, which is flat with FY 2020 enacted and $1.9M below the budget request. The bill encourages additional data collection on light-emitting diode bulbs, commercial building codes, and electric transmission.*

- $8M for the Office of Indian Energy Policy and Programs for energy development and deployment on Indian lands, reduction of energy costs, assistance in economic development, and electrification in tribal communities where unemployment and poverty rates far exceed national averages.

  House Action: *The FY 2021 HEWD bill provides $22.25M for Indian Energy, which is $250K above FY 2020 enacted and $14.25M above the budget request. Consistent with prior years, the increased funding is intended to provide financial assistance for Indian country grants toward energy development and electrification, and provide technical assistance to overcome barriers to energy project development on tribal land.*

- $78.6M for the four Power Marketing Administrations (PMA) to sell electricity primarily generated by federally owned hydropower projects to public entities and electric cooperatives. The Budget again proposes to repeal WAPA's borrowing authority that finances the construction of electricity transmission projects. Investments in transmission assets are best carried out by the private sector with appropriate market and regulatory incentives that support resiliency and reliability. The Request again proposes to sell the transmission assets owned and operated by the PMAs, and authorize the PMAs to charge rates comparable to those charged by for-profit investor owned utilities. Reducing the government's role in electricity transmission infrastructure ownership, and introducing market-based incentives for power sales from Federal dams would encourage an efficient allocation of economic resources and mitigate risk to taxpayers.

  House Action: *The FY 2021 HEWD bill provides $100M for the PMAs. The difference between this mark, and the FY 2020 enacted level of $78M and the FY 2021 budget request level of $78.6M has to do with a scoring issue related to the Colorado River Basin.*

Progressing Scientific Research

The FY 2021 Budget Request includes $5.9B to progress scientific research continuing U.S. dominance in research and science. The Budget funds the science mission by focusing on early-stage research, operating the national laboratories, and continuing high priority construction projects. The Budget includes ongoing investments for exascale and QIS for creating new ways of processing and analyzing information.

House Action: *The FY 2021 HEWD bill provides $7.05B for the Office of Science, an increase of $50M above the FY 2020 enacted level and $1.2 billion above the request. Primary increases above the Request in FY 2021 HEWD mark focus on facilities and infrastructure, and line items, including:*

- *Basic Energy Sciences, $2.24B;*
- *Fusion Energy Sciences, $680M including a $260M for the U.S. contribution to the ITER project;*
- *High Energy Physics, $1.05B; and*
- *Science Laboratories Infrastructure, $68.75M.*

The FY 2021 HEWD mark also includes increases for research in specific areas, including exascale computing, the Innovation Network for Fusion Energy (INFUSE) R&D program; and Electron Ion Collider research.

The FY 2021 HEWD bill supports the Office of Science's coordinated and focused research program in quantum information science and technology. The recommendation provides $235M for quantum information science, including not less than $120M for research and not less than $100M for up to five National Quantum Information Science Research Centers.

President's Budget Highlights include:

- $988M for Advanced Scientific Computing Research (ASCR) to strengthen U.S. leadership in strategic computing, the foundations of AI and QIS, and the infrastructure that supports and facilitates data-driven science. To meet SC's high performance computing mission for the exascale project, the Budget prioritizes basic research in Applied Mathematics and Computer Science with emphasis on the challenges of data intensive science, including AI and machine learning, and computing technologies. The Budget increases support for ASCR's Computational Partnerships focusing on developing partnerships in quantum computing and data intensive applications, and new partnerships in exascale and data infrastructure. The Budget also provides support for ASCR user facilities operations to support the availability of high performance computing, data, and networking to the scientific community.
- $1.9B for Basic Energy Sciences (BES) to support fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels providing foundations for new energy technologies, to mitigate the environmental impact of energy use. BES supports DOE missions in energy, environment, and national security. DOE aims to better understand the physical world and harness nature to benefit people and society. Specifically, funds provide for exascale computing, QIS, and operation of user facilities. The Budget will continue ongoing construction projects and fund a new construction project, the Cryomodule Repair and Maintenance Facility.
- $516.9M for Biological and Environmental Research (BER) to support fundamental research to understand complex biological, biogeochemical, and physical principles of natural systems at scales extending from the genome of microbes and plants to the environmental and ecological processes at the scale of the planet Earth. The Budget supports research in biological systems science, earth and environmental systems science, and new efforts in translating biodesign rules to functional properties of novel biological polymers. The Budget continues operation of the three BER scientific user facilities: the Joint Genome Institute, the Atmospheric Radiation Measurement Research Facility, and the Environmental Molecular Sciences Laboratory.

SCIENCE
FY 2021

Science	$M
Office of Science Programs	
• Advanced Scientific Computing Research	988
• Basic Energy Sciences	1,936
• Biological and Environmental Research	517
• Fusion Energy Sciences	454
• High Energy Physics	818
• Nuclear Physics	653
• Workforce Development for Teachers and Scientists	21
• Science Laboratory Infrastructure	174
• Safeguards and Security	116
• Program Direction	190
Office of Science Programs Total	**5,867**
Artificial Intelligence and Technology Office	**5**
Office of Technology Transitions	**13**
Science Total	**5,885**

- $425.1M for the Office of Fusion Energy Sciences (FES) for research to develop a fusion energy source and to understand matter at very high temperatures and densities. Fusion energy is a carbon-free energy source with enormous potential, such as combatting climate change, serving as a vast energy source, providing economic benefits, and promoting national security. The Budget continues to support research and facility operations, including research at international facilities with unique capabilities, research in QIS, and research in high-density laboratory plasma science. Funding for facilities operations includes DIII-D for magnetic fusion, the National Spherical Torus Experiment Upgrade facility repairs, and upgrades at the Matter in Extreme Conditions Petawatt facility project. The Budget also funds the U.S. in- kind hardware contribution for the ITER international research project.
- $818.1M for High Energy Physics (HEP) for research to understand how the universe works at the most fundamental level by discovering the most elementary constituents of matter and energy, probing the interactions among these, and exploring the basic nature of space and time. HEP underpins and advances DOE mission and objectives through this research. The Budget funds core research activities including QIS, AI, exascale computing, and next-generation microelectronics. The Budget further funds the Accelerator Traineeship Program to expand workforce development in advanced technology and HEP facilities.

BACK TO TABLE OF CONTENTS

- $653.2M for Nuclear Physics to support research to discover, explore, and understand all forms of nuclear matter. The Budget funds world class nuclear physics, QIS, the DOE Isotope program. The Budget also supports new initiatives in AI and Strategic Accelerator R&D in relationship to nuclear physics.
- $20.5M for Workforce Development for Teachers and Scientists to provide for a sustained pipeline of science, technology, engineering, and mathematics (STEM) professionals to meet current and future national goals and objectives. Maintaining U.S. leadership requires specialized computer scientists and applied mathematicians to develop supercomputing methods to solve real world problems today and develop technology of the future. The Budget funds programs that place highly qualified applicants in authentic STEM learning and training opportunities at DOE laboratories, as well as supports the National Science Bowl® competition.
- $174.1M for Science Laboratories Infrastructure to sustain mission-ready infrastructure and safe and environmentally responsible operations by providing the infrastructure necessary to support leading edge research at ten national science laboratories. The Budget funds the new and ongoing construction projects that will address inadequate core infrastructure and utility needs.

The Budget funds $5M for operations of the Artificial Intelligence and Technology Office (AITO). AI is a foundational technology that is transformational and will affect decades of innovation. AITO leads Department-wide efforts to evaluate the scope and effectiveness of DOE's AI programs and identify gaps not addressed by programs, functional offices, sites, or associated National Laboratories. AITO is uniquely situated to develop and lead collaborative solutions across the Department that are consistent with the Secretary's priorities and objectives. The office will also be instrumental in supporting the Administration's Industries of the Future Initiative.

House Action: *the FY 2021 House bill zeroes out funding for AITO and recommends that unused FY 2020 carryover funds be used to close out activities in this office.*

The Budget funds $12.6M for the Office of Technology Transitions to support ongoing activities, including the Technology Commercialization Fund, Lab Partnering Service, Energy I-Corps, and Innovation XLab summits. The Budget will fully implement the Empowering Novel American Businesses with Laboratory Embedding competition.

House Action: *The House bill provides $5M above the Budget Request for Office of Technology Transitions for a competitive funding opportunity for incubators building energy innovation clusters.*

Protecting The Nation

Environmental Management

The Department must continue to manage nuclear waste in all forms including some of the most dangerous materials known. The FY 2021 Budget Request includes $6.1B for environmental management to continue cleanup resulting from six decades of nuclear weapons development and production and Government-sponsored nuclear energy research. Funds will support cleanup of millions of gallons of liquid radioactive waste and thousands of tons of spent nuclear fuel and nuclear materials. DOE will dispose of large volumes of transuranic and mixed/low-level waste, and huge quantities of contaminated soil and water. To date, the Office of Environmental Management (EM) has completed cleanup activities at 91 sites in 30 states and in the Commonwealth of Puerto Rico. EM is responsible for cleanup at 16 remaining sites in 11 states.

House Action: *The bill provides $7.46B, an increase of $1.4B above the request. This funding is used for nuclear cleanup work at 16 sites across the country. This includes:*

- *Non-Defense Environmental Cleanup – $315M, a decrease of $4.2M below FY 2020 enacted, and an increase of $39M above the Budget Request.*
- *Uranium Enrichment Decontamination and Decommissioning – $821.6M, an increase of $15M above the Budget Request.*
- *Defense Environmental Cleanup – $6.3B, an increase of $66M above FY 2020 enacted and $1.3B above the Budget Request.*

While the Budget Request for the Office of Environmental Management (EM) included increases at some sites, the FY 2021 HEWD report noted

that those increases were at the expense of other important cleanup activities at sites, including Hanford, Idaho, and Oak Ridge. The FY 2021 HEWD bill continues to sustain the momentum of ongoing cleanup activities across all Department cleanup sites.

FY 2021 Budget Request Highlights include:

- $1.7B to support the Liquid Waste Program at Savannah River Site (SRS) to achieve additional risk reduction by stabilization and immobilization of high activity radionuclides through vitrification into canisters at the Defense Waste Processing Facility and disposition of decontaminated salt waste in Saltstone Disposal Units. The Request supports continuing construction of Saltstone Disposal Units. The Salt Waste Processing Facility is poised to start in FY 2020 and in FY 2021 will begin 24-7 operations. The Budget also includes $25M for the design and construction of the Advanced Manufacturing Collaborative Facility.
- $1.3B for the Office of River Protection to safely manage and treat approximately 56 million gallons of radioactive liquid and chemical waste currently stored in 177 underground storage tanks at Hanford. The Budget supports construction, start up, and commissioning of facilities that are integral to begin treating Hanford low-activity tank waste by December 2023 as required by the 2016 Amended Consent Decree.
- $655M for the Richland site to support continued achievement of important progress required by the Tri-Party Agreement for cleanup activities other than tank waste managed by the Office of River Protection. The Budget will maintain safe operations, provide Hanford site-wide services, and conduct critical site infrastructure projects, as well as startup preparation activities for the Integrated Disposal Facility to support Direct Feed Low Activity Waste commissioning and startup.
- $491M for the decontamination and decommissioning of the Portsmouth Gaseous Diffusion Plant facilities, including construction and design of on-site waste disposal facilities.
- $432M for cleanup activities at the Oak Ridge site, including continued slab and soil remediation at the East Tennessee Technology Park, mercury characterization and remediation technologies, planning for construction of the mercury treatment facility at the Y-12 National Security Complex, as well as continued design for the On-Site Disposal Facility to support Y-12 National Security Complex and Oak Ridge National Laboratory.

ENVIRONMENTAL MANAGEMENT
FY 2021

Environmental Management	$M
• Savannah River	1,703
• River Protection	1,258
• Richland/Hanford	655
• Portsmouth	491
• Oak Ridge	432
• Carlsbad/Waste Isolation Pilot Plant	390
• Idaho	271
• Program Direction	275
• Paducah	282
• Los Alamos	120
• West Valley Demonstration Project	92
• Lawrence Livermore National Laboratory	2
• Nevada	61
• Moab	48
• Technology Development	25
• Uranium Thorium Reimbursements	21
• Separation Process Research Unit (SPRU)	15
• Headquarters Operations	13
• Energy Technology Engineering Center	11
• Other Sites	5
• Sandia National Laboratory	5
• *Offset (Rescission of Prior Year Balances)*	*-109*
EM Total	**6,066**

- $390M to safely continue waste emplacement at the Waste Isolation Pilot Plant, the Nation's only mined geologic repository for permanent disposal of defense-generated transuranic waste, including $50M for continued progress on the utility shaft project to increase underground airflow for simultaneous mining and waste emplacement operations, as well as $10M to begin the Hoisting Capability Project.
- $271M to continue cleanup at the Idaho site. The Budget supports Integrated Waste Treatment operations and additional treated sodium bearing waste storage capacity, supports completing buried waste exhumation activities, and continued progress in characterizing, packing, and shipping stored contact-handled and remote handled transuranic waste, as well as spent nuclear fuel activities in order to meet the Idaho Settlement Agreement milestone for 2023.

BACK TO TABLE OF CONTENTS

- $282M for the Paducah site to continue environmental remediation and further stabilize the gaseous diffusion plant.
- $120M to continue focus on surface and groundwater management at Los Alamos National Lab (LANL). The Budget also continues activities to control migration of a hexavalent chromium plume beneath Montana and Sandia Canyons. DOE will plan and execute retrieval and repackaging of the below-grade transuranic waste.

Legacy Management

- The Budget provides $317M for Legacy Management (LM) to support long-term activities, administer an interagency agreement addressing abandoned defense related uranium mines, execute the Department's Uranium Leasing Program, develop applied studies and technology to reduce scope and costs, and close the Grand Junction, Colorado Disposal Site.
- The Budget also includes $150M to support and expand the Reform Proposal to consolidate funding for the administration for Formerly Utilized Sites Remedial Action Program under LM.

  House Action: *The FY 2021 HEWD bill provides $167M for LM, which is $5M above the FY 2020 enacted level and $150M below the FY 2020 Budget Request. The House did not authorize a move of Formerly Utilized Sites Remedial Action Program activities from the U.S. Army Corps of Engineers to LM.*

National Nuclear Security Administration

NNSA is responsible for maintaining a safe, secure, and effective nuclear weapons stockpile that preserves a credible nuclear deterrent in the return of great power competition, for preventing, countering, and responding to evolving and emerging nuclear proliferation and terrorism threats. NNSA also provides safe, reliable, and long-term nuclear propulsion to the Nation's Navy as it protects American and allied interests around the world.

To support these activities the Budget proposes $19.8B for NNSA. Consistent with the nation's nuclear deterrence mission and the policy set forth in the 2018 Nuclear Posture Review (NPR), the Budget invests in the security and safety of the Nation by maintaining a safe, secure, and effective nuclear weapons stockpile; reducing global nuclear threats and keeping material out of the hands of terrorists; strengthening key science, technology, and engineering capabilities; providing safe and effective integrated nuclear propulsion systems for the U.S. Navy; and modernizing the national security infrastructure as well as funding for staff critical to carry out the NNSA mission.

House Action: *The FY 2021 HEWD bill provides $18B for NNSA, a decrease of $1.7B below the request and $1.3B above the FY 2020 Enacted levels for the activities required to support the nuclear security complex. The bill prohibits funding for nuclear weapons testing.*

Funding in the FY 2021 HEWD bill includes:

- *Weapons Activities – $13.7B, an increase of $1.2B above FY 2020 Enacted, and $1.94B below the FY 2021 Budget Request.*
- *Defense Nuclear Nonproliferation - $2.2B, an increase of $75M over FY 2020 enacted, and $209M above the Budget Request.*
- *Naval Reactors - $1.7B, which is an increase of $35M above FY 2020 enacted, and flat with the FY 2021 Budget Request.*
- *Federal Salaries and Expenses - $454M, which is $19.3M above FY 2020 enacted, and flat with the FY 2021 Budget Request.*

FY 2021 Budget Request Highlights include:

- $15.6B for Weapons Activities to maintain the safety, security, and effectiveness of the nuclear stockpile, continue the nuclear modernization program, and modernize and recapitalize NNSA's nuclear security infrastructure portfolio in alignment with the NPR.

  House Action: *The FY 2021 HEWD bill provides $13.7B for Weapons Activities. The bill partially adopts a new structure for Weapons Activities that replaces work funded within Directed Stockpile Work and Research, Development, Test and Evaluation with three new elements: Stockpile Management; Production Modernization; and Stockpile Research, Technology, and Engineering.*

  The FY 2021 HEWD bill directs NNSA to provide a classified integrated priorities report (IPR) for Weapons Activities each year with the budget request, beginning with the fiscal year 2022 budget request. The purpose is to provide an integrated

BACK TO TABLE OF CONTENTS

look at the priorities, assumptions, and risks underpinning the budget request and the Future Years Nuclear Security Program, and to delineate changes from the prior year.

NATIONAL SECURITY
FY 2021

National Security Programs	$M
NNSA Programs	
• Weapons Activities	15,602
• Defense Nuclear Nonproliferation	2,031
• Naval Reactors	1,684
• Federal Salaries and Expenses	454
NNSA Total	**19,771**
Environmental Management	**6,066**
Other Defense Activities	**1,054**
• Legacy Management	317
National Security Total	**26,891**

- $4.3B for Stockpile Management to support stockpile sustainment, dismantlement, and modernization of the nuclear weapons program. The Budget funds sustainment of the current stockpile, major warhead modernization efforts, safe and secure dismantlement of weapons, and production operations.

  House Action: *in the FY 2021 HEWD bill, no funding is provided for the W93 and directed that no funding shall be spent on this activity. The Committee also determined that the W87-1 Modification Program requires close synchronization with the NNSA's primary capability and non-nuclear modernization efforts, which carry significant risk; and directed that quarterly briefings be provided on the status, scope, and cost of the program, beginning not later than 90 days after enactment of the Act.*

- $2.5B for Production Modernization to support strategic materials production capabilities for nuclear weapons, including primaries, canned subassemblies, radiation cases and non-nuclear components needed to sustain the nuclear stockpile near- to long-term. The Budget funds equipment, facilities, and personnel required to reestablish the Nation's ability to produce pits with the goal of producing 80 pits per year by 2030 at LANL and SRS.

  House Action: *The FY 2021 HEWD bill includes $1.9 billion for Plutonium Modernization, $599 million below the request.*

- $2.8B for Stockpile Research, Technology, and Engineering to provide the scientific foundation for science-based stockpile decisions and actions, including the capabilities, tools, and components enabling assessment of the active stockpile and certification of warhead modernization programs. The Budget for FY 2021 supports the continued implementation of the Enhanced Capabilities for Subcritical Experiments (ECSE). Funding includes $235M for activities and research leading to deployment of exascale capability for national security applications. This includes $85.5M for a multi-year non-recurring engineering collaboration focusing on advanced system engineering efforts and software technologies to make the 2023 exascale system a capable and productive computing resource for the Stockpile Stewardship Program.

  House Action: *The FY 2021 HEWD bill includes $2.7 billion for Stockpile Research, Technology, and Engineering, $122 million below the request.*

- $4.4B for Infrastructure and Operations to continue the long-term effort to modernize NNSA infrastructure, improve working conditions of NNSA's deteriorating facilities and equipment, and address safety and programmatic risks. The Request includes increased funding for the construction of the Uranium Processing Facility project and design of the Lithium Processing Facility at Y-12 and the Tritium Finishing Facility at SRS. The Budget also continues construction of the Chemistry and Metallurgical Research Replacement project to sustain plutonium science activities.

  House Action: *The FY 2021 HEWD bill includes $3.4 billion for Infrastructure and Operations, $1.0 billion below the request.*

- $2B for Defense Nuclear Nonproliferation to address nuclear threats by preventing the unwanted acquisition of nuclear weapons or weapons-usable materials, countering efforts to acquire such weapons or materials, and responding to nuclear or radiological incidents. The Budget supports design, long lead procurements, and site preparation for the Surplus Plutonium Disposition project, increases funding for nuclear forensics, and continues support of non-Highly Enriched Uranium-based Molybdenum-99 production facilities in the U.S.

  House Action: *The FY 2021 HEWD bill includes $3.4B for Infrastructure and Operations, $1B below the request.*

BACK TO TABLE OF CONTENTS

- $1.7B for Naval Reactors to continue funding for delivery of the reactor core for the Columbia-class submarine and refueling of the S8G prototype reactor. The Request also supports recapitalizing the capability to handle naval spent nuclear fuel and continued work for the fleet remains the most advanced, well-maintained, and capable nuclear fleet in the world.

  House Action: *The FY 2021 HEWD bill provides $1.65B for Infrastructure and Operations, which is $35M above FY 2020 enacted and flat with the FY 2021 Budget Request.*

Cybersecurity

Cyberattacks pose an increasing threat to the Nation's energy infrastructure. Recognizing the seriousness of the threat against critical infrastructure, the Budget supports increased funding for cyber and energy security initiatives. DOE will improve energy infrastructure security by addressing the emerging threats of tomorrow while protecting the reliable flow of energy to Americans today. The Budget includes $158.8M in program office budgets to support improved energy-sector cybersecurity, in addition to $375M for the information technology and cybersecurity of NNSA.

Other Defense Activities

The FY 2021 Budget Request provides $1.1B to support defense activities conducted by the Department including $317M for LM. These include Environment, Health, Safety and Security, Enterprise Assessments, Specialized Security Activities, Hearings and Appeals, and Defense Related Administrative Support (DRAS). Funding from DRAS is used to offset administrative expenses for work supporting defense-oriented activities.

House Action: *The FY 2021 HEWD bill provides $942M for Other Defense Activities, which is $36M above FY 2020 enacted and $313M above the FY 2021 Budget Request.*

Administration And Oversight

The FY 2021 Budget Request includes $215M for Administration and Oversight activities, including Departmental Administration (DA), International Affairs, the Office of the Inspector General, and offsets.

Highlights include:

- $123.5M for DA to fund management and mission support organizations that have enterprise-wide responsibility for administration, accounting, budgeting, contract and project management, human resources, congressional and intergovernmental liaison, energy policy, information management, life-cycle asset management, legal services, workforce diversity and equal employment opportunity, ombudsman services, small business advocacy, sustainability, and public affairs. In January 2020, the Secretary of Energy announced that the Office of Policy will be restructured to the Office of Strategic Planning and Policy (OSPP). OSPP will become a direct report to the Office of the Secretary for a more efficient and effective approach to the analysis, formulation, development, and advancement of all policy across the Department.

ADMINISTRATION AND OVERSIGHT
FY 2021

	$K
Administration and Oversight	**215**
Savings and Receipts	***-722***

- $33M for International Affairs (IA) to coordinate the Department's international work and promote global market opportunities for U.S. energy companies and technology exports.

  House Action: *The FY 2021 HEWD bill provides $27M for International Affairs, which is $175K above FY 2020 enacted and $6M below the Budget Request.*

- $58M for Office of the Inspector General to review the integrity, economy, and efficiency of DOE programs and operations, including NNSA and the Federal Energy Regulatory Commission.

  House Action: *The FY 2021 HEWD bill provides the full request, which is $3.5M above FY 2020 enacted.*

- -$722M in savings and receipts including from the sale of the NEHHOR (-$75M), sale of oil from SPR and gasoline from the NGSR (-$589M), and savings from the Federal Energy Regulatory Commission fees and recoveries in excess of annual appropriations (-$9M).

  House Action: *The FY 2021 HEWD bill rejects the proposed elimination of the Northeast Home Heating Oil Reserve and instead provides $10,000,000 to maintain the reserve.*

BACK TO TABLE OF CONTENTS

Conclusion

The Department of Energy FY 2021 President's Budget Request provides for America's future by promoting energy independence, progressing scientific research, and protecting the Nation. The Budget demonstrates fiscal discipline and commitment to an efficient and effective Federal government. To that end, DOE will focus spending in areas with the highest return on investment of tax payer dollars. Achieving goals established in the Request requires an exceptional workforce. The Department will invest in the workforce by attracting, training, and retaining the Nation's best talent. The Budget supports the critical role the Department of Energy has in energy independence and dominance, economic growth, and the safety and security of the Nation. The Department appreciates the support of Congress and looks forward to continuing to work together.

Appendix

Spending by Location

DOE spends money in all 50 states, in Washington, D.C., in Puerto Rico, and in U.S. territories. These funds are spent at or through DOE's 17 National Laboratories, cleanup sites, nuclear production facilities, and dozens of other locations across the country. Locations are detailed in these tables.

Long Term Obligations

The Department has extensive infrastructure the Department must maintain, and simultaneously continues to build new facilities and procure upgraded and new equipment. The Department is also responsible for some benefits costs of the nearly 100,000 contractors. These obligations cost nearly $10 billion a year, nearly one quarter of the annual appropriation. Long-term obligations are summarized.

DEPARTMENT OF ENERGY

Appropriation Summary FY 2021

(Dollars in Thousands)

Department of Energy Budget by Appropriation	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs. FY 2020 Enacted	
				$	%
Energy Efficiency and Renewable Energy	2,379,000	2,777,277	719,563	-2,057,714	-74.09%
Electricity	156,000	190,000	195,045	5,045	2.66%
Cybersecurity, Energy Security and Emergency Response	120,000	156,000	184,621	28,621	18.35%
Nuclear Energy*	1,180,000	1,340,000	1,042,131	-297,869	-22.23%
Uranium Reserve	0	0	150,000	150,000	0.00%
Interim Storage and Nuclear Waste Fund Oversight	0	0	27,500	27,500	0.00%
Fossil Energy Research and Development	740,000	750,000	730,601	-19,399	-2.59%
Strategic Petroleum Reserve	235,000	195,000	187,081	-7,919	-4.06%
Naval Petroleum and Oil Shale Reserve	10,000	14,000	13,006	-994	-7.10%
Strategic Petroleum Reserve Petroleum Account	10,000	10,000	0	-10,000	-100.00%
Northeast Home Heating Oil Reserve	10,000	10,000	0	-10,000	-100.00%
Total, Fossil Energy Petroleum Reserve Accounts	**265,000**	**229,000**	**200,087**	**-28,913**	**-12.63%**
Total, Fossil Energy Programs	**1,005,000**	**979,000**	**930,688**	**-48,312**	**-4.93%**
Uranium Enrichment Decontamination and Decommissioning (D&D) Fund	841,129	881,000	806,244	-74,756	-8.49%
Energy Information Administration	125,000	126,800	128,710	1,910	1.51%
Non-Defense Environmental Cleanup	310,000	319,200	275,820	-43,380	-13.59%
Science	6,585,000	7,000,000	5,837,806	-1,162,194	-16.60%
Artificial Intelligence Technology Office	0	0	4,912	4,912	0.00%
Advanced Research Projects Agency - Energy	366,000	425,000	-310,744	-735,744	-173.12%

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BACK TO TABLE OF CONTENTS

(Continued from previous page)

Department of Energy Budget by Appropriation	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs. FY 2020 Enacted	
				$	%
Departmental Administration	165,858	161,000	136,094	-24,906	-15.47%
Indian Energy Policy and Programs	18,000	22,000	8,005	-13,995	-63.61%
Inspector General	51,330	54,215	57,739	3,524	6.50%
International Affairs	0	0	32,959	32,959	0.00%
Title 17 Innovative Technology Loan Guarantee Program	12,311	29,000	-160,659	-189,659	-654.00%
Advanced Technology Vehicles Manufacturing Loan Program	5,000	5,000	0	-5,000	-100.00%
Tribal Energy Loan Guarantee Program	1,000	2,000	-8,500	-10,500	-525.00%
Total, Credit Programs	**18,311**	**36,000**	**-169,159**	**-205,159**	**-569.89%**
Total, Energy Programs	**13,320,628**	**14,467,492**	**10,057,934**	**-4,409,558**	**-30.48%**
Federal Salaries and Expenses	410,000	434,699	454,000	19,301	4.44%
Weapons Activities	11,100,000	12,457,097	15,602,000	3,144,903	25.25%
Defense Nuclear Nonproliferation	1,930,000	2,164,400	2,031,000	-133,400	-6.16%
Naval Reactors*	1,788,618	1,648,396	1,684,000	35,604	2.16%
Total, National Nuclear Security Administration	**15,228,618**	**16,704,592**	**19,771,000**	**3,066,408**	**18.36%**
Defense Environmental Cleanup	6,024,000	6,255,000	4,983,608	-1,271,392	-20.33%
Nuclear Energy	146,090	153,408	137,800	-15,608	-10.17%
Other Defense Programs	860,292	906,000	1,054,727	148,727	16.42%
Total, Environmental and Other Defense Activities	**7,030,382**	**7,314,408**	**6,176,135**	**-1,138,273**	**-15.56%**
Total, Atomic Energy Defense Activities	**22,259,000**	**24,019,000**	**25,947,135**	**1,928,135**	**8.03%**
Southwestern Power Administration	10,400	10,400	10,400	0	0.00%
Western Area Power Administration	89,372	89,196	89,372	176	0.20%
Falcon and Amistad Operating and Maintenance Fund	228	228	228	0	0.00%
Colorado River Basins Power Marketing Fund	0	-42,800	-21,400	21,400	**-50.00%**
Total, Power Marketing Administrations	**100,000**	**57,024**	**78,600**	**21,576**	**37.84%**
Federal Energy Regulatory Commission	0	-16,000	0	16,000	-100.00%
Total, Energy and Water Development and Related Agencies	**35,656,628**	**38,527,516**	**36,083,669**	**-2,443,847**	**-6.34%**
Excess Fees and Recoveries, FERC	-16,000	0	-9,000	-9,000	0.00%
Title XVII Loan Guarantee Program Section 1703 Negative Credit Subsidy Receipt	-107,000	-15,000	-49,000	-34,000	226.67%
Sale of Northeast Home Heating Oil Reserve	0	0	-75,000	-75,000	0.00%
Sale of Oil from Strategic Petroleum Reserve**	0	0	-589,000	-589,000	0.00%
Total, Funding by Appropriation	**35,533,628**	**38,512,516**	**35,361,669**	**-3,150,847**	**-8.18%**
DOE Budget Function	**35,533,628**	**38,512,516**	**35,361,669**	**-3,150,847**	**-8.18%**
NNSA Defense (050) Total	15,228,618	16,704,592	19,771,000	3,066,408	18.36%
Non-NNSA Defense (050) Total	7,030,382	7,314,408	6,176,135	-1,138,273	-15.56%
Defense (050)	*22,259,000*	*24,019,000*	*25,947,135*	*1,928,135*	*8.03%*
Science (250)	6,585,000	7,000,000	5,837,806	-1,162,194	-16.60%
Energy (270)	6,689,628	7,493,516	3,576,728	-3,916,788	-52.27%
Non-Defense (Non-050)	*13,274,628*	*14,493,516*	*9,414,534*	*-5,078,982*	*-35.04%*

** Funding does not reflect statutory transfer of funds from Naval Reactors to Nuclear Energy for maintenance and operation of the Advanced Test Reactor ($85.5M in FY19; $88.5M in FY 2020).*
***Includes a $50M sale from the Northeast Gasoline Supply Reserve.*

BACK TO TABLE OF CONTENTS

DEPARTMENT OF ENERGY

Funding by Organization FY 2021

(Dollars in Thousands)

Department of Energy Budget by Organization	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs. FY 2020 Enacted	
				$	%
Under Secretary for Nuclear Security and National Nuclear Security Administration					
Weapons Activities	11,100,000	12,457,097	15,602,000	3,144,903	25.25%
Defense Nuclear Nonproliferation	1,930,000	2,164,400	2,031,000	-133,400	-6.16%
Naval Reactors*	1,788,618	1,648,396	1,684,000	35,604	2.16%
Federal Salaries and Expenses	410,000	434,699	454,000	19,301	4.44%
Total, Under Secretary for Nuclear Security and National Nuclear Security	**15,228,618**	**16,704,592**	**19,771,000**	**3,066,408**	**18.36%**
Under Secretary of Energy					
Energy Programs					
Energy Efficiency and Renewable Energy	2,379,000	2,777,277	719,563	-2,057,714	-74.09%
Office of Electricity	156,000	190,000	195,045	5,045	2.66%
Power Marketing Administrations	100,000	57,024	78,600	21,576	37.84%
Cybersecurity, Energy Security, and Emergency Response	120,000	156,000	184,621	28,621	18.35%
Petroleum Reserves	265,000	229,000	200,087	-28,913	-12.63%
Fossil Energy Research and Development	740,000	750,000	730,601	-19,399	-2.59%
Nuclear Energy*	1,326,090	1,493,408	1,357,431	-135,977	-9.10%
Office of Indian Energy Policy and Programs	18,000	22,000	8,005	-13,995	-63.61%
Office of Policy	2,510	7,000	7,631	631	9.01%
Project Management Oversight and Assessment	15,005	12,596	15,577	2,981	23.67%
Environment, Health, Safety, and Security	202,839	207,839	209,688	1,849	0.89%
Credit Programs					
Title 17 Innovative Technology Loan Guarantee Program	12,311	29,000	-160,659	-189,659	-654.00%
Tribal Energy Loan Guarantee Program	1,000	2,000	-8,500	-10,500	-525.00%
Advanced Technology Vehicles Manufacturing Loan Program	5,000	5,000	0	-5,000	-100.00%
Other Energy Programs					
Advanced Research Projects Agency - Energy	366,000	425,000	-310,744	-735,744	-173.12%
Energy Information Administration	125,000	126,800	128,710	1,910	1.51%
Under Secretary of Energy					
Science	6,585,000	7,000,000	5,837,806	-1,162,194	-16.60%
Environmental Management	7,175,129	7,455,200	6,065,672	-1,389,528	
Legacy Management Programs	158,877	162,029	316,993	154,964	95.64%
Office of Technology Transitions	8,505	14,080	12,639	-1,441	-10.23%
Departmental Administration (Direct Reports)					
Chief Information Officer	131,624	140,200	134,778	-5,422	-3.87%
Management	55,385	54,358	57,258	2,900	5.34%
Chief Human Capital Officer	26,125	24,316	26,191	1,875	7.71%
Economic Impact and Diversity	10,169	10,169	9,931	-263	-2.34%
Office Of The Secretary	5,395	5,119	5,582	463	9.04%
Chief Financial Officer	48,912	52,000	53,591	1,591	3.06%

(Continued on next page)

BACK TO TABLE OF CONTENTS

(Continued from previous page)

Department of Energy Budget by Organization	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs. FY 2020 Enacted	
				$	%
Congressional and Intergovernmental Affairs	4,200	4,395	5,616	1,221	27.78%
Public Affairs	6,594	4,000	5,954	1,954	48.85%
General Counsel	33,075	32,575	35,111	2,536	7.79%
International Affairs	22,878	26,825	0	-26,825	-100.00%
Artificial Intelligence Technology Office	0	2,500	0	-2,500	-100.00%
Office of Small & Disadvantaged Business Utilization	3,170	3,337	3,402	65	1.95%
Strategic Partnership Projects and Revenues	-56,000	-53,378	-53,378	0	0.00%
Other Defense Activities (Direct Reports)					
Office of Enterprise Assessments	76,770	78,779	81,584	2,805	3.56%
Specialized Security Activities	266,378	273,409	258,411	-14,998	-5.49%
Hearings and Appeals	3,739	4,852	4,262	-590	-12.16%
Other Departmental Offices					
Artificial Intelligence Technology Office	0	0	4,912	4,912	0.00%
International Affairs	0	0	32,959	32,959	0.00%
Inspector General	51,330	54,215	57,739	3,524	6.50%
Federal Energy Regulatory Commission	-16,000	-16,000	-9,000	7,000	43.80%
Sale of Northeast Gas Reserves	0	0	-75,000	-75,000	0.00%
Sale of Oil from Strategic Petroleum Reserve	0	0	-589,000	-589,000	0.00%
Title XVII Loan Guar. Prog Section 1703 Negative Credit Subsidy Receipt	-107,000	-15,000	-49,000	-34,000	226.67%
Total, Funding by Organization	**35,533,628**	**38,512,516**	**35,361,669**	**-3,150,847**	**-8.18%**

** Funding does not reflect statutory transfer of funds from Naval Reactors to Nuclear Energy for maintenance and operation of the Advanced Test Reactor ($85.5M in FY19; $88.5M in FY 2020)*

BACK TO TABLE OF CONTENTS

Federal Workforce

This section provides data on DOE's federal employee workforce by program and by site, and information on union membership.

DOE's Federal Human Capital Management programs and policies aim to create a Department-wide high-performance culture and attract, motivate, and retain a highly skilled and diverse workforce capable of meeting the organizational challenges well into the 21st Century.

The Department employs a highly technical and specialized workforce to accomplish its various scientific and technological missions. There is an increasing competition within the American working population for individuals with the requisite knowledge, skills, and competencies that the Department needs. As a result, recruitment and retention of critical staff is becoming increasingly problematic. As such, the Department continues to explore the use of corporate recruitment and retention strategies to retain our high performing employees and personnel in mission critical occupational series; especially through the use of recruitment, retention, relocation, and student loan incentives.

Throughout this section, tables are used to provide the on board count of federal employees by Headquarters office and field sites; pie charts are used to display federal workforce information on gender, race, education, occupational series, age, and scientific and technical occupations; and graphs are used to display some retirement projections. Finally, the last section provides information on union representation at DOE.

Federal Employee Staffing Levels

The following table displays the number of DOE employees on board at the end of FY 2020. The data is displayed by reporting organization, referred to as Program Secretarial Offices (PSO).

Staffing Analysis Tables

As depicted in the following five tables, DOE had a total of 13,137 federal employees onboard as of the end of FY 2020, excluding FERC.

(Table 1)

Department of Energy	
Departmental Staff and Support Offices	2,044
Under Secretary for Energy	1,975
Power Marketing Administrations (PMAs)	4,514
Under Secretary of Science	2,076
Under Secretary for Nuclear Security	2,528
DOE TOTAL	**13,137**
FERC*	1,462
TOTAL	**14,599**

**Note: FERC was created as an independent regulatory agency through the Department of Energy Organization Act of 1977. In performance of this function, the employees of FERC are not responsible or subject to the supervision, management, or direction of any office or employee of any part of the Department of Energy. The management and execution of resources are maintained separately by each organization. As such, FERC employees are not included in any representation of the DOE workforce.*

BACK TO TABLE OF CONTENTS

(Table 2)

Departmental Staff and Support Offices		
HQ	Secretary Of Energy	22
HQ	General Counsel	176
HQ	Inspector General	277
HQ	Congressional & Intergovernmental Affairs	29
HQ	Hearings and Appeals	16
HQ	Public Affairs	19
HQ	Economic Impact and Diversity	31
HQ/Field	Chief Information Officer	106
HQ	Advanced Research Projects Agency-Energy (ARPA-E)	52
HQ	Strategic Planning and Policy	5
HQ	Intelligence and Counterintelligence	193
HQ	Secretary of Energy Advisory Board	6
HQ	Enterprise Assessments	81
HQ	Small & Disadvantaged Business Utilization	13
HQ	U.S. Energy Information Administration	321
HQ	International Affairs	80
HQ	Chief Financial Officer	196
HQ	Chief Human Capital Officer	194
HQ	Management	227
	Sub-Total SSO-	**2,044**

(Table 3)

Under Secretary for Energy		
HQ	Indian Energy Policy And Programs	7
HQ	Loan Programs	89
HQ	Arctic Energy	0
HQ	Energy Efficiency And Renewable Energy	416
Field	*Golden Field Office*	127
HQ	Nuclear Energy	114
Field	*Idaho Operations Office*	171
Field	*NE Oak Ridge Site Office*	3
HQ	Fossil Energy	132
Field	*National Energy Technology Laboratory*	480
Field	*Strategic Petroleum Reserve*	88
HQ	Office of Electricity	65
PMA	*Bonneville Power Administration*	2,843
PMA	*Southeastern Power Administration*	39
PMA	*Southwestern Power Administration*	168
PMA	*Western Area Power Administration*	1,464
HQ	Environment, Health, Safety & Security	235
HQ	Project Management Oversight & Assessments	26
HQ	Cybersecurity, Energy Security & Emergency Response	22
	Sub-Total USE	**6,489**

(Table 4)

Under Secretary for Science		
HQ	Legacy Management	69
HQ	Office of Science	452
Field	*Consolidated Service Center*	192
Field	*Ames Site Office*	4
Field	*Argonne Site Office*	22
Field	*Bay Area Site Office*	26
Field	*Brookhaven Site Office*	23
Field	*Fermi Site Office*	20
Field	*Pacific Northwest Site Office*	31
Field	*Princeton Site Office*	10
Field	*Thomas Jefferson Site Office*	10
Field	*ORNL Site Office*	38
HQ	Technology Transitions	15
HQ	Artificial Intelligence & Technology	3
HQ	Planning & Management Oversight	2
HQ	Environmental Management	232
Field	*Richland Operations Office*	336
Field	*Savannah River Operations Office*	224
Field	*Consolidated Business Center*	173
Field	*Carlsbad Field Office*	45
Field	*Environmental Management Los Alamos Field Office*	25
Field	*Carlsbad Field Office*	45
Field	*Portsmouth & Paducah Project Office*	51
	Sub-Total USS	**2,076**

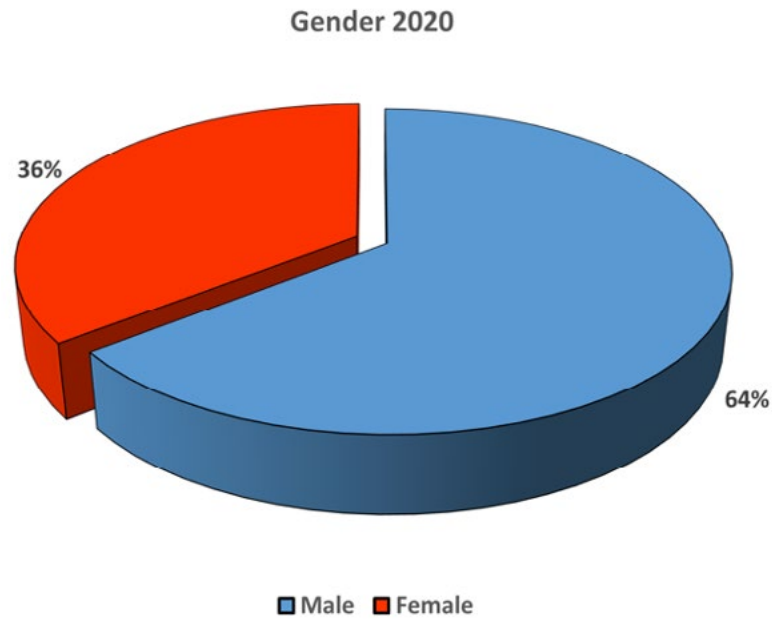
(Table 5)

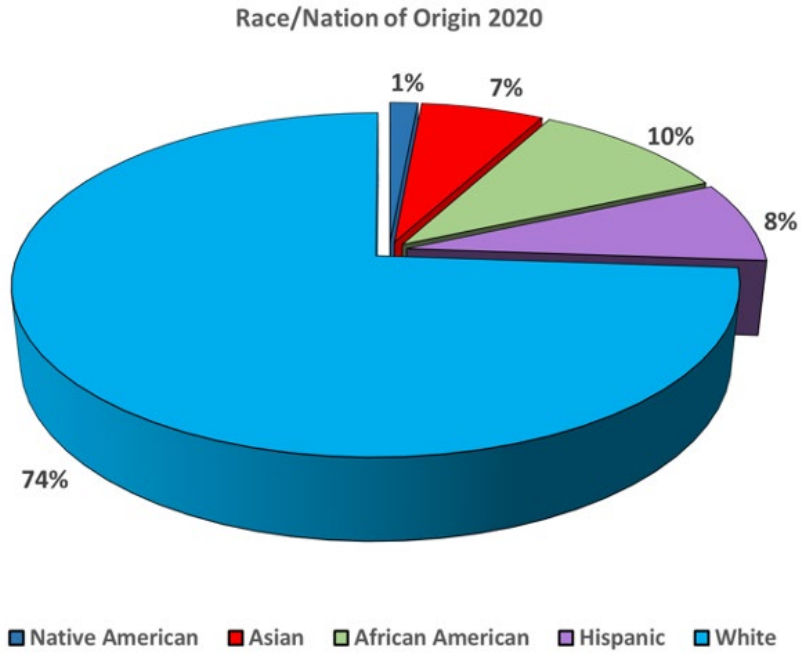
Under Secretary for Nuclear Security		
HQ	NNSA – Office of Administrator	40
Field	*Emergency Operations*	46
HQ	*Def Nuclear Security*	83
HQ	*Counter-Terrorism*	56
HQ	*External Affairs*	19
HQ	*General Counsel*	39
HQ	*Acquisition and Project Mgt.*	171
HQ	*Management and Budget*	255
HQ	*Info Mgt. and Chief Information*	34
HQ	*Safety, Infrastructure and Operations*	105
HQ	Deputy Admin for DP	753
Field	*NNSA Production Office*	127
Field	*Sandia Site Office*	85
Field	*Kansas City Site Office*	37
Field	*Los Alamos Site Office*	88
Field	*Nevada Site Office*	77
Field	*Livermore Site Office*	76
Field	*Savannah River Site Office*	39
HQ	Deputy Admin for NN	170
HQ	DA for Naval Reactors	143
Field	*NR Lab Field Office*	85
	Sub-Total for NNSA	**2,528**

Federal Employee Demographics and Skills

Gender and Race

The charts below show the diversity and gender make-up of DOE's federal workforce in FY 2020. The gender profile in FY 2020 indicates that 64% of the workforce is male and 36% female. The race/nation of origin profile shows that 74% of the DOE workforce self-identifies as being white. These percentages have largely been stable over the past decade.



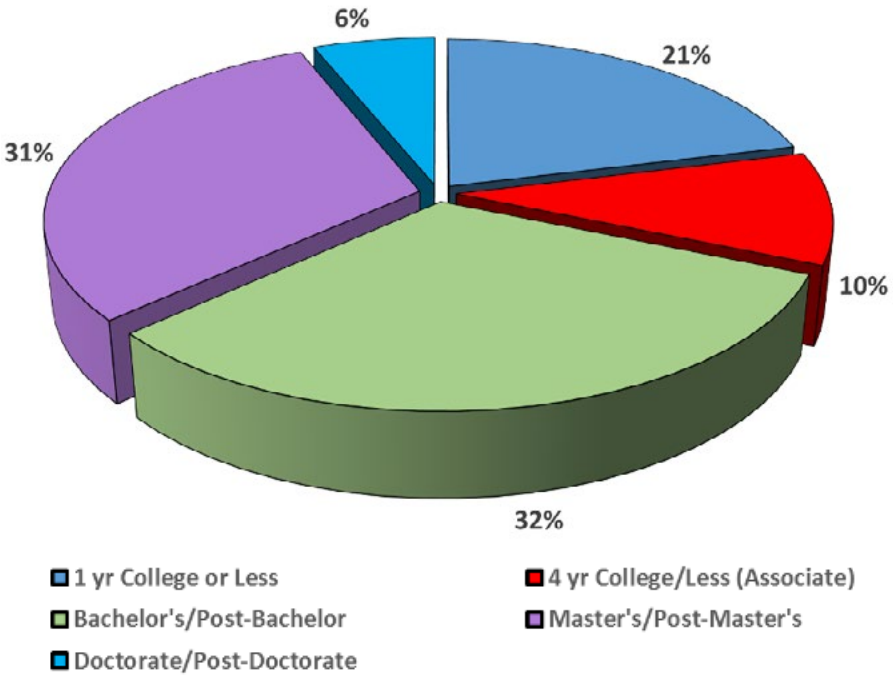


BACK TO TABLE OF CONTENTS

Education

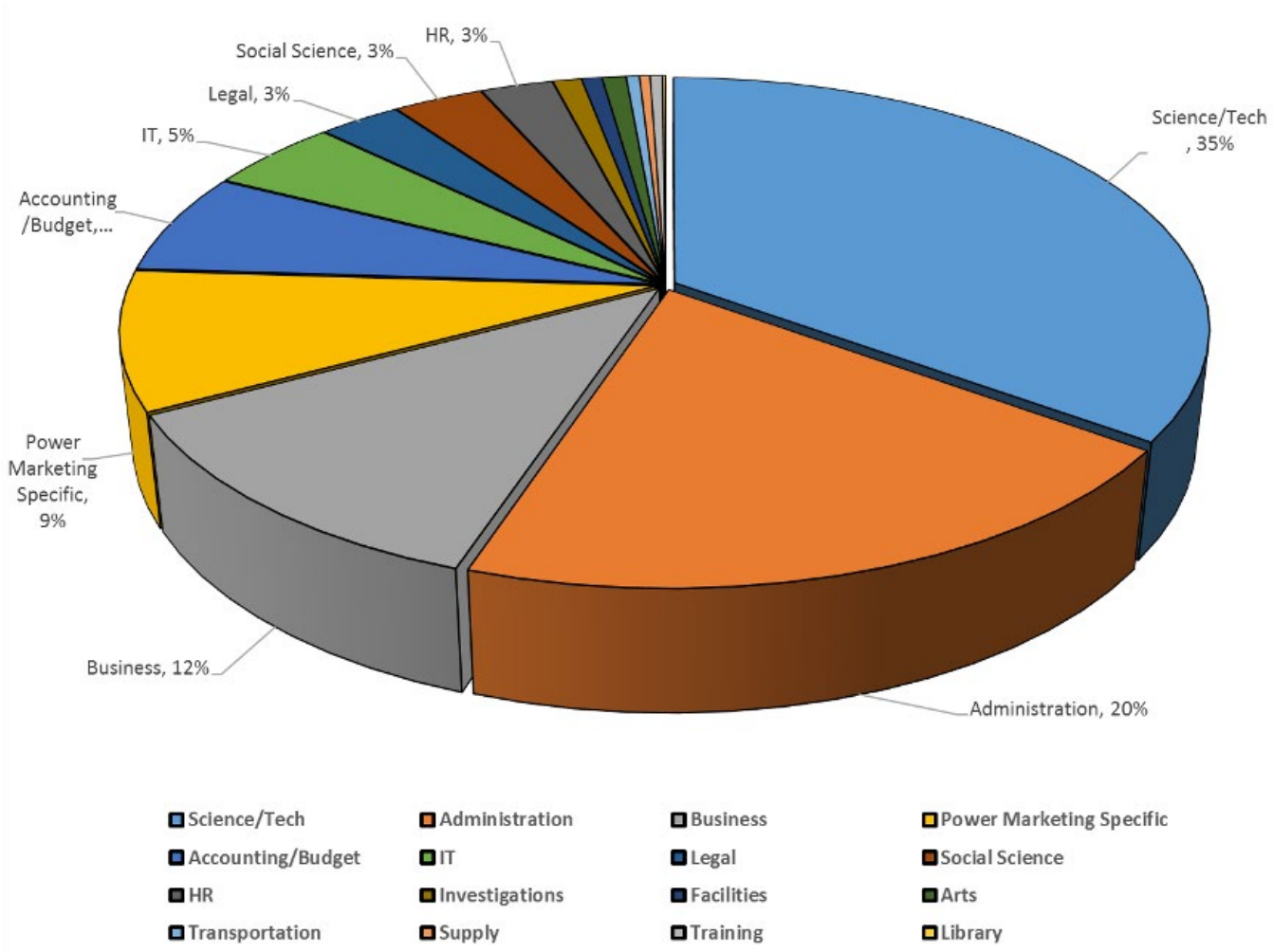
The chart below indicates a highly educated DOE workforce with most (~70%) of DOE employees having earned a Bachelor's Degree or higher. This is not unexpected in a science and technology agency.

(as of September 2020)



Occupational Mix

The chart below displays the occupational makeup of DOE's federal workforce. The slices are groupings of different categories of occupations, called Occupational Series (OS). The three largest occupational series include: scientific and technical (35%); administration (20%); and business (including procurement 12%).



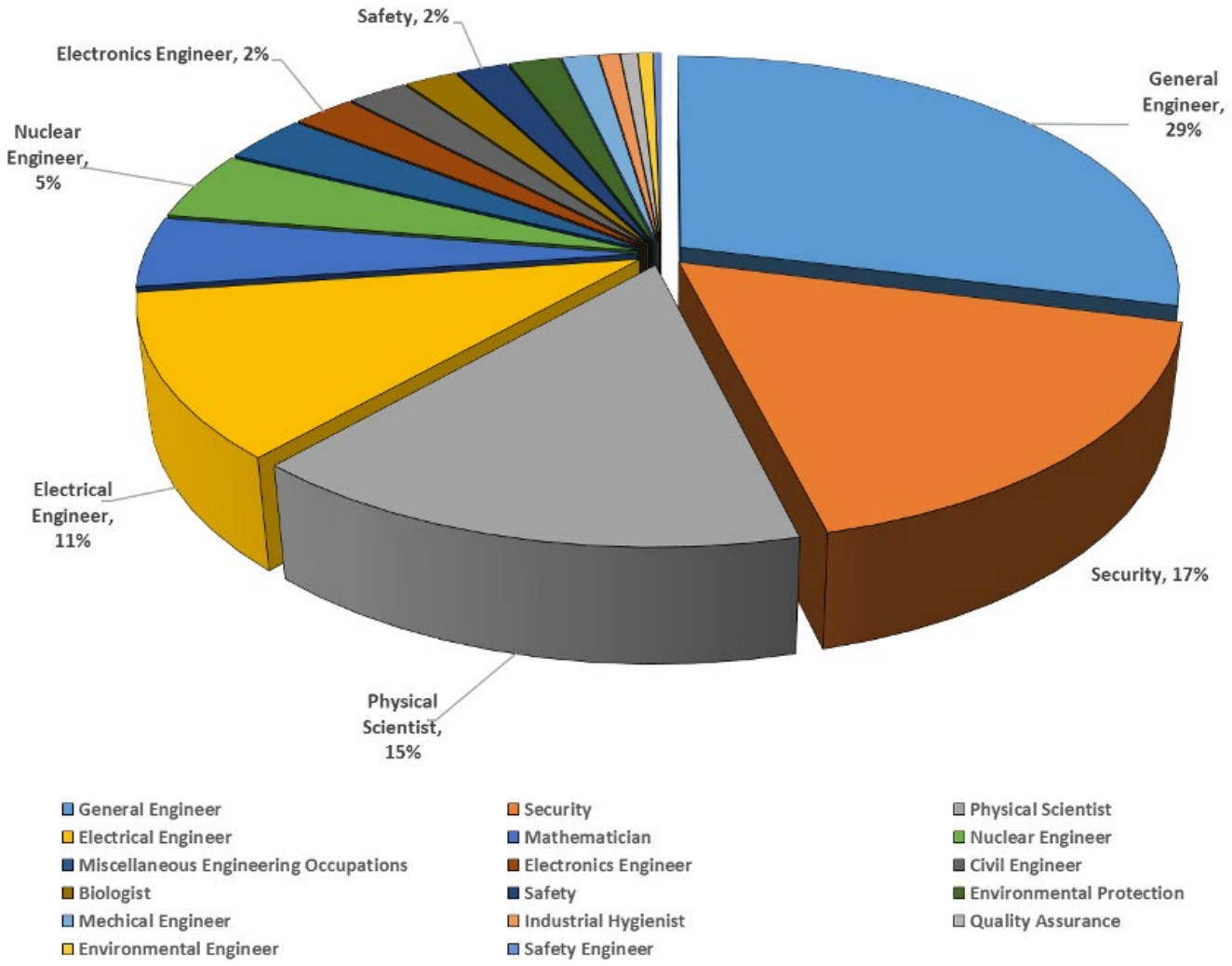
BACK TO TABLE OF CONTENTS

Scientific and Technical Workforce Breakdown

As indicated in the chart above, DOE's scientific and technical workforce makes up 35% of DOE's total workforce. A breakdown of this workforce is shown in the chart below.

The scientific and technical workforce is defined by the following categories: Engineering; Physical Science; Safety and Occupational Health Management; Safety Technicians; Environmental Protection Specialists; Fire Protection and Fire Prevention Specialists; Industrial Hygienists; Environmental Health Technicians; Quality Assurance Specialists; and all Excepted Service Employees (Pay Plan EK) hired under the National Defense Authorization Act.

The chart below shows that General Engineers, Electrical Engineers, and Nuclear Engineers together make up roughly half of DOE's federal scientific and technical workforce. Several other engineering series have small populations (miscellaneous, civil, electronic, and safety), and when combined with general, electrical, and nuclear engineers, the engineering category makes up roughly two thirds of the DOE scientific and technical workforce.

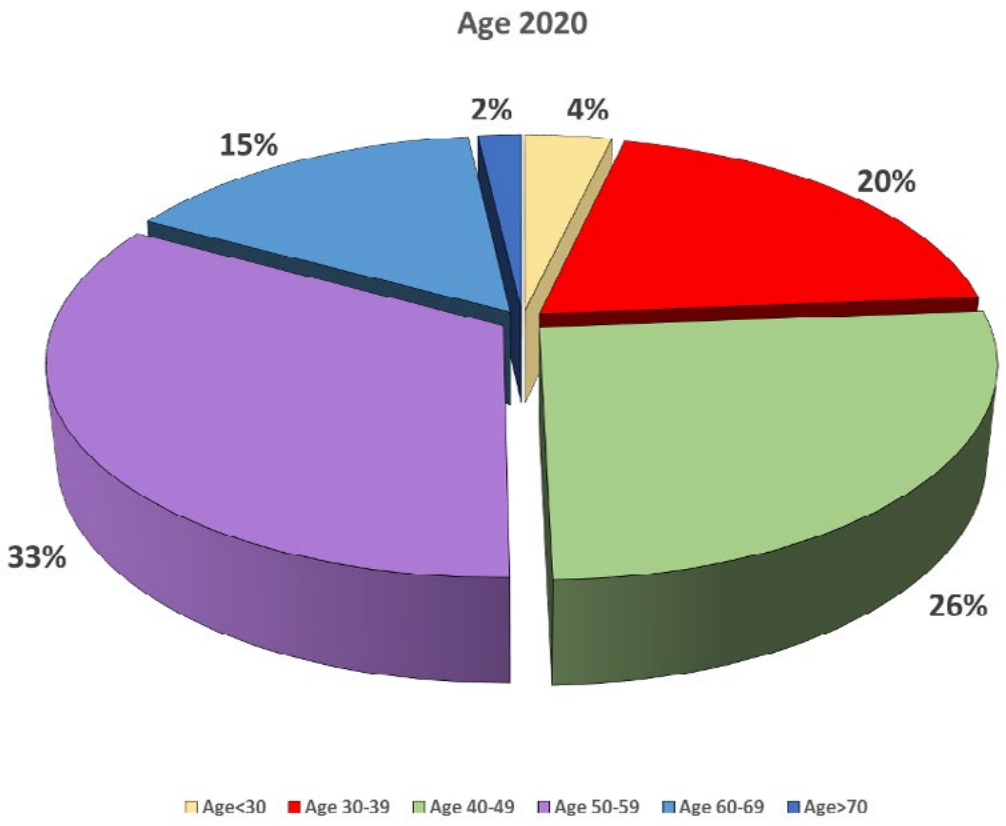


BACK TO TABLE OF CONTENTS

Federal Employee Staffing Retirement

Age

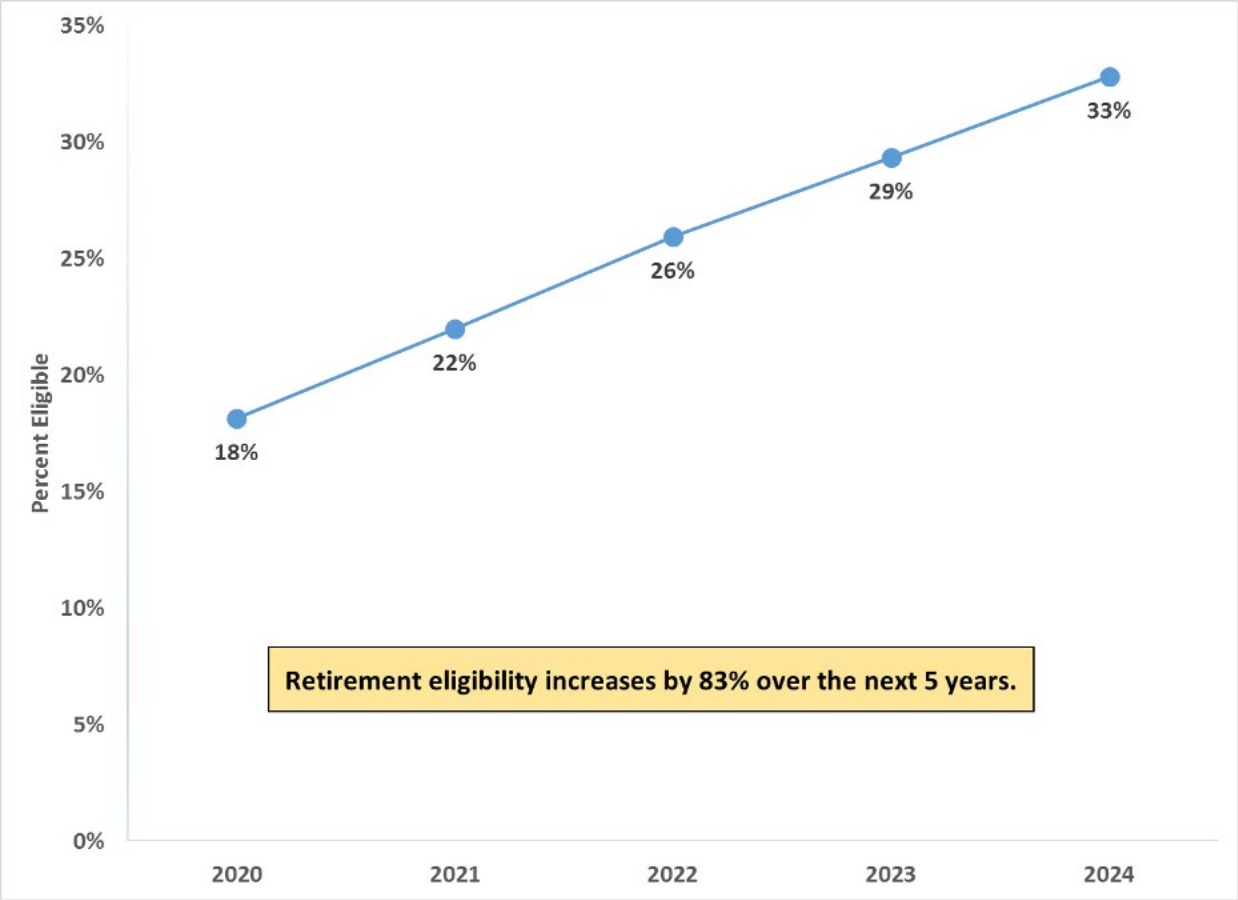
DOE's federal workforce is aging. The chart below displays the current age distribution of DOE's federal workforce. Over the last five years, DOE's average age has increased to just over 49 due to steady increases in the population of employees ages 40-49, 50-59, and 60-69.



BACK TO TABLE OF CONTENTS

Retirement Eligibility

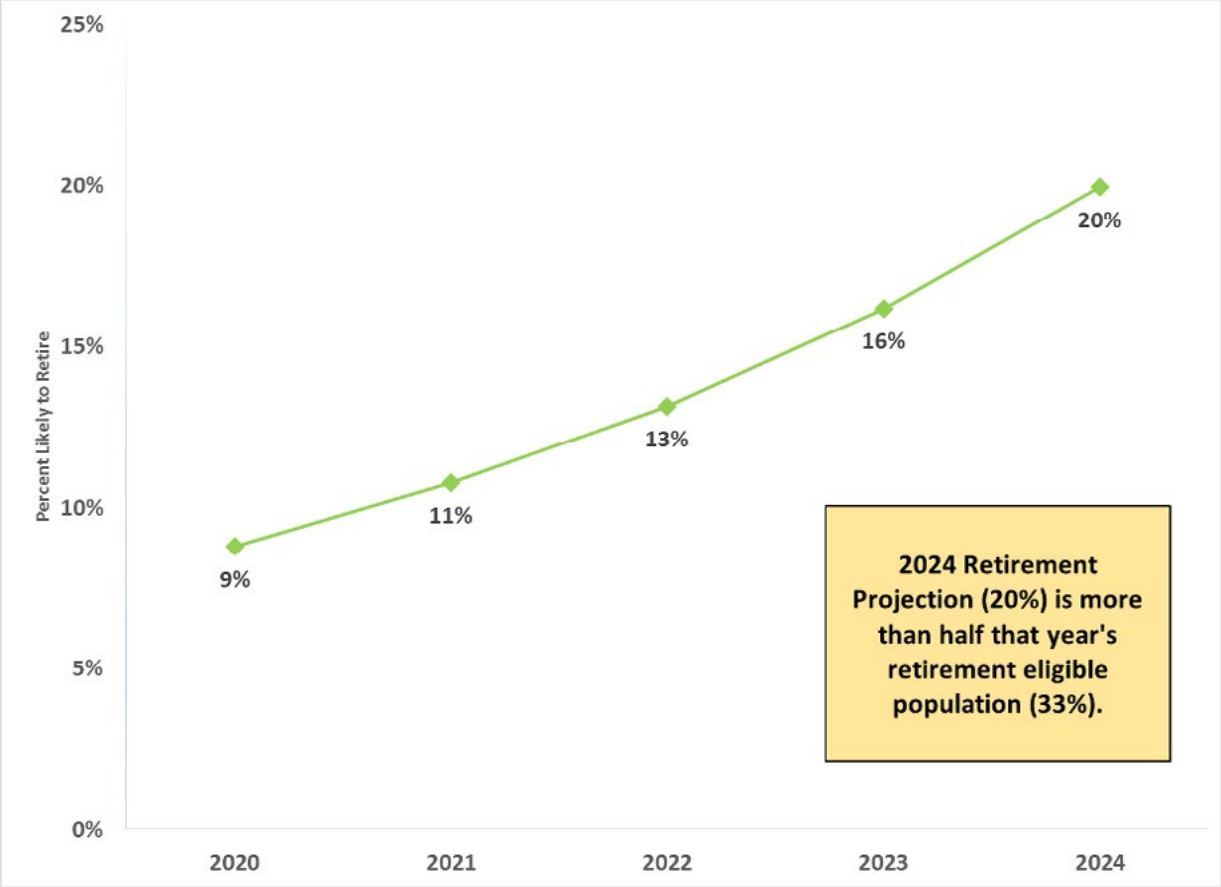
The Department's retirement eligibility forecast, coupled with the aging workforce, presents a significant human capital challenge. The chart below shows the percentage of the present population that will be eligible to retire over the next four years. This is simply an eligibility chart, not a prediction of what will happen. However, this chart indicates that over one-third (33%) of the current federal employee population will be eligible to retire by the end of 2024.



Retirement Projections

Based on historical data that assesses when employees actually retire, the Department has determined that, on average, employees retire about 3.5 years after they have become eligible. This analysis has implications for DOE's projected retirement losses. The chart below shows a projection of 9 percent of the workforce being likely to retire, as opposed to the 18 percent that is eligible to leave in FY 2020. This value grows to a projection of 20 percent of the retirement eligible population actually separating from the workforce by the end of FY 2024 (as opposed the 33 percent that is eligible to leave that year).

(with more than 3.5 years of Retirement Deferment)



Federal Employee Unions

Overview

Bargaining unit employees are employees of the Agency not excluded by statute (e.g., managers, supervisors, or confidential employees), who are entitled to representation by a recognized labor organization and are covered by a collective bargaining agreement. Bargaining unit employees may elect to pay dues or not pay dues. About 6,300 DOE employees, located at numerous sites Department-wide, are included in bargaining units.

The Collective Bargaining Agreement (CBA) is the written document incorporating the agreed-to conditions of employment affecting bargaining unit employees. Conditions of employment subject to bargaining include, but are not limited to, personnel policies, practices, and matters such as hours of work, leave administration, performance management, awards, merit promotions, hours of work, and discipline.

The union has an obligation to represent all bargaining unit employees whether they pay dues or not. Representation includes collective bargaining, negotiated grievances, formal meetings, responses to proposed disciplinary actions, and third party representation.

The union has a right to be present and invited to comment or speak during formal meetings with bargaining unit employees. Generally, a meeting is considered to be formal when it is held with a supervisor or higher level manager; has a scheduled time and place; has an established agenda; is mandatory; may have a note taker; and discusses changes in personnel policies and procedures, and other conditions of employment. It does not include an operational staff meeting.

Bargaining unit employees are entitled to representation during investigatory meetings or interviews. Known as *Weingarten Rights,* the employee may request union representation during any examination by an Agency representative in connection with an investigation if the employee reasonably believes that the examination may result in disciplinary action against the employee. In accordance with the CBA, DOE HQ bargaining unit employees who may be subject to discipline as a result of the investigation will be apprised of their *Weingarten Rights* at the beginning of the investigatory interview.

Department of Energy Headquarters, Labor Relations

The National Treasury Employees Union (NTEU) is the most visible union due to its location at headquarters. However, the American Federation of Government Employees (AFGE) is the largest union within the Department; AFGE is located at most of DOE's field sites. NTEU has had bargaining recognition with DOE Headquarters (HQ) since 1979. Anthony "Tony" Reardon is the current National President of NTEU. William Li is the NTEU national representative for the NTEU HQ Chapters. There are two NTEU Chapters: Chapter 213 (covers bargaining unit employees in Washington D.C.) and Chapter 228 (covers bargaining unit employees in Germantown, MD).

Below is a list of all federal labor unions within DOE.

- **Bonneville Power Administration**
  - Columbia Power Trades Council (CPTC)
  - Laborers International Union of North America (LIUNA), Local 335 (Vancouver, WA)
  - American Federation of Government Employees (AFGE), Local 928 (Portland, OR)
- **Headquarters, Department of Energy**
  - NTEU, Local 213 (Washington, DC)
  - NTEU, Local 228 (Germantown, MD)
- **Idaho Operations Office**
  - International Federation of Professional and Technical Engineers (IFPTE), Local 94 (Idaho Falls, ID)
- **National Energy Technology Laboratory**
  - American Federation of Government Employees (AFGE), Local 1995 (Morgantown, WV)
  - American Federation of Government Employees (AFGE), Local 1916 (Pittsburgh, PA)
  - American Federation of Government Employees (AFGE), Local 1104 (Albany, OR)
- **Oak Ridge Office**
  - Office of Professional Employees International Union (OPEIU), Local 2001 (Oak Ridge, TN)
- **Office of Energy Efficiency and Renewable Energy (EERE)**
  - American Federation of Government Employees (AFGE), Local 1194 (Golden, CO)

BACK TO TABLE OF CONTENTS

- **Richland Operations Office**
  - American Federation of Government Employees (AFGE), Local 788 (Professional and Non-Professional)
- **Southwestern Power Administration**
  - International Brotherhood of Electrical Workers (IBEW), Local 1002 (Tulsa, OK)
- **Western Area Power Administration**
  - American Federation of Government Employees (AFGE), Locals 3824 (Loveland, CO) & Local 3807 (Watertown, SD)
  - International Brotherhood of Electrical Workers (IBEW-GCC-1), Locals 640 (Phoenix, AZ), 1245 (Folsom, CA), 1759 (Loveland, CO), 1959 (Sioux Falls, SD), & 2159 (Montrose, CO)

Department of Energy Accomplishments

Since the beginning of this Administration, the Department of Energy (DOE) has made significant progress across its entire mission space, having:

- **Established U.S. Energy Dominance** for the first time, America became the world's number one producer of oil and natural gas;
- **Led substantial increases in exports of U.S. Liquefied Natural Gas (LNG)** by nearly five-fold and issued 20 long-term authorizations for LNG exports to non-free trade agreement countries since January 2017 the U.S now exports LNG to 38 countries on 5 continents;
- **Increased oil production at the Alaska Field Lab project by more than 700 barrels per day** over the first 20 months of polymer injection, which more than doubles the previous production;
- **Established 15 resource basin-specific field labs** since January 2017, aimed at maximizing resource recovery with a goal to double well productivity in a safe and environmentally prudent manner;
- **Published the Small-Scale LNG Rule** to expedite approval for small-scale natural gas exports;
- **Published the 2050 LNG Policy Statement** to allow companies to export LNG through 2050 as an alternative to our original 20-year authorizations;
- **Stabilized oil markets during the COVID-19 pandemic** by facilitating discussions among the world's leading oil producers through DOE's leadership in the International Energy Agency and G20;
- **Used the Strategic Petroleum Reserve, for the first time, as a temporary storage option for U.S. small and mid-sized crude oil producers** to help stabilize oil markets following the demand destruction caused by COVID-19;
- **Launched the Science-informed Machine Learning to Accelerate Real Time (SMART) Decisions in Subsurface Applications Initiative,** bringing together seven DOE national laboratories, industry, and academia to apply artificial intelligence and machine learning to carbon storage and oil and natural gas applications;
- **Founded the National Virtual Biotechnology Laboratory** to provide interdisciplinary and multi-lab support to the national COVID-19 response;
- **Co-led the COVID-19 High Performance Computing Consortium,** a unique public-private effort, bringing together federal government, industry, and academic leaders to volunteer free compute time and resources to halt the spread of COVID-19;
- **Launched the COVID-19 Technical Assistance Program,** an initiative to allow National Lab experts to provide free, targeted assistance to American innovators in the fight against COVID-19;
- **Launched the** Lab Partnering Service **COVID-19 portal,** offering users a curated access point to National Lab research, facilities, and intellectual property that could prove useful in the fight against COVID-19;
- **Launched the Coal FIRST (Flexible, Innovative, Resilient, Small and Transformative) Initiative** to develop the power plant of the future, which can produce electricity and hydrogen from coal, biomass, and waste, with zero or even negative CO2 emissions;
- **Continued to promote 21st Century Coal** by advancing research and development in the conversion of coal to high-value carbon products like building materials and manufactured products, which can help sustain coal community jobs;
- **Implemented the Nuclear Fuel Working Group's Strategy** to Restore American Nuclear Energy Leadership;
- **Supported the First Nuclear Power Plant (Vogtle) to be built in the U.S. in Nearly 30 Years** by providing an additional $3.7 billion in loan guarantees;
- **Established the National Reactor Innovation Center (NRIC)** to provide a platform for private sector technology developers to assess the

BACK TO TABLE OF CONTENTS

performance of their nuclear reactor concepts through testing and demonstration;

- **Launched the Advanced Reactor Demonstration Program** to competitively-select two advanced reactor projects to result in fully functional advanced nuclear reactors within seven years;
- **Successfully returned electric power** to communities affected by multiple catastrophic hurricanes and typhoons;
- **Developed the North American Energy Resilience Model (NAERM)** to understand risks to electricity infrastructure and identify needed investments to improve system resilience across the U.S., Canada, and Mexico;
- **Established the Office of Cybersecurity, Energy Security, and Emergency Response (CESER)** to improve the cybersecurity and resilience of the Nation's energy critical infrastructure;
- **Delivered on the President's Cyber Workforce Executive Order** through the Department of Energy CyberForce Competition, with over 100 colleges and universities competing across 10 National Labs to grow capabilities in industrial control system cybersecurity;
- **Strengthened Protections for the Nation's Electric Grid against Foreign Adversaries** by implementing Executive Order 13920, Securing the United States Bulk-Power System, which the President signed on May 1, 2020;
- **Established the Cyber Testing for Resilience of the Industrial Control Systems (CyTRICS) program** to secure the Nation's Energy Supply Chain and support the Bulk Power System Executive Order;
- **Oversaw the expansion of renewable power,** including a doubling of solar production from 2016 through 2019 and a 32 percent increase in wind production, making the U.S. the world's second largest producer of both wind and solar;
- **Launched the American-Made Challenges,** by investing more than $40 million in 16 different American-Made prizes and competitions to advance energy innovation and American manufacturing;
- **Launched the Energy Storage Grand Challenge,** a comprehensive strategy to position the U.S. for global leadership in the energy storage technologies of the future;
- **Launched the American-Made Solar Prize,** a competition designed to revitalize solar manufacturing in the United States, leading to four rounds that will result in $12 million in prizes;
- **Created the Energy-Water Desalination Hub** as part of the White House Water Security Grand Challenge, announcing nearly $100 million for the National Alliance for Water Innovation to address water security issues in the United States;
- **Launched the American-Made Solar Desalination Prize,** a $9 million prize competition designed to accelerate the development of low-cost desalination systems that use solar-thermal power to produce clean water from salt water;
- **Funded the development of the first renewable jet fuel used on a commercial flight** from Orlando to London Gatwick;
- **Initiated the Plastics Innovation Challenge** which launched a comprehensive program to design new highly recyclable or biodegradable plastics, develop novel methods for deconstructing and upcycling existing plastic waste, and address plastic waste;
- **Rolled back unnecessary regulations** supporting a presidential priority by refocusing energy conservation standards to increase consumer choice and save over $300 million for the American people;
- **Protected consumer lighting choices** by preventing more stringent regulations on common incandescent lightbulbs that would have essentially regulated those products out of existence, denying families the ability to make their own lighting choices;
- **Initiated the Sustainability in Manufacturing Partnership** to help drive manufacturing productivity improvements resulting in partners saving over $6 billion in energy costs;
- **Reduced the price of batteries by more than 80% over 10 years,** culminating in 2019, from just over $1,000 per kilowatt-hour to $185 per kilowatt-hour for the useable energy of a full battery pack;

BACK TO TABLE OF CONTENTS

- **Established the ReCell Battery Recycling R&D Center and launched the Lithium-Ion Battery Recycling Prize** to develop technologies to profitably capture 90% of all lithium-based battery technologies in the United States and recover 90% of the key materials from the collected batteries;
- **Reduced the cost of electrolyzers,** which produce hydrogen from water and electricity, by 80% and automotive fuel cell costs by 60% in the past decade, while quadrupling their durability to over 120,000 miles;
- **Completed the first science-based high-level radioactive waste (HLW) interpretation shipment,** removing 8 gallons of recycle wastewater from the Defense Waste Processing Facility at the Savanah River Site for treatment and disposal, a model for new pathways to address tank waste and expedite cleanup of DOE sites across the country;
- **Approved commencement of operations at the Savannah River Salt Waste Processing Facility,** which will allow DOE to address the bulk of the remaining tank waste within a decade;
- **Transferred 70 sites to the Office of Legacy Management (LM)** across the Nevada Test and Training Range, including the Tonopah Test Range, the first transfer of active Environmental Management Sites to long-term LM stewardship since 2012;
- **Completed "Vision 2020" at Oak Ridge's East Tennessee Technology Park,** the first time a uranium enrichment complex has been fully deactivated and decommissioned , and completed four years ahead of schedule, saving taxpayers $500 million;
- **Reached agreement with the state of California to allow active cleanup to resume** at the Energy Technology Engineering Center (ETEC) site after more than a decade. Nine out of an initial set of 10 buildings are down, and by the end of the year the final building will be demolished;
- **Won 106 R&D 100 Awards** for exceptional new products and processes that were developed and introduced into the marketplace, pushing the DOE total to over 900;
- **Established DOE's first ever Chief Commercialization Officer,** who is tasked with bridging the gap between our 17 National Labs and commercialization in the private sector;
- **Celebrated the 2020 Nobel Prize in Chemistry win by a DOE Lab Researcher** (Dr. Jennifer Doudna) who was originally funded by DOE's Lawerence Berkeley National Laboratory for her foundational work in understanding the structure of RNA, which led to her co-invention of the gene editing technology known as CRISPR;
- **Celebrated two DOE-supported researchers winning the 2019 Nobel Prize in Chemistry** (Dr. M. Stanley Whittingham and Dr. John Goodenough) for their foundational work in the development of lithium-ion batteries;
- **Established the Artificial Intelligence and Technology Office** to serve as the central point for the coordination and development of broad and extensive artificial intelligence (AI) capabilities for the Department and its National Laboratories;
- **Improved Veteran's Health** through a partnership with the U.S. Department of Veterans Affairs to leverage next-generation AI and supercomputing technologies;
- **Maintained Global Leadership in Supercomputing** by building and operating two of the world's fastest supercomputers at DOE National Laboratories;
- **Launched the Quantum Internet** to evolve from today's limited local quantum network experiments and revolutionize how information is transmitted in the future;
- **Selected the first Quantum Information Science (QIS) Research Centers** to provide training and collaboration opportunities for the next generation of QIS scientists and engineers;
- **Supported the exploration of the Universe in Partnership with NASA** by providing the power source and the SuperCam detector for the Mars Perseverance Rover, and winning a Gears of Government award for developing an electrical power source to support long-duration crewed missions on the Moon, Mars and destinations beyond;
- **Established the DOE-NASA Joint Executive Committee** to ensure alignment and collaboration in the furtherance of the Administration's national space goals of landing the first woman and next man on the surface of the moon by 2024, establishing a sustainable presence on the moon by 2028, and ultimately putting the first human boots on the surface of Mars;

BACK TO TABLE OF CONTENTS

- **Supported American's Innovative Small Business** by providing $1.1 billion in funding through DOE's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants across 49 States;
- **Funded Energy Frontier Research Centers** by providing over $445 million to support 64 Centers in diverse energy and science related fields;
- **Launched the Pathfinder Program** with U.S. Department of Defense and U.S. Department of Homeland Security to better prevent and protect against attacks on Defense Critical Energy Infrastructure;
- **Increased private sector follow-on-funding** for DOE's ARPA-E projects by 100% to $3.6 billion and nearly doubled the number of filed patents stemming from ARPA-E funded research to 385, since 2017;
- **Engaged over 1,800 partners in research agreements through the DOE National Laboratories,** bringing in $337,924,445 in funding and earning $21,084,539 in licensing income in FY2018 to propel American innovation forward;
- **Launched the Innovation Network for Fusion Energy** (INFUSE) program as the first public-private partnership for accelerating fusion as a future energy source;
- **Increased Global Nuclear Security** by removing or confirming disposition of significant quantities of highly enriched uranium (HEU), bringing the program's lifetime total to more than 7,215 kilograms of highly enriched uranium (HEU) and plutonium downblended or eliminated from nearly 50 partner countries — enough material for more than 320 nuclear weapons;
- **Completed Flight Tests** and other key milestones for nuclear warhead modernization programs in cooperation with the U.S. Department of Defense;
- **Completed the W76-1 Life Extension Program** under budget and ahead of schedule, strengthening U.S. safety and security by extending the warhead's service life from 20 years to 60 years;
- **Developed Five Developmental Plutonium Pits** in support of a strategic effort to recapitalize production of a key component of nuclear weapons;
- **Made Significant Progress on Nuclear Weapons Infrastructure Initiatives** that will enable the use of strategic materials including uranium, plutonium, lithium, tritium, and high explosives to maintain the nuclear deterrent;
- **Issued four cooperative agreement awards to produce Molybdenum-99,** a medical isotope used in over 400,000 medical procedures each day, including the diagnosis of heart disease and cancer, without the use of highly enriched uranium;
- **Enhanced the Federal Bureau of Investigation's (FBI) regional capabilities to disrupt weapons of mass destruction (WMD) attacks** by providing advanced equipment and training for the "Capability Forward" initiative, through which fourteen major U.S. cities will receive new advanced capabilities by FY2022;
- **Replaced fixed-wing Aerial Measuring System (AMS) aircraft,** used to provide rapid wide-area assessments of releases of radioactive materials in the environment;
- **Met milestones for the Columbia-class ballistic missile submarine,** including contracts for reactor plant heavy equipment including the lead ship reactor core;
- **Placed the U.S. Navy's 150th spent fuel canister into dry storage** at the Naval Reactors Facility at Idaho National Laboratory;
- **Launched the Partnership for Transatlantic Energy Cooperation (P-TEC)** with partner countries from Central and Eastern Europe to push back against Russian energy-based malign influence;
- **Completed a Deal with Australia to lease space and store U.S. crude oil** in the U.S. Strategic Petroleum Reserve for the first time since Congress provided DOE with this authority;
- **Fostered the Development of the Eastern Mediterranean Gas Forum** bringing together Israel, the Palestinian authority, Egypt, Jordan, and other regional partners to facilitate natural gas trade and economic growth; and
- **Launched the U.S.-India Strategic Energy Partnership** to enhance energy security, expand energy and innovation linkages, bolster our strategic alignment, and facilitate increased industry and stakeholder engagement in the energy sector.

BACK TO TABLE OF CONTENTS

FY 2019
Labs at a Glance

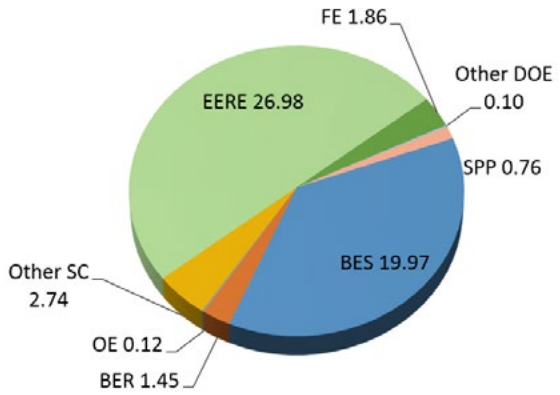
The Department of Energy's 17 National Laboratories tackle the critical scientific challenges of our time and possess unique instruments and facilities, many of which are found nowhere else in the world. They address large scale, complex research and development challenges with a multidisciplinary approach that places an emphasis on translating basic science to innovation.

BACK TO TABLE OF CONTENTS

Ames Laboratory
At a Glance

Ames Laboratory is a world-class institution dedicated to creating materials, inspiring minds to solve problems, and addressing global challenges. For more than 70 years, Ames Laboratory has been a leader in the discovery, synthesis, analysis, and application of new materials, novel chemistries, and transformational analytical tools. The Laboratory conducts fundamental and applied research that helps the world to better understand the nature of the building blocks that make up our universe, and translates that knowledge into new and unique materials, processes, and technologies that advance the nation's economic competitiveness and enhance national security. Ames Laboratory's location on the campus of its contractor, Iowa State University, has instilled a culture of interdisciplinary science and innovation. Invention of lead-free solder, a hybrid catalyst that more efficiently converts crops to biofuel, and caloric materials for improved air conditioning and refrigeration are just a few examples of Ames Laboratory's materials that are impacting our world.

FY 19 Funding by Source ($M)



FY 2019 Lab Operating Costs: $53.99M
FY 2019 DOE/NNSA Costs: $53.23M
FY 2019 SPP (Non-DOE/Non-DHS) Costs: $0.76M
FY 2019 SPP as % Total Lab Operating Costs: 1.4%
FY 2019 DHS Costs: $0.0M

Facts

Location: Ames, IA
Year Founded: 1947
Director: Dr. Adam Schwartz
Type: Single-program Laboratory
Contractor: Iowa State University of Science and Technology
Site Office: Ames Site Office
Website: *www.ameslab.gov*

Physical Assets

10 acres and 13 buildings
340,968 GSF in buildings
Replacement Plant Value: $105M

Human Capital

303 Full Time Equivalent Employees
47 Joint Faculty
38 Postdoctoral Researchers
98 Graduate Students
88 Undergraduate Students
104 Visiting Scientists

Core Capabilities

Applied Materials Science and Engineering
Chemical and Molecular Science
Condensed Matter Physics and Materials Science

Mission Unique Facilities

Critical Materials Institute
Materials Preparation Center
Sensitive Instrument Facility
Powder Synthesis & Development Facility
Dynamic Nuclear Polarization NMR

www.ameslab.gov

AMES LABORATORY
Creating Materials & Energy Solutions
U.S. DEPARTMENT OF ENERGY

BACK TO TABLE OF CONTENTS

Argonne National Laboratory
At a Glance

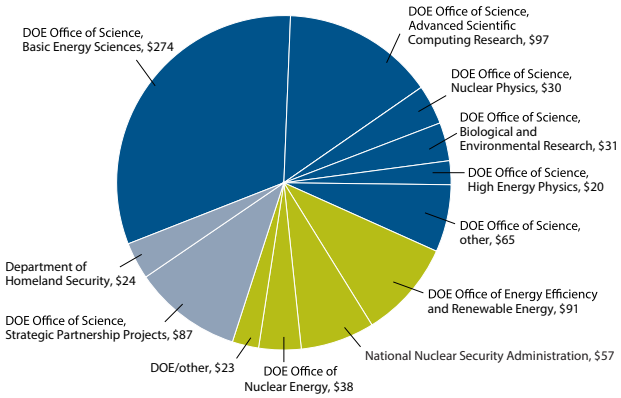
Argonne National Laboratory accelerates science and technology to drive US prosperity and security. The Laboratory conducts research that spans the spectrum from basic science to engineering solutions that change the world for the better. Argonne's scientists and engineers are recognized nationally and internationally for leadership in creating new knowledge through pivotal discoveries in chemistry; materials; nuclear and particle physics; and life, climate, and earth system sciences. In addition, Argonne scientists are known for driving advances in computation and analysis to solve the most challenging problems and for shaping the nation's future through engineering of advanced technological systems.

We build on our discoveries and innovations to improve energy production, storage, and distribution; protect critical infrastructure; and strengthen national security.

ANL also designs, builds and operates scientific user facilities - large national research facilities that would be too expensive for a single company or university to run. These facilities are relied on by thousands of researchers from universities and industry aeronautics to batteries and pharmaceuticals.

FY 2019 Costs by Funding Source

($837 million total)*



Cost Breakdown by Major Sponsor Type

Department of Energy	$727 million
Department of Homeland Security	$24 million
Strategic Partnership Projects (non-DOE/non-DHS)	$87 million
Strategic Partnership Projects + DHS	13% of Argonne total

*Excludes expenditures of monies received from other DOE contractors and through joint appointments of research staff

Facts

Location: Lemont, Illinois, near Chicago
Type: Multiprogram Laboratory
Director: Dr. Paul Kearns
Contractor: UChicago Argonne LLC
Responsible Site Office: Argonne Site Office
Website: www.anl.gov

Physical Assets

1,517 acres
154 buildings
$3.9 billion replacement plant value
5.1 million gross sq. ft. in buildings
0.3 million gross sq. ft. in leased facilities
0.02 million gross sq. ft. in 16 excess facilities

Human Capital

3,448 full-time equivalent employees
379 joint faculty
317 postdoctoral researchers
297 undergraduate students
224 graduate students
8,035 facility users
809 visiting scientists

Argonne National Laboratory Core Capabilities

- Accelerator Science and Technology
- Advanced Computer Science, Visualization, and Data
- Applied Materials Science and Engineering
- Applied Mathematics
- Biological and Bioprocess Engineering
- Chemical and Molecular Science
- Chemical Engineering
- Climate Change Sciences and Atmospheric Science
- Computational Science
- Condensed Matter Physics and Materials Science
- Cyber And Information Sciences
- Decision Science and Analysis
- Large-Scale User Facilities and Advanced Instrumentation
- Nuclear and Radio Chemistry
- Nuclear Engineering
- Nuclear Physics
- Particle Physics
- Systems Engineering and Integration

Mission Unique Facilities

- Advanced Photon Source (APS)
- Argonne Leadership Computing Facility (ALCF)
- Argonne Tandem-Linac Accelerator System (ATLAS)
- Atmospheric Radiation Measurement Climate Research Facility's Southern Great Plains (ARM-SGP)
- Center for Nanoscale Materials (CNM)

BACK TO TABLE OF CONTENTS

Brookhaven National Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

Brookhaven National Laboratory delivers discovery science and transformative technology to power and secure the nation's future. Primarily supported by the U.S. Department of Energy's (DOE) Office of Science, Brookhaven Lab is a multidisciplinary laboratory with seven Nobel Prize-winning discoveries, 36 R&D 100 Awards, and more than 70 years of pioneering research.

Brookhaven Lab's 2,500-plus staff members lead and support diverse research teams from Brookhaven and other national labs, academia, and industry, by designing, building, and operating major scientific user facilities. These teams and researchers address DOE's mission to ensure the nation's security and prosperity by tackling its energy, environmental, and nuclear challenges, in part by using these facilities.

Brookhaven's current initiatives are energy and data science; nuclear science and particle physics; accelerator science and technology; quantitative plant science; and quantum information science.

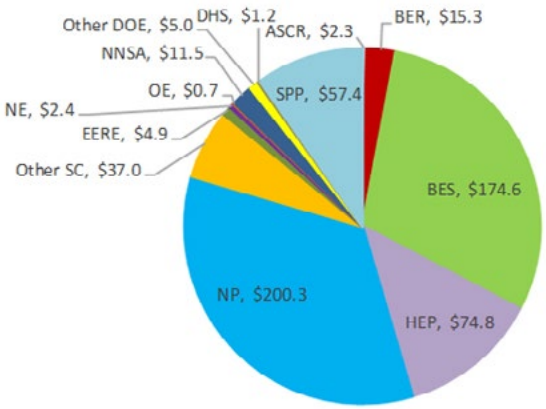
Brookhaven's programs also help prevent the spread of nuclear weapons, protect astronauts on future space missions, and produce medical isotopes to diagnose and treat disease.

In fiscal year 2018, Brookhaven attracted 5,374 facility users and guest researchers from all 50 states, and countries around the world. In NY State alone, the Laboratory's presence added approximately 4,800 jobs and increased economic output by $637 million.

In addition to its world-leading science programs, Brookhaven Lab offers robust STEM education and workforce development programs that draw more than 30,000 students and educators annually.

Brookhaven Lab is managed for the Office of Science by Brookhaven Science Associates, a partnership between Stony Brook University and Battelle, and six universities: Columbia, Cornell, Harvard, Massachusetts Institute of Technology, Princeton, and Yale.

FY 19 Funding by Source ($M)



Lab Operating Costs: $587.5
DOE Costs: $528.9
SPP (Non-DOE/Non-DHS) Costs: $57.4
DHS Costs: $1.2
SPP/DHS as % Total Lab Operating Costs: 10.0%

Facts

Location: Upton, New York
Type: Multi-program Laboratory
Director: Dr. Doon Gibbs
Contractor: Brookhaven Science Associates
Responsible Site Office: Brookhaven Site Office
Website: *http://www.bnl.gov*

Physical Assets

5322 acres and 314 buildings
4.83M GSF in buildings
Replacement Plant Value: $5.8 B
159,912 GSF in 27 Excess Facilities
0 GSF in Leased Facilities

Human Capital

2421 Full Time Equivalent Employees (FTEs) 139
Joint faculty
159 Postdoctoral Researchers
286 Undergraduate Students
200 Graduate Students
3555 Facility Users
1523 Visiting Scientists

Core Capabilities

Accelerator Science and Technology
Advanced Computer Science, Visualization & Data
Applied Materials Science and Engineering
Biological System Science
Chemical and Molecular Science
Chemical Engineering
Climate Change Sciences and Atmospheric Science
Condensed Matter Physics and Materials Science
Large-Scale User Facilities/R&D
Facilities/Advanced Instrumentation
Nuclear & Radio Chemistry
Nuclear Physics
Particle Physics
Systems Engineering and Integration
Computational Science
Applied Mathematics

Mission Unique Facilities

Accelerator Test Facility
Center for Functional Nanomaterials
National Synchrotron Light Source II
Relativistic Heavy Ion Collider

www.bnl.gov

BROOKHAVEN NATIONAL LABORATORY

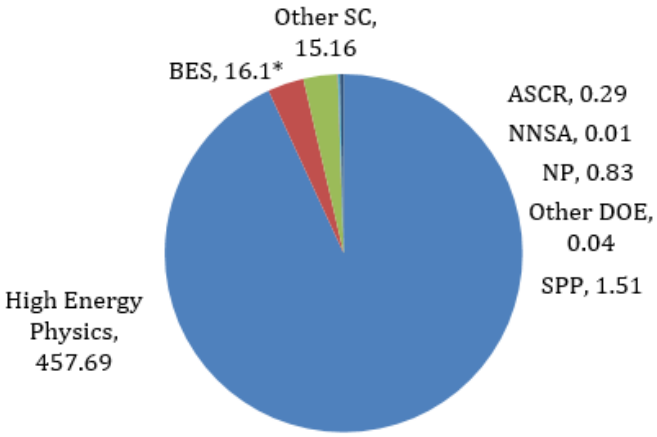
BACK TO TABLE OF CONTENTS

Fermi National Accelerator Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

Fermilab is America's particle physics and accelerator laboratory. Fermilab's vast complex of particle accelerators powers research into the fundamental nature of the universe. The flagship Deep Underground Neutrino Experiment, supported by the Long-Baseline Neutrino Facility, is the first international mega-science project based at a DOE National Laboratory. PIP-II is the first U.S. particle accelerator project with major contributions from international partners. Fermilab integrates U.S. researchers into the global particle physics enterprise through its experiments and programs. The laboratory's scientific R&D advances accelerator, detector, computing and quantum technology for use in science and society.

FY 19 Funding by Source ($M)



FY 2019 Lab operating costs: $491.64M
FY 2019 DOE costs: $490.12M
FY 2019 SPP costs (non-DOE/ non-DHS): $1.51M
FY 2019 SPP as % total lab operating costs: 0.3%
*BES number reflects funding of $15.537M provided by SLAC for LCLS-II work

Facts

Location: Batavia, Illinois (40 miles west of Chicago)
Type: Single-program Laboratory
Year Founded: 1967
Director: Dr. Nigel Lockyer
Contractor: Fermi Research Alliance, LLC
Responsible Site Office: Fermi Site Office
Website: https://www.fnal.gov

Physical Assets

6,800 acres and 365 buildings
2.4 million GSF in buildings
Replacement plant value: $2.44B
28,913 GSF in 10 excess facilities
22,155 GSF in leased facilities

Human Capital

1,810 full-time equivalent employees (FTEs)
22 joint faculty
95 postdoctoral researchers
3,725 facility users
27 visiting scientists
65 undergraduate students
30 graduate students

Core Capabilities

Accelerator Science and Technology
Advanced Computer Science, Visualization, and Data
Large Scale User Facilities/Advanced Instrumentation
Particle Physics

Mission Unique Facilities

Fermilab Accelerator Complex

Major Partnerships

Deep Underground Neutrino Experiment
World's flagship neutrino experiment with more than 1,000 scientists from over 30 countries

PIP-II particle accelerator
215-meter-long particle accelerator to be constructed at Fermilab with major international contributions

LCLS-II X-ray Laser
Design and construction of superconducting cryomodules needed for the LCLS-II X-ray laser at DOE's SLAC laboratory

Quantum Science and Technology
Apply expertise and knowledge in quantum systems in collaboration with industry and other research institutions

www.fnal.gov

Fermilab

BACK TO TABLE OF CONTENTS

Idaho National Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

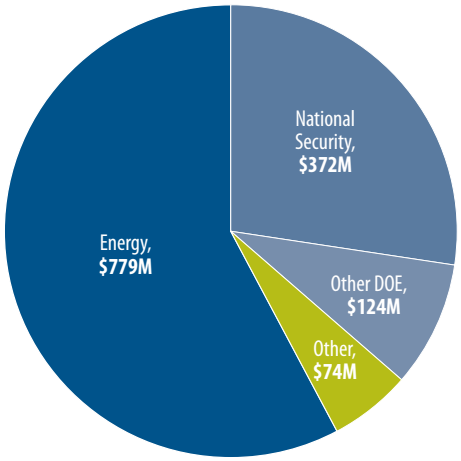
INL serves as the U.S. leader for advanced nuclear energy research and development, and is home to an unparalleled combination of nuclear energy test-bed facilities, including those that focus on fuel development and fabrication, steady-state and transient irradiation, and macro- and microscale post-irradiation examination.

INL's applied science and engineering discipline and problem-solving approach helps the Defense and National and Homeland Security departments, as well as industry partners, solve significant national security challenges in critical infrastructure protection, cybersecurity, and nuclear nonproliferation. Scientists and engineers are also exploring solutions to grand challenges in energy technologies and improving the water and energy efficiency of industrial manufacturing processes.

Under direction of DOE-NE, INL is leading the Gateway for Accelerated Innovation in Nuclear (GAIN) initiative to provide the nuclear community with access to the technical, regulatory and financial expertise necessary to move innovative nuclear energy technologies, such as small modular reactors, toward commercialization while ensuring the continued safe, reliable and economical operation of the existing nuclear fleet.

Battelle Energy Alliance, LLC (BEA) manages and operates INL for DOE. BEA is an alliance of Battelle Memorial Institute, BWX Technologies, Amentum, EPRI, a consortium of National Universities, and a collaboration of Idaho Public Universities.

FY 2019 Spending by Source ($M)



FY 2019 Lab Operating Cost: **$1,349M**
Total DOE/NNSA Costs: **$980M**
SPP (Non-DOE/Non-DHS): **$300M**
CRADA: **$9M**
Total DHS Costs: **$61M**

Facts

Location: Idaho Falls, Idaho
Type: Multiprogram Laboratory
Director: Dr. Mark Peters
Contractor: Battelle Energy Alliance
Responsible Site Office: Idaho Operations Office (DOE-ID)

Physical Assets

569,180 acres and **540** real property assets
(DOE owned assets that are operating or standby)
2.3 million gross square footage (GSF) in owned operating buildings
9,609 GSF in operational standby buildings
$5.6 billion in Replacement Plant Value (all DOE owned assets)
20,363 GSF in three excess facilities
1 million GSF in leased facilities

Human Capital

4,888 full-time equivalent employees
36 joint appointments
68 postdoctoral researchers
20 high school interns
265 undergraduate interns
200 graduate interns
691 facility users
12 visiting scientists

Core Capabilities

- Advanced Computer Science, Visualization, and Data
- Applied Materials Science and Engineering
- Biological and Bioprocess Engineering
- Chemical Engineering
- Chemical and Molecular Science*
- Condensed Matter Physics and Materials Science*
- Cyber and Information Sciences
- Decision Science
- Environmental Subsurface Science and Analysis
- Large Scale User Facilities and Advanced Instrumentation
- Mechanical Design and Engineering
- Nuclear Engineering
- Nuclear and Radiochemistry
- Power Systems and Electrical Engineering
- Systems Engineering and Integration

*Emerging capabilities

Mission Unique Facilities

- Advanced Test Reactor
- Transient Reactor Test Facility
- Hot Fuel Examination Facility
- Irradiated Materials Characterization Laboratory
- Fuel Manufacturing Facility
- Experimental Fuels Facility
- Space and Security Power Systems Facility
- Critical Infrastructure Test Range Complex
- Biomass Feedstock National User Facility
- Wireless Security Institute
- Cybercore Integration Center

www.inl.gov

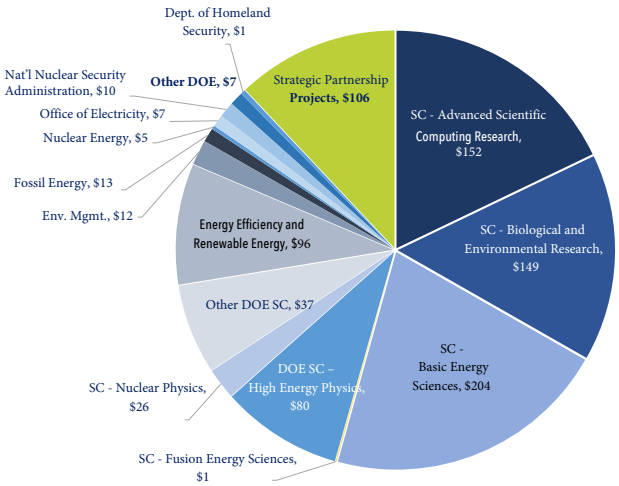
INL Idaho National Laboratory

BACK TO TABLE OF CONTENTS

Lawrence Berkeley National Laboratory
At a Glance

Berkeley Lab creates useful new materials, advances the frontiers of computing, develops sustainable energy and environmental solutions, and probes the mysteries of life, matter, and the universe. The Lab's strengths in materials; chemistry; physics; biology; earth and environmental science; mathematics; and computing are enhanced by a deep integration of basic and applied science; advanced instrumentation; large-scale team science; and collaboration with the national scientific community. Our five national user facilities provide more than 12,000 researchers each year with capabilities in high-performance computing and data science; materials synthesis and characterization; and genomic science. Founded in 1931, Berkeley Lab's research and its scientists have been recognized with 13 Nobel Prizes.

FY 19 Funding by Source ($M)



FY19 Lab operating costs: $907.07M
FY19 DOE/NNSA costs: $800M
FY19 SPP (non-DOE/non-DHS) costs: $105.68M
FY19 SPP as % total Lab operating costs: 11.7%
FY19 Total DHS costs: $1.40M
FY19 Added $9.077 for LCLS-II

Facts

Location: Berkeley, California
Type: Multi-program laboratory
Year Founded: 1931
Director: Dr. Michael Witherell
Contractor: University of California
Responsible Field Office: Bay Area Site Office

Physical Assets

202 acres and 97 buildings and 21 trailers
1.7M GSF in DOE owned and operated buildings
Replacement plant value: $1.49B
315,471 GSF in contractor leased facilities

Human Capital

3,398 full-time equivalent employees (FTEs)
1,699 scientists and engineers
245 joint faculty
513 postdoctoral researchers
332 graduate students
159 undergraduates
13,990 facility users
1,611 visiting scientists and engineers

Core Capabilities

Accelerator Science and Technology
Advanced Computer Science, Visualization, and Data
Applied Materials Science and Engineering
Applied Mathematics
Biological and Bioprocess Engineering
Biological Systems Science
Chemical Engineering
Chemical and Molecular Science
Climate Change Science and Atmospheric Science
Computational Science
Condensed Matter Physics and Materials Science
Cyber and Information Sciences
Decision Science and Analysis
Earth Systems Science
Environmental Subsurface Science
Large Scale User Facilities/ Advanced Instrumentation
Mechanical Design and Engineering
Nuclear Physics
Nuclear and Radio Chemistry
Particle Physics
Power Systems and Electrical Engineering
Systems Engineering and Integration

Mission Unique Facilities

Advanced Light Source
The Molecular Foundry
National Energy Research Scientific Computing Center (NERSC)
Energy Sciences Network (ESnet)
Joint BioEnergy Institute (JBEI)
Joint Genome Institute (JGI)
Advanced Biofuels Process Demonstration Unit
FLEXLAB® (Integrated Building and Grid Technologies Testbed)
BELLA (Berkeley Lab Laser Accelerator)
88-inch Cyclotron

BERKELEY LAB

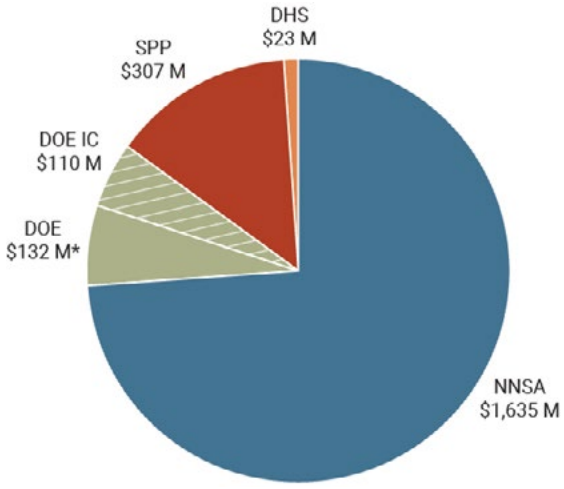
www.lbl.gov

BACK TO TABLE OF CONTENTS

Lawrence Livermore National Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

Science and technology on a mission - This is the hallmark of Lawrence Livermore National Laboratory. In service to the Department of Energy/National Nuclear Security Administration and other federal agencies, LLNL develops and applies world-class science and technology (S&T) to ensure the safety, security and reliability of the nation's nuclear deterrent. LLNL also applies S&T to confront dangers ranging from nuclear proliferation and terrorism to energy storages and climate change that threaten national security and global stability. Using a multidisciplinary approach that encompasses all disciplines of science and engineering, and utilizes unmatched facilities, LLNL pushes the boundaries to provide breakthroughs for counter-terrorism and nonproliferation; defense and intelligence; and energy and environmental security. LLNL was founded in 1952; Lawrence Livermore National Security, LLC has managed the Lab since 2007.



*SPP: Strategic Partnership Projects

FY19 LLNL operating costs: $2,207M
FY19 NNSA costs: $1,635M
FY19 DOE costs: $132M
FY19 SPP costs (non-DOE/non-DHS): $307M
FY19 SPP as % total LLNL operating costs: 14%
FY19 DHS costs: $23M

Facts

Location: Livermore, California
Type: Multidisciplinary national security laboratory
Year Founded: 1952
Director: Dr. William H. Goldstein
Contractor: Lawrence Livermore National Security, LLC (LLNS)
Responsible Site Office: Livermore Field Office
Website: www.llnl.gov

Physical Assets

7,700 acres (owned) and 517 buildings/trailers
6.4 million gross square footage (GSF) in active buildings
565,009 GSF in 76 non-operational buildings
24,443 GSF in leased facilities
Replacement plant value: $20.2 billion

Human Capital

6,932 Full Time Equivalent Employees (FTEs)
18 joint faculty
253 postdoctoral researchers
184 undergraduate interns
138 graduate students
1,300 facility users
449 visiting scientists

Core Capabilities

Advanced Materials and Manufacturing
High-Energy-Density Science
High-Performance Computing, Simulation, and Data Science
Lasers and Optical Science and Technology
Nuclear, Chemical, and Isotopic Science and Technology
All-Source Intelligence Analysis
Nuclear Weapons Design and Engineering
Bioscience and Bioengineering
Earth and Atmospheric Sciences

Mission Unique Facilities

National Ignition Facility
Livermore Computing Complex
National Atmospheric Release Advisory Center
High-Explosives Applications Facility
Contained Firing Facility
Forensic Science Center
Center for Micro and Nanotechnology
Center for Bioengineering
Jupiter Laser Facility
Center for Accelerator Mass Spectrometry
Advanced Manufacturing Laboratory

www.llnl.gov

Lawrence Livermore National Laboratory

BACK TO TABLE OF CONTENTS

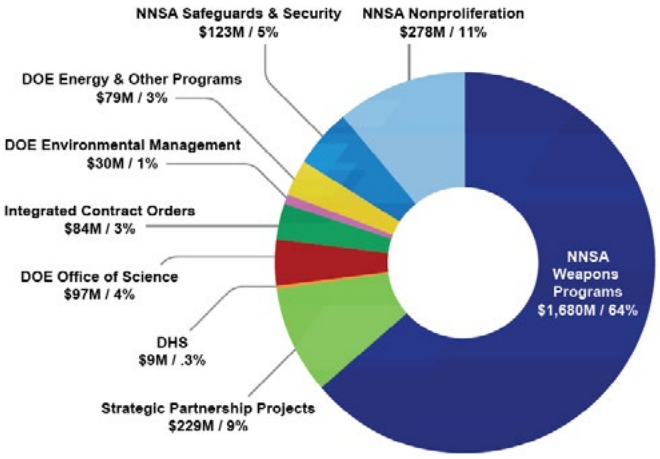
Los Alamos National Laboratory
At a Glance

Los Alamos National Laboratory applies innovative science, technology, and engineering to help solve the nation's toughest challenges, protect the nation, and promote world stability. Our work ensures the safety, security, and effectiveness of the U.S. nuclear deterrent and reduces emerging national security and global threats.

Meeting our mission requires a multidisciplinary approach that extends to nuclear nonproliferation, counterproliferation, energy and infrastructure security, and technology to counter chemical, biological, radiological, and explosive threats. We rely on talented employees, unique capabilities, and almost 80 years of experience to develop innovative solutions to these challenges.

Our strategy focuses on simultaneous excellence in four strategic areas: nuclear security; mission-focused science, technology, and engineering; mission operations; and community relations. By balancing these areas, our Laboratory will deliver on our national security mission long into the future.

FY 19 Funding by Source ($M)



FY19 Lab operating costs: $2,609M
FY19 NNSA costs: $2,081M
FY19 DOE costs: $280M
FY19 SPP (non-DOE/non-DHS) costs: $229M
FY19 DHS costs: $9M
FY19 SPP as % total lab operating costs: 9%

Facts

Location: Los Alamos, New Mexico
Type: Multi-program laboratory
Year Founded: 1943
Director: Dr. Thomas Mason
Contractor: Triad National Security, LLC
Responsible Site Office: Los Alamos Field Office

Physical Assets

24,612 acres
896 buildings
8.24 million GSF in buildings
Replacement plant value: $39.1B
208,677 GSF in 66 excess facilities
362,894 GSF in leased facilities

Human Capital

9,831 full-time equivalent employees
460 postdoctoral researchers
847 undergraduate students
604 graduate students
995 facility users
855 visiting scientists

Core Capabilities

Accelerators and Electrodynamics
Biosciences
Chemical Science
Computer and Computational Science
Computational Physics and Applied Math
Earth and Space Sciences
High Energy Density Plasma and Fluids
Information and Knowledge Sciences
Materials
Nuclear Engineering and Technology
Nuclear and Particle Physics, Astrophysics, and Cosmology
Science of Signatures
Weapons Science and Engineering

Mission Unique Facilities

Dual-Axis Radiographic Hydrodynamic Test Facility
Plutonium Science & Manufacturing Facility
Los Alamos Neutron Science Center: Isotope Production Facility, Proton Radiography (pRad) Facility, Ultra Cold Neutron Facility, Weapons Neutron Research Facility
Metropolis Center for Modeling & Simulation
Center for Integrated Nanotechnologies
Electron Microscopy Lab
National High Magnetic Field Laboratory
SIGMA Complex for Materials Manufacturing & Machining
Center for Explosives Science

www.lanl.gov

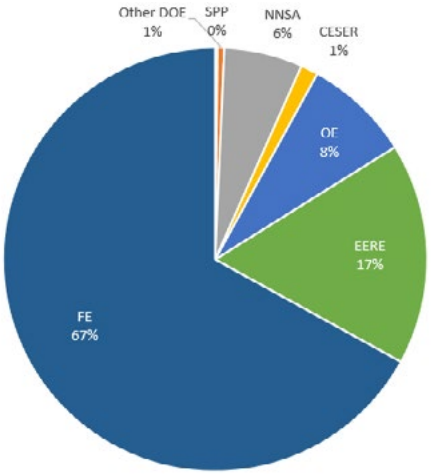
Los Alamos NATIONAL LABORATORY EST. 1943

BACK TO TABLE OF CONTENTS

National Energy Technology Laboratory
At a Glance

The mission of the National Energy Technology Laboratory (NETL) is to discover, integrate, and mature technology solutions to enhance the nation's energy foundation and protect the environment for future generations. NETL's advanced technology development enables production of the clean, reliable and affordable energy needed to increase domestic manufacturing; investment in improving our nation's energy infrastructure; improvement of electrical grid reliability and resilience; expansion of domestic energy production; education of America's future scientists and engineers; workforce revitalization; and support of U.S. energy and national security goals. As the only government-owned, government-operated laboratory in the U.S. Department of Energy (DOE) complex, NETL and its predecessor laboratories have supported DOE goals by maintaining nationally recognized technical competencies and collaborating with partners in industry, academia, and other national and international research organizations to nurture emerging technologies. NETL and its predecessor laboratories implement mission-driven programs and perform objective technical and economic analyses to inform technology readiness and decision-making.

FY 19 Funding by Source ($M)



FY 2019 Total NETL Costs: $767M
FY 2019 Lab Operating Costs: $302.9M
FY 2019 DOE Costs: $765.6M
FY 2019 SPP/DHS Costs: $5.4M
FY 2019 SPP/DHS as percentage of Total Lab Operating Costs: 0.46%
SPP Costs (non-DOE/ non-DHS): $1.4M
FY 2019 Active Research (DOE and Performer Shares): $6.9B

Facts

Location: Pittsburgh, Pennsylvania; Morgantown, West Virginia; Albany, Oregon; Sugar Land, Texas; Anchorage, Alaska
Director: Dr. Brian Anderson
Year Founded: 1910
FY 2019 Total Active Research Projects: 1,069
Total FY 2019 Award Value: $625 M+
Total FY 2019 Executed Awards: 210
Emerging Capabilities: Chemical and Molecular Science; Cyber and Information Sciences

Physical Assets

$593.75 M Replacement Value
1,126,777 Gross Square Footage (GSF) in Buildings
13,662 GSF in seven Excess Facilities
3,392 GSF in 7 Excess Facilities
13,225 GSF in Leased Facilities
237 Acres and 108 Buildings

Human Capital

1,712 Full-Time Equivalent (FTE) Employees
108 Joint Faculty
121 Post-Doctoral Researchers
115 Graduate Students
54 Undergraduate Students

Core Capabilities

Applied Materials Science and Engineering
Systems Engineering and Integration
Chemical Engineering
Environmental Subsurface Science
Decision Science and Analysis
Computational Science

Mission Unique Facilities

Pittsburgh
Carbon Capture Materials Synthesis Lab
Subsurface Experimental Lab
Center for Data Analytics & Machine Learning
Biogeochemistry & Water Lab

Albany
Severe Environment Corrosion Erosion Research Facility
Magnetohydrodynamics (MHD) Lab
Metals Fabrication Lab/ Metals Melting Facility

Morgantown
Center for High Performance Computing (Joule 2.0 Supercomputer)
Reaction Analysis & Chemical Transformation (ReACT) Facility
Solid Oxide Fuel Cell (SOFC) Manufacturing & Test Lab
Center for Advanced Imaging & Characterization

www.netl.doe.gov

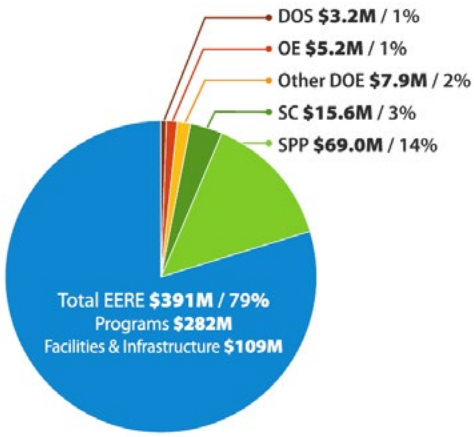
BACK TO TABLE OF CONTENTS

National Renewable Energy Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

NREL is the U.S. DOE's primary national laboratory for renewable energy and energy efficiency research and development. NREL delivers impactful scientific discoveries, innovations, and insights that transform clean energy technologies, systems, and markets. The lab's research focuses on engineering of energy efficiency, sustainable transportation, and renewable power technologies and provides the knowledge to integrate and optimize energy systems. NREL's mission space delivers foundational knowledge; technology and systems innovations; and analytic insights to catalyze a transformation to a renewable and sustainable energy future.

FY 19 Funding by Source ($M)



FY 2019 Lab Operating Costs: $491.8M
FY 2019 DOE Costs: $420.2M
FY 2019 SPP (Non-DOE/Non-DHS) Costs: $71.0M
FY 2019 DHS Costs: $0.6M
FY 2019 SPP as % Total Lab Operating Costs: 14.5%

Facts

Location: Golden, Colorado
Type: Single-program laboratory
Year Founded: 1977
Director: Dr. Martin Keller
Contractor: Alliance for Sustainable Energy, LLC
Responsible Site Office: Golden Field Office

Physical Assets

630 acres, 58 buildings, and four trailers (owned)
1,082,068, GSF in buildings/trailers (owned)
Replacement plant value: $503,332,504
169,949 GSF in leased facilities (five buildings, whole or partial)

Human Capital

2,265 full and part-time employees
27 joint appointments
189 postdoctoral researchers
79 undergraduate students
85 graduate students
39 facility users
2 visiting scientists

Core Capabilities

Computer Science and Analysis
- Advanced Computer Science, Visualization, and Data
- Decision Science and Analysis

Innovation and Application
- Biological and Bioprocess Engineering
- Chemical Engineering
- Mechanical Design and Engineering
- Power Systems and Electrical Engineering

Foundational Knowledge
- Applied Materials Science and Engineering
- Biological Systems Science
- Chemical and Molecular Science

System Integration
- Systems Engineering and Integration
- Large-Scale User Facilities

Mission Unique Facilities

Battery Thermal and Life Test Facility
Controllable Grid Interface Test System
Distributed Energy Resources Test Facility
Energy Systems Integration Facility
Field Test Laboratory Building
High-Flux Solar Furnace
Hydrogen Infrastructure Testing and Research Facility
Integrated Biorefinery Research Facility
Outdoor Test Facility
Renewable Fuels and Lubricants Laboratory
Science and Technology Facility
Solar Energy Research Facility
Thermal Test Facility
Thermochemical Process Development Unit
Thermochemical Users Facility
Vehicle Testing and Integration Facility
Wind Dynamometer Test Facilities
Wind Structural Testing Laboratory
Wind Turbine Field Test Sites

www.nrel.gov

NREL Transforming ENERGY

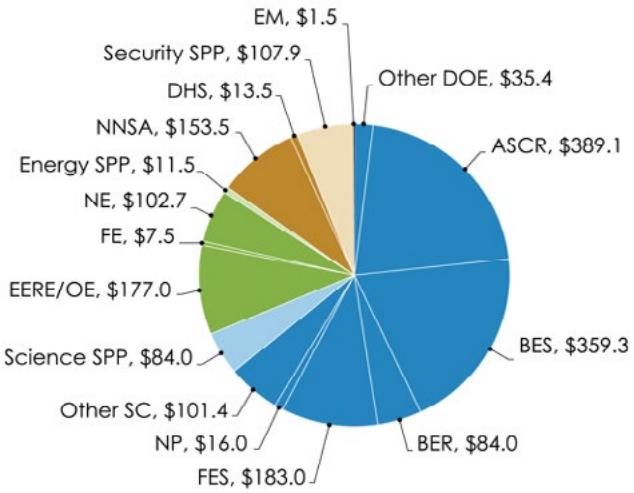
BACK TO TABLE OF CONTENTS

Oak Ridge National Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

ORNL is a multiprogram Office of Science laboratory whose mission is to deliver scientific discoveries and technical breakthroughs that accelerate the development and deployment of solutions in clean energy and global security, creating economic opportunity for the Nation. Established in 1943 as part of the Manhattan Project, ORNL pioneered plutonium production and separation, then focused on nuclear energy and later expanded to other energy sources and their impacts. Today, ORNL manages one of the Nation's most comprehensive materials programs; two of the world's most powerful neutron science facilities, the Spallation Neutron Source and the High Flux Isotope Reactor; unique resources for nuclear science and technology; leadership-class computers including Summit, the world's most powerful and smartest scientific supercomputer; and a diverse set of programs linked by an urgent focus on clean energy and global security.

FY 19 Funding by Source ($M)



FY 2019 Lab Operating Costs: $1,824.6M
FY 2019 DOE/NNSA Costs: $1,607.8M
FY 2019 SPP (Non-DOE/DHS) Costs: $203.4M
FY 2019 SPP/DHS as % Total Lab Operating Costs: 11.9%
FY 2019 Total DHS Costs: $13.5M

Facts

Location: Oak Ridge, Tennessee
Type: Multiprogram laboratory
Year founded: 1943
Director: Dr. Thomas Zacharia
Contractor: UT-Battelle, LLC
Responsible Field Office: ORNL Site Office

Physical Assets

4,421 acres and 272 buildings
4.85M GSF in active operational buildings
Replacement Plant Value: $7.3B
1.4M GSF in 63 excess facilities
1.1M GSF in leased facilities

Human Capital

4,856 full-time equivalent (FTE) employees
194 joint faculty
323 postdoctoral researchers
556 undergraduate students
532 graduate students
2,928 facility users
1,691 visiting scientists

Core Capabilities

Accelerator Science and Technology
Advanced Computer Science, Visualization, and Data
Applied Materials Science and Engineering
Applied Mathematics
Biological and Bioprocess Engineering
Biological Systems Science
Chemical Engineering
Chemical and Molecular Science
Climate Change Science and Atmospheric Science
Computational Science
Condensed Matter Physics and Materials Science
Cyber and Information Sciences
Decision Science and Analysis
Earth Systems Science and Engineering
Environmental Subsurface Science
Large Scale User Facilities/ Advanced Instrumentation
Mechanical Design and Engineering
Nuclear Engineering
Nuclear Physics
Nuclear and Radio Chemistry
Plasma and Fusion Energy Science
Power Systems and Electrical Engineering
Systems Engineering and Integration

Mission Unique Facilities

Building Technologies Research and Integration Center
Carbon Fiber Technology Facility
Center for Nanophase Materials Sciences
Center for Structural Molecular Biology
Grid Research, Integration and Deployment Center
High Flux Isotope Reactor
Manufacturing Demonstration Facility
National Transportation Research Center
Oak Ridge Leadership Computing Facility
Spallation Neutron Source

OAK RIDGE National Laboratory

www.ornl.gov

BACK TO TABLE OF CONTENTS

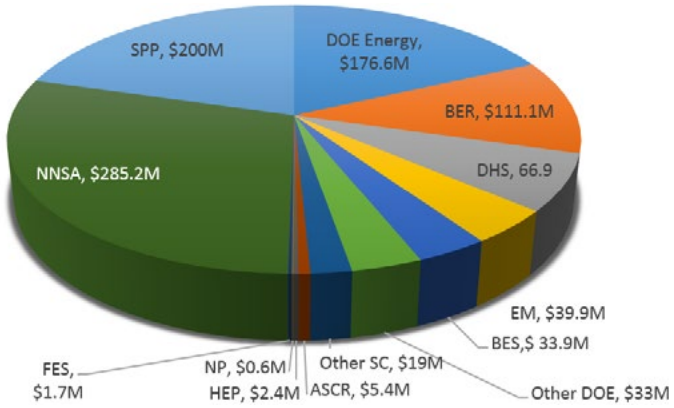
Pacific Northwest National Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

PNNL advances the frontiers of knowledge, taking on some of the world's greatest science and technology challenges. Distinctive strengths in chemistry, earth sciences, and data analytics are the heart of its science mission, laying a foundation for innovations that improve America's energy resiliency and enhance our national security.

PNNL is a national lab with Pacific Northwest roots and global reach. Whether unlocking the mysteries of the Earth system, helping modernize the U.S. electric power grid, or safeguarding ports around the world from nuclear smuggling, PNNL accepts great challenges for one purpose: to create a world that is safer, cleaner, more prosperous, and more secure.

FY 19 Funding by Source ($M)



FY 2019 Total Lab Operating Costs: $938.3M
FY 2019 Total DOE/NNSA Costs: $708.7M
FY 2019 SPP (Non-DOE/Non-DHS) Costs: $200M
FY 2019 SPP % of Total Laboratory Operating Costs: 21.3%
FY 2019 Total DHS Costs: $66.9M
FY 2019 EM-Related Costs:* $37.3M

** reflected in the total Lab Operating Costs*

Facts

Location: Richland, Washington
Type: Multiprogram laboratory
Director: Dr. Steven Ashby
Contract Operator: Battelle Memorial Institute
Responsible Site Office: Pacific Northwest Site Office
Website: http://www.pnnl.gov

Physical Assets

549 acres DOE; 232 acres Battelle (including 117 in Sequim, Washington)
76 total buildings and trailers of which 35 are DOE-owned
1,180,712 gross square feet (gsf) of DOE-owned, active operating buildings (35) with 23 infrastructure assets [other structures and facilities (OSFs)]
Replacement plant value (RPV): $934,315,000 (DOE buildings and OSFs, and leased buildings)
968,580 gsf in 30 leased buildings or third-party agreements
166,477 gsf in 11 Battelle buildings and 21 OSFs
2,315,769 gsf total buildings

Human Capital

4,301 Full-Time Equivalents (FTEs); Headcount ~4,700
150 Joint Appointments
287 Postdoctoral Researchers
398 Undergraduate Students
414 Graduate Students
1,557 Facility Users
71 Visiting Scientists

Core Capabilities

Advanced Computer Science, Visualization and Data
Applied Materials Science and Engineering
Applied Mathematics
Biological and Bioprocess Engineering
Biological Systems Science
Chemical and Molecular Science
Chemical Engineering
Climate Change Sciences and Atmospheric Science
Computational Science
Condensed Matter Physics and Materials Science
Cyber and Information Sciences
Decision Science and Analysis
Earth System Science and Engineering
Environmental Subsurface Science
Nuclear and Radiochemistry
Nuclear Engineering
Power Systems and Electrical Engineering
Systems Engineering and Integration
User Facilities and Advanced Instrumentation

Mission Unique Facilities

Atmospheric Radiation Measurement User Facility
Applied Process Engineering Laboratory
Bioproducts, Sciences, and Engineering Laboratory
Environmental Molecular Sciences Laboratory
Marine Sciences Laboratory
Radiochemical Processing Laboratory
Electricity Infrastructure Operations Center

www.pnnl.gov

Pacific Northwest NATIONAL LABORATORY

BACK TO TABLE OF CONTENTS

Princeton Plasma Physics Laboratory
At a Glance

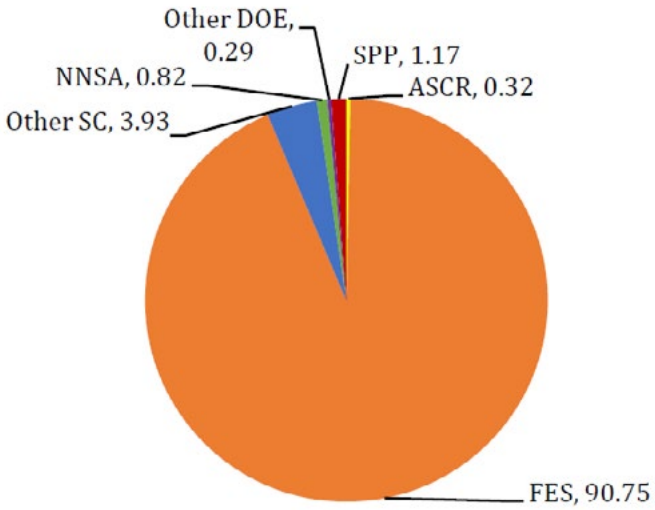
The U.S. Department of Energy's (DOE) Princeton Plasma Physics Laboratory (PPPL) is a collaborative, national center for fusion energy research. PPPL has two coupled missions: ***PPPL develops the scientific understanding of plasmas from nano- to astrophysical-scale and develops the scientific knowledge and advanced engineering to enable fusion to power the U.S. and the world.*** As a core part of Princeton University's culture, PPPL educates and inspires future generations to serve the national interest. PPPL's five core capabilities reflect its expertise and the role it plays in the DOE missions:

Core Capabilities

- Plasma and Fusion Energy Sciences
- Large-Scale User Facilities/Advanced Instrumentation
- Mechanical Design and Engineering
- Power Systems and Electrical Engineering
- Systems Engineering and Integration

PPPL has been managed by Princeton University, a world-class teaching and research university, since 1951. For more than seven decades, PPPL has been a world leader in magnetic confinement experiments, plasma science, fusion science, and engineering. PPPL is partnering in the ITER Project to prepare for U.S. participation in the first burning plasma. As the only DOE national laboratory dedicated to research in Fusion Energy Sciences, PPPL aspires to be the nation's premier design center for the realization and construction of future fusion concepts. The Laboratory contributes to the economic health and competitiveness of the U.S. by serving as a national leader in plasma theory and computation; plasma science; and technological innovation. Indeed, PPPL aims to drive the next wave of innovation in plasma technologies to maintain U.S. leadership in this critical area. PPPL is the leading institution exploring the science of magnetic fusion energy. At the end of FY 2018, PPPL's workforce was composed of 38 percent technical staff and 62 percent operations staff.

FY 19 Funding by Source ($M)



FY 2019 Total Lab Operating Costs: $97.28M
FY 2019 Total DOE Costs: $96.11M
FY 2019 SPP Costs: $1.17M
FY 2019 SPP % of Total Laboratory Operating Costs: 1.2%

Facts

Location: Princeton, NJ
Type: Single-program Laboratory
Director: Dr. Steven Cowley
Contract Operator: Princeton University
Responsible Field Office: Princeton Site Office
Website: *www.pppl.gov*

Physical Assets

90.7 acres and 30 buildings
758k GSF in Active Operational Buildings
Replacement Plant Value: $744.1M

Human Capital

531 Full-Time Equivalent Employees
7 Joint Faculty
36 Postdoctoral Researchers
45 Graduate Students
318 Facility Users
28 Visiting Scientists

Mission Unique Facilities

National Spherical Torus Experiment-Upgrade
Lithium Tokamak Experiment
Laboratory for Plasma Nanosynthesis Magnetic Reconnection Experiment
Facility for Laboratory Reconnection Experiment

www.pppl.gov

PPPL PRINCETON PLASMA PHYSICS LABORATORY

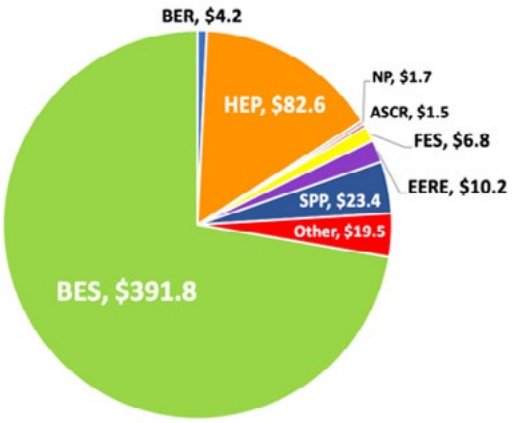
BACK TO TABLE OF CONTENTS

SLAC National Accelerator Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

Managed by Stanford University and located in Silicon Valley, SLAC is a vibrant multi-program laboratory whose mission is to explore how the universe works at the biggest, smallest, and fastest scales and invent powerful tools used by scientists around the globe. Since its founding in 1962, SLAC has made revolutionary discoveries that have established the laboratory's leadership in high energy physics. Today, SLAC is the world-leading laboratory in X-ray and ultrafast science due in large part to its X-ray user facilities: the Stanford Synchrotron Radiation Lightsource (SSRL) and the Linac Coherent Light Source (LCLS). Through diverse research programs in materials, chemical, biological, and energy sciences; high energy density science; cosmology; particle physics; bioimaging; and technology development, SLAC helps solve real-world problems and advances the interests of the nation.

FY 19 Funding by Source ($M)



Lab Operating Costs: $541.5M
DOE Costs: $518.1M
SPP (Non-DOE/Non-DHS) Costs: $23.0M
DHS Costs: $0.4M
SPP/DHS as percent Total Lab Operating Costs: 4.0%

Facts

Location: Menlo Park, California
Type: Multi-program Laboratory
Year Founded: 1962
Director: Dr. Chi-Chang Kao
Contractor: Stanford University
Responsible Site Office: Bay Area Site Office

Physical Assets

426.3 acres and 150 buildings
1.8M GSF in buildings
Replacement Plant Value: $3.1B
1,170 GSF in 1 excess facility
0 GSF in leased facilities

Human Capital

1,620 Full Time Equivalent Employees (FTEs)
22 Joint Faculty
227 Postdoctoral Researchers
121 Undergraduate Students
241 Graduate Students
2,608 Facility Users
22 Visiting Scientists

Core Capabilities

Large-Scale User Facilities/Advanced Instrumentation
Condensed Matter Physics and Materials Science
Chemical and Molecular Science
Accelerator Science and Technology
Plasma and Fusion Energy Science
Particle Physics
Emerging Core Capability in Advanced Computer Science, Visualization, and Data

Mission Unique Facilities

Linac Coherent Light Source (LCLS)
Ultrafast Electron Diffraction facility
Stanford Synchrotron Radiation Lightsource (SSRL)
Stanford-SLAC facility for cryo-electron microscopy
Facility for Advanced Accelerator Experimental Tests (FACET)
Leading the DOE contributions to the construction and operation of the Large Synoptic Survey Telescope (LSST)
Leading the joint DOE-NSF construction of the next-generation dark matter experiment SuperCDMS-SNOLAB

www.slac.stanford.edu

SLAC NATIONAL ACCELERATOR LABORATORY

BACK TO TABLE OF CONTENTS

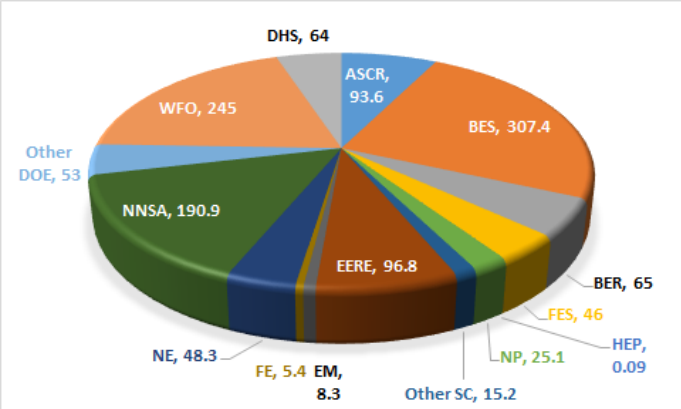
Sandia National Laboratories
At a Glance

Sandia grew out of the effort to develop the first atomic bombs. Today, maintaining the U.S. nuclear stockpile is a major part of Sandia's work as a multimission national security engineering laboratory. Sandia develops advanced technologies to ensure global peace. Its role has evolved to address the complex threats facing the United States through research and development in the following areas:

- Nuclear Deterrence – Supporting U.S. deterrence policy by ensuring the nation's nuclear stockpile is safe, secure, and effective
- Global Security – Protecting nuclear assets and materials, and addressing nuclear emergency response and nonproliferation worldwide
- National Security Programs – Supplying new capabilities to U.S. defense and national security communities
- Energy & Homeland Security – Ensuring the stable supply of energy and resources, and protection of infrastructure
- Advanced Science & Technology – Integrating multidisciplinary efforts to advance the science of the possible for Sandia's missions

Sandia's science, technology, and engineering foundations enable its unique mission. The Laboratories' highly specialized research staff is at the forefront of innovation, collaborating with universities and industry and performing multidisciplinary science and engineering research programs with significant impact on U.S. security.

FY 19 Funding by Source ($M)



FY 2019 Labs operating costs: $3,594M
FY 2019 NNSA operating costs: $2,230M
FY 2019 DOE operating costs: $247M
FY 2019 DHS costs: $45M
FY 2019 SPP Costs: $1,155M
FY 2019 SPP as % of total Labs operating costs: 32.1%

Facts

Location: Albuquerque, NM; Livermore, CA; Tonopah, NV; Amarillo, TX; Carlsbad, NM; Kauai, HI
Type: Multidisciplinary national security laboratory
Year Founded: 1949
Director: Dr. James S. Peery
Contractor: National Technology and Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International, Inc.
Responsible Site Office: Sandia Field Office
Website: www.sandia.gov

Physical Assets

196,192 acres and 1,001 buildings/trailers (all sites)
7,695,261 GSF in buildings and trailers
Replacement plant value: $16,397,460,863
42,063 GSF in 28 excess facilities
375,289 GSF in leased facilities

Human Capital

12,178 full-time employees
251 postdoctoral researchers
501 undergraduate students
429 graduate students

Core Capabilities

Cyber technology
High-reliability engineering
Micro and nano devices and systems
Modeling & simulation and experiment
Natural and engineered materials
Pathfinder engineered systems
Radiation-hardened, trusted microelectronics development/production
Systems engineering
Safety, risk, and vulnerability analysis
Sensors and sensing systems

Mission Unique Facilities

Z Machine
Combustion Research Facility
Microsystems Engineering, Sciences and Applications (MESA) complex

www.sandia.gov

Sandia National Laboratories

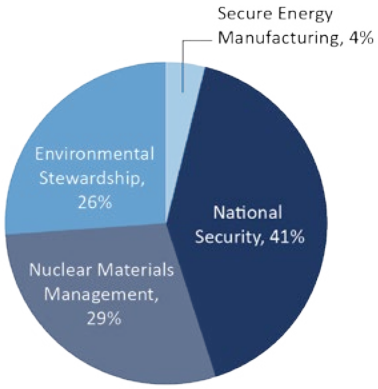
BACK TO TABLE OF CONTENTS

Savannah River National Laboratory
At a Glance

From the beginning, SRNL has put science to work to protect our nation. When it was established in the early 1950s, SRNL's primary focus was the startup and operation of the Savannah River Site (SRS), including its five reactors, to produce tritium and plutonium, basic materials for the United States nuclear weapons used to maintain the balance of power during the Cold War.

Today, SRNL protects our nation by supporting multiple United States federal agencies in providing practical, cost-effective solutions to nuclear materials management, national security, environmental stewardship, and energy security challenges. Building upon its pioneering work at SRS, SRNL now performs cutting edge scientific research and technology development in various fields to protect United States interests here and around the world.

FY 19 Funding



$261 million FY 2019 overall Program Budget
4% Secure Energy Manufacturing
41% National Security
29% Nuclear Materials Management
26% Environmental Stewardship

Facts

Location: Aiken, SC
Type: Multidiscipline
Year Founded: 1951
Director: Dr. Vahid Majidi
Contractor: Savannah River Nuclear Solutions
Responsible Site Office: Savannah River Site

Physical Assets

SRNL Main Technical Area ~ 39 Acres
Replacement Plant Value ~ $2.0B
Nuclear Hazard Category II and III Facilities
13 Nuclear Facilities with over 200,000 sq. ft. of radiologically controlled laboratory and process space, with 155 laboratories and 326 offices
Total Buildings, Trailers & Other Structures and Facilities ~ 829,800 sq. ft.
Leased facilities - 58,850 sq. ft.

Human Capital

1,000 employees – more than 500 Engineers and Scientists — more than 200 Ph.Ds. — 6 Postdocs — 50 student interns

Core Capabilities

Environmental Remediation and Risk Reduction
Tritium Processing, Storage and Transfer Systems
Nuclear Materials Processing and Disposition
Nuclear Materials Detection, Characterization and Assessment

Mission Unique Facilities

Shielded Cells Facility
Ultra-Low-Level Underground Counting Facility
Outfall Constructed Wetland Cell Facility
Radiological Testbed Facilities
FBI Radiological Evidence Examination Facility
Atmospheric Technology Center

www.srnl.doe.gov

Savannah River National Laboratory®
OPERATED BY SAVANNAH RIVER NUCLEAR SOLUTIONS

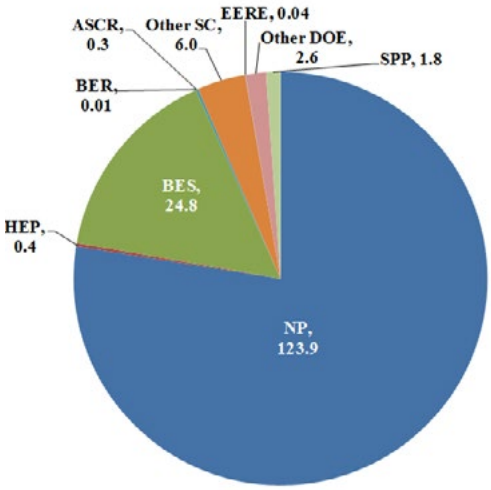
BACK TO TABLE OF CONTENTS

Thomas Jefferson National Accelerator Facility
At a Glance

U.S. DEPARTMENT OF ENERGY

TJNAF is the preeminent Laboratory in precision studies of the fundamental nature of confined states of quarks and gluons, including the protons and neutrons that make up the mass of the visible universe. The Laboratory is home to the Continuous Electron Beam Accelerator Facility, the first large-scale application of superconducting radiofrequency technology. TJNAF's expertise is enabling an ever-increasing array of applications in the international scientific community, from high-power lasers to advanced particle accelerators.

FY 18 Funding by Source ($M)



BES costs ($24.8M) reflect LCLS-II & LCLS-II HE work for SLAC

Lab operating costs: $159.9M
DOE costs: $158.1M
SPP costs (non-DOE/ non-DHS): $1.8M
DHS costs: $0M

Facts

Location: Newport News, Virginia
Type: Program-dedicated, Single-purpose Laboratory
Year Founded: 1984
Director: Dr. Stuart Henderson
Contractor: Jefferson Science Associates, LLC
Responsible Site Office: Thomas Jefferson Site Office

Physical Assets

169 acres and 69 buildings
882,900 GSF in buildings
Replacement plant value: $509M
0 GSF in excess facilities
66,289 GSF in leased facilities

Human Capital

714 full-time equivalent employees (FTEs)
24 joint faculty
30 postdoctoral researchers
33 undergraduate students
40 graduate students
1,691 facility users
1,552 visiting scientists

Core Capabilities

Accelerator Science and Technology
Large Scale User Facilities/ Advanced Instrumentation
Nuclear Physics

Mission Unique Facilities

Continuous Electron Beam Accelerator Facility

www.jlab.org

Jefferson Lab

BACK TO TABLE OF CONTENTS

THE NATIONAL LABORATORY DIRECTORS' COUNCIL

OCTOBER 15, 2020

The National Laboratory Directors' Council (NLDC)

The *National Laboratory Directors' Council (NLDC)* is a self-organized, self-governing body composed of the Laboratory Directors from the seventeen DOE National Laboratories (Table 1). The NLDC advances the effectiveness of the DOE National Laboratory Complex in addressing national needs and provides an interface to DOE on issues and concerns of common interest. The NLDC also provides a forum for presenting the Secretary and DOE senior management with consensus views on matters that affect the laboratories and their ability to contribute to the DOE mission. With its standing working groups, it represents the most senior operational and scientific leadership at the Laboratories and is thus a key mechanism for coordinating across the DOE laboratory complex on matters ranging from scientific directions to operational issues and requirements. In short, in DOE's diverse federated environment, the NLDC is a critical resource available to the Department's senior leadership to inform DOE strategy and policy.

1. Governance

A subset of NLDC members comprise an Executive Committee (EC) that organizes and coordinates the activities of the NLDC. The EC is comprised of four members who collectively represent DOE Mission areas: Science (SC), Energy (E), Nuclear Security (NS), and Environment (EM). The EC members are elected by the full membership to serve two-year terms. Energy and Environment are staggered with Science and Nuclear Security so that each year, two representatives are elected to the Committee. The full NLDC also elects one EC member to serve as Chair for a two-year term. The NLDC has a Secretariat who manages meetings and operations for the NLDC.

2. DOE Interactions

The NLDC holds four strategic retreats per year, two of which include face-to-face meetings with the Secretary in Washington, DC. Attendees may also include the Deputy Secretary, the Under Secretaries or their representatives and other functionaries (e.g., the General Counsel, CFO or Assistant Secretaries) depending on the agenda. The NLDC Secretariat works with DOE on the agendas and briefing materials. Meetings cover a broad range of topics from scientific strategies to operational issues. Over the past year, topics have included COVID-19 and increasing national laboratory response to future crises, technical horizon scanning, and diversity, equity and inclusion. The NLDC, working with DOE, is responsible for educating various stakeholders through events such as the periodic Lab Days on the Hill. The NLDC also sponsors The Oppenheimer Science and Energy Leadership Program (OSELP) intended to prepare the next generation of scientific leaders. The NLDC has also helped to identify and change policies that impact efficient operations at the Labs and review proposed policy changes through its representation in the Laboratory Operations Board, Cyber Security Council and the DOE Directives Review Board.

Overall, the value of the NLDC lies in its ability to provide guidance on how to integrate across the programs at DOE in order to allow the enterprise to be more than the sum of its parts.

3. Working Groups

To provide insights on specific issues and impacts, and to help work with the various DOE offices on policy implementation, the NLDC has eleven standing Working Groups that represent the spectrum of issues including research, operations, information technology, finance, legal, communications, federal relations, human capital, STEM and environmental health and safety. Similar to the NLDC, an Executive Committee that is representative of the seventeen Laboratories typically governs each working group with annual elections; the current leadership for each is summarized in Table 2. While the formal interface with DOE is through the NLDC, each working group has routine interactions with DOE counterparts to facilitate discussions and issues resolution. Additionally, two CROs and two COOs serve on the DOE Lab Operations Board which reports to the Secretary's Office of Strategic Planning and Policy.

a. The Chief Research Officers group (NLCRO) advises the NLDC on scientific and programmatic issues, serving as a forum for communication and providing leadership for major scientific activities related to the strategic direction for the laboratories. In the past year, the CRO group and their representatives facilitated the organization of national laboratory capabilities and resources to enable

BACK TO TABLE OF CONTENTS

rapid and coordinated responses to addressing the COVID-19 pandemic, served on the Space Coordination Group to provide critical input necessary to advance the nation's future space capabilities and played a pivotal role in the development of the *2020 NLDC Future Science & Technology Opportunities* report. The group has also contributed key input to the State of the National Laboratories report, DOE's Laboratories of the Future Initiative and provided feedback to DOE and the other NL working groups on strategic science and technology issues. Their primary interfaces in DOE are the principal deputies in the various research program offices.

b. The Chief Operations Officers group (NLCOO) advises the NLDC on issues and improvement opportunities related to the management and operation of the National Laboratory infrastructure. The NLCOO evaluates resource impacts of administrative and regulatory requirements to facilitate productive and cost-effective utilization of the DOE laboratory system; promotes practices based upon performance-based management; and shares best practices and lessons learned. The group has meet biweekly through the COVID-19 pandemic to coordinate planning and response activities across the lab complex including research and operations curtailment implementation plans, shared emerging COVID safety protocols (both preventive and in response to confirmed cases), and share best practices and lessons learned for conventional and COVID safety. In response to the pandemic, they led the formation of three working groups around systematic and safe resumption of lab operations and research, bio-screening strategy and family equity issues. They also provide key input to DOE, the NLDC, and other NL working groups on strategic operational issues affecting the lab complex.

c. The Chief Information Officers group (NLCIO) advises the NLDC on issues related to computing, information management and cybersecurity. They provide a forum for communication and coordination of the major activities in information technology, scientific computing, and cybersecurity throughout the National Laboratories. The NLCIO group shared best practices on planning and rapidly shifting to an all-remote work environment to address the COVID-19 pandemic. The NLCIO meets regularly with the DOE CIO, the NNSA CIO, and DOE-SC IT leadership to provide advice on benefits and impacts of Federal policy initiatives. They are closely aligned with the DOE Cyber Council and other councils to advise the Secretary, Undersecretaries and CIO on Department-wide IT Strategy and Policy.

d. The Chief Financial Officers group (NLCFO) advises the NLDC on business, financial and procurement issues and provides an interface to DOE-CFO and DOE-MA organizations in these areas. The Council also serves as a forum for information exchange, best practice sharing, consensus building, and coordination of major initiatives impacting the DOE contractor community in the business, financial and procurement arena. During the past year, the NLCFOs collaborated with DOE-CFO and MA to respond to a number of material and significant challenges presented by the COVID-19 global pandemic. This included developing the appropriate policies for tracking costs as well as ensuring adequate funding strategies were in place. In the regular order of business, the NLCFOs provide guidance and impact analysis on changes to financial and acquisition DOE Orders, Directives, and the CFO's Financial Management Handbook. The community collaborates on the Institutional Cost Report (ICR), a key financial report across the Lab system, providing insight and benchmarking into the cost of doing business.

e. The Chief Communications Officers working group (NLCCO) advises the National Laboratory Directors Council (NLDC) and interacts with Department of Energy communications and public affairs offices on relevant matters across the National Laboratory System (NLS). NLCCO functions include information exchange; consensus building; promotion of best practices and policies; coordination; counsel; and execution of communications-related activities identified by the NLDC, DOE, or NLCCO members for promotion of the scientific missions and value of the NLS. In the past year, the CCO group and their representatives led the communications programs highlighting ways the NLS is addressing the COVID-19 pandemic, and in partnership with the Office of Technology Transitions (OTT), led the facilitation of DOE's InnovationXLab series to expand the commercial impact of the substantial investment in the National Lab innovation portfolio.

f. The General Counsel group (NLGC) advises the NLDC on legal issues serving as a forum for communication and coordination of the major legal issues potentially impacting activities at the laboratories. In the past year, the GC group has meet regularly to share information and best practices around COVID-related issues. The group also invites subject matter experts from other legal areas (such as Employee and Labor Relations) to facilitate the sharing of information and knowledge across the complex. Their primary interface in DOE is with the DOE General Counsel or his representatives, along with the NNSA General Counsel and his representatives.

BACK TO TABLE OF CONTENTS

g. The Environment, Safety and Health Directors group (NLESHD) proactively advises the NLDC on ES&H issues that are common across the DOE Laboratory complex. The group reviews events and shares lessons learned, identifies best practices, recommends policy and regulatory interpretation and provides assistance in evaluating unique hazards and conditions as required. The group serves as a forum to identify the best subject matter experts across the complex on high priority ES&H topics so they can assist as the need arises.

h. The Chief Human Resources Officers group (NLCHRO) determines areas of mutual interest to the Labs, opportunities or critical complex wide issues that would benefit HR leadership and leverage strategic advantage of National Laboratories and by extension, to the benefit of DOE. The purpose of the group is to optimize their collective effectiveness in human capital and talent management across the complex and provide support to the NLDC and DOE in governance and on critical outcomes which will result in more consistent and efficient performance of human resources. Accomplishments include development and execution of recruiting strategies to showcase the National Laboratory Systems as a preferred employer, a joint effort to increase the diversity of staff across all National Laboratories and create an inclusive working environment for all employees.

i. The National Laboratory Technology Transfer (NLTT) provides counsel to the NLDC on technology transfer related matters of interest to the Laboratory Directors. The NLTT undertakes studies and activities as proposed and agreed to by the NLDC. Conclusions and recommendations are are submitted to the NLDC for approval or further guidance. In addition, the NLTT provides an interface to the DOE on department-wide efforts to increase the transition of technologies from the laboratory into commercial practice. Over the past year, the NLTT played a key role in the InnovationXLab Summit series, designed to expand the commercial impact of the investment in the national laboratories. NLTT also engaged with the department on technology transfer regulatory reform, contributing to the design and implementation of the Master Scope of Work which markedly increases the efficiency of partnership agreements. NLTT frequently works in close collaboration with the NLCRO on new and improved approaches to public-private partnerships that foster research as well as the subsequent transfer of the resulting technology to US industry.

j. The Federal Relations (NLFR) meets on an as-needed basis to share information and best practices on issues of mutual interest. Additionally, the NLFR supports the NLDC in execution of Lab Day congressional engagement and messaging. In connection with every national lab day, the NLFR has planned, hosted, and executed ancillary educational staff briefings, one on one meetings, and meet and greets with Members of Congress. These activities have included meetings for teams of Lab Directors with over eighty Members of Congress or staff representing thirty-seven states in connection with Lab day activities.

k. The Laboratory Education Directors' Executive Council (NLED) was established in September 2020 to coordinate cross-complex STEM education activities that advance STEM outreach, K-12, university and workforce development programming related to the DOE lab missions with the goal of achieving inclusion, equity and diversity within the laboratory complex. The NLED established a working group in response to a recommendation by the Secretary of Energy Advisory Board around the development of a portal for lab educational resources.

TABLE 1: LABORATORIES AND DIRECTORS (AS OF OCTOBER 2020)

DOE LABORATORY CONTRACTOR	DIRECTOR EMAIL	NLDC ROLE
Ames Laboratory Iowa State University of Science & Technology	**Adam Schwartz** ajschwartz@ameslab.gov	**NLDC Executive Committee (SC)**
Argonne National Laboratory (ANL) UChicago Argonne, LLC	**Paul Kearns** pkearns@anl.gov	**NLDC Executive Committee (SC), Chair**
Brookhaven National Laboratory (BNL) Brookhaven Science Associates	**Doon Gibbs** gibbs@bnl.gov	
Lawrence Berkeley National Laboratory (LBNL) University of California	**Michael Witherell** mswitherell@lbl.gov	
Fermi National Accelerator Laboratory (FNAL) Fermi Research Alliance, LLC	**Nigel Lockyer** lockyer@fnal.gov	
Idaho National Laboratory (INL) Battelle Energy Alliance, LLC	**Mark Peters** mark.peters@inl.gov	
Los Alamos National Laboratory (LANL) Triad National Security, LLC	**Thom Mason** masont@lanl.gov	**NLDC Executive Committee (NNSA)**
Lawrence Livermore National Laboratory (LLNL) Lawrence Livermore National Security, LLC	**William (Bill) Goldstein** goldstein3@llnl.gov	
National Energy Technology Laboratory (NETL) Government-owned, government-operated	**Brian Anderson** brian.anderson@netl.doe.gov	
National Renewable Energy Laboratory (NREL) Alliance for Sustainable Energy, LLC	**Martin Keller** martin.keller@nrel.gov	**NLDC Executive Committee (ENERGY)**
Oak Ridge National Laboratory (ORNL) UT-Battelle, LLC	**Thomas Zacharia** zachariat@ornl.gov	
Pacific Northwest National Laboratory (PNNL) Battelle Memorial Institute	**Steven Ashby** sfashby@pnnl.gov	
Princeton Plasma Physics Laboratory (PPPL) Princeton University	**Steve Cowley** scowley@pppl.gov	
Sandia National Laboratories (SNL) National Technology and Engineering Solutions of Sandia, LLC	**James Peery** jspeery@sandia.gov	
Savannah River National Laboratory (SRNL) Savannah River Nuclear Solutions, LLC	**Vahid Majidi** vahid.majidi@srnl.doe.gov	
SLAC National Accelerator Laboratory Stanford University	**Chi-Chang Kao** ckao@slac.stanford.edu	
Thomas Jefferson National Accelerator Facility (TJNAF) Jefferson Science Associates, LLC	**Stuart Henderson** stuart@jlab.org	
NLDC Secretariat	**Julie Wulf-Knoerzer** wulf@anl.gov	**NLDC Executive Committee Liaison**

TABLE 2: NLDC WORKING GROUP EXECUTIVE COMMITTEES (AS OF OCTOBER 2020)

WORKING GROUP	DIRECTOR
Chief Research Officer (NLCRO)	**Michelle Buchanan** buchananmv@ornl.gov
	Ralph James ralph.james@srnl.doe.gov
	John Sarrao, Chair-Elect sarrao@lanl.gov
	Horst Simon hdsimon@lbl.gov
	Marianne Walck, Ex Officio Chair marianne.walck@inl.gov
Chief Operations Officer (NLCOO)	**Michael Brandt, Chair** mtbrandt@lbl.gov
	Sharon Marra sharon.marra@srnl.doe.gov
	Mike Schlender mike.schlender@pnnl.gov
Chief Information Officer (NLCIO)	**Tom Schlagel, Chair** schlagel@bnl.gov
	Thomas Harper thomas.harper@pnnl.gov
	Robert Hillier robert.hillier@inl.gov
	Carol Jones pcjones@sandia.gov
	Andy Kowalski kowalski@jlab.org
	Kris Torgerson torgersonkl@ornl.gov
	Stephen Warren swwarren@lanl.gov
Chief Financial Officer (NLCFO)	**Owen Barwell, Chair** owen.barwell@nrel.gov
	Scott Branham branhams@ornl.gov
	Suzanne Hansen suzanned@slac.stanford.edu
	Tim Knewitz, tknewitz@anl.gov

WORKING GROUP	DIRECTOR
General Counsel (NLGC)	**Will Elias, Chair** wselias@sandia.gov
Chief Communications Officer (NLCCO)	**Lauren Hansen, Chair** lhansen@jlab.org
	Frederick Bermudez fbermud@sandia.gov
	Pete Genzer genzer@bnl.gov
	David Keim keimdm@ornl.gov
	Melinda Lee melinda.lee@slac.stanford.edu
	Lynda Seaver seaver1@llnl.gov
Environment Safety and Health Director (NLESHD)	**John Powell, Chair** powellje@ornl.gov
Chief Human Resources Officer (NLCHRO)	**Mark Holubar, Chair** mark.holubar@inl.gov
Technology Transfer (NLTT)	**Lee Cheatham, Chair** lee.cheatham@pnnl.gov
	Rich Rankin rankin8@llnl.gov
	Jason Stolworthy jason.stolworthy@inl.gov
Federal Relations (NLFR)	**Sarah Higgins, Chair** shiggins@anl.gov
	Josh Shiode, Vice Chair josh.shiode@pnnl.gov
Education Directors (NLED)	**Meridith Bruozas, Interim Chair** mbruozas@anl.gov

BACK TO TABLE OF CONTENTS

VALUE OF THE DOE NATIONAL LABORATORIES[1]

NATIONAL LABORATORY DIRECTORS' COUNCIL[2]

OCTOBER 15, 2020

BACK TO TABLE OF CONTENTS

Introduction

The U.S. Department of Energy (DOE) National Laboratories (see table 1) are the crown jewels of the nation's research and development (R&D) ecosystem. Forged during the Manhattan Project of World War II to counter the existential threat facing our country and allies, these initial research sites next pursued the peacetime uses of nuclear power, expanding into the National Laboratory complex we have today that continues to provide rapid advances in science and technology (S&T) aligned to pressing national and world-impacting needs. The seventeen National Laboratories function as an interdependent system with an exceptional set of distinctive capabilities, world-leading staff, and state-of-the art facilities and instrumentation. Together, they have produced a wealth of scientific discoveries and technology innovations in support of DOE's overarching mission of advancing the national, energy, and economic security of the United States,[3] garnering 118 Nobel Prizes and discovering 22 elements on the periodic table along the way. The National Laboratories steward vital scientific and engineering capabilities that are essential to our nation's continued science and technology leadership. Their global impacts include discovering and developing new materials and chemistry to advance energy technologies; advancing the field for synchrotrons, light and neutron sources, particle physics, and materials; helping to map the human genome; and developing passive remediation methods to clean contaminated groundwater while saving energy, time, and billions of dollars. In addition to mission support, these world-leading institutions stand ready to deliver rapid-response S&T to help address natural and man-made threats and disasters, including Fukushima, Deepwater Horizon, Hurricane Katrina, Superstorm Sandy, Puerto Rico earthquake, Ukrainian grid cyber-attack, and now Sars-CoV-2/COVID-19 — just as they have done for more than seven decades.

The National Laboratories design, build, and operate unique scientific instrumentation and facilities to serve tens of thousands of scientists and engineers from academia and industry who are collaborating to solve the most pressing and complex problems of our time. These facilities, which are found nowhere else in the world, support open scientific research as well as classified work. Researchers continually advance the laboratories' state-of-the-art capabilities through the development, deployment, and application of next-generation scientific tools and technologies. These capabilities enable researchers to make fundamental scientific discoveries, support our nation's energy future, and ensure national security. In addition, these capabilities are critical to industry in its development of new materials, improved manufacturing processes, and advanced product testing.

The National Laboratories promote innovation that advances U.S. economic competitiveness and contributes to our future prosperity. They partner with the private sector, especially industry, to integrate fundamental and applied pre-competitive research for the broad benefit of the economy. They contribute materially to U.S. economic prosperity by making key scientific discoveries, demonstrating the utility of these discoveries in early prototypes, and working with industry to move these technologies rapidly into the marketplace, thus creating high-paying jobs. The prowess of the National Laboratories is evidenced by their proven track record in technology transfer and commercialization. In short, the Labs have become key partners in many sectors to U.S. industry.

At the core of the National Laboratories is a first-rate workforce of research scientists, engineers, and support personnel who are entrusted to serve the American people. The National Laboratories embrace the responsibility to steward their people, and as such, they also play a critical role in the nation's science, technology, engineering, and mathematics (STEM) ecosystem. Indeed, as the largest funder of the physical sciences in the United States, steward of the nation's most powerful supercomputers, and with critical mission needs such as securing the nuclear weapons stockpile and developing new and sustainable energy and environmental solutions, the DOE has a vested need to develop talent. Separately and together, the National Laboratories invest in growing the nation's S&T workforce with on-the-job training to undergraduates, graduates, and postdoctoral researchers. Building a talent pipeline has proven to be an invaluable investment that sets the National Laboratories apart from other Federally Funded Research and Development Centers (FFRDCs), and is part of how these laboratories are able to maintain their innovative edge. In addition, DOE directly funds college programs, and individual National Laboratories fund K-12 STEM activities, many with a focus on schools in their local communities.

BACK TO TABLE OF CONTENTS

PART I: Mission and Impact

Today's system of National Laboratories has evolved in response to changing national priorities and needs. Nevertheless, the National Laboratories "remain among the most important institutions in American science and technology."[4] In 2018, Energy Secretary Dan Brouillette (then Deputy Secretary) stated, "Together, the national laboratories are greater than the sum of their parts, creating a world-class scientific complex of unparalleled capability."

DELIVERING SCIENTIFIC DISCOVERY AND INNOVATION

The scale and scope of the National Laboratories enable them to launch "big picture" multidisciplinary investments in large-scale and complex problems, with an emphasis on translating basic science to innovation. They collaborate extensively with universities and industry to develop and deploy scientific and technological solutions that meet national needs. While they emphasize long-term contributions, the National Laboratories are also capable of responding with agility to emerging crises. Specifically, these laboratories:

- Conduct research of the highest caliber in physical, chemical, biological, materials, and computational and information sciences that advances our understanding of the world around us;
- Further U.S. energy independence and leadership in clean energy technologies to ensure the ready availability of clean, reliable, and affordable energy;
- Enhance global, national, and homeland security by ensuring the safety and reliability of the U.S. nuclear deterrent, helping to prevent the proliferation of weapons of mass destruction, and securing the nation's borders; and
- Design, build, and operate distinctive scientific facilities and instrumentation, and make these resources available to the broader research community.

Discoveries and innovations from the National Laboratories have contributed to numerous achievements and improvements related to quality of life, economic competitiveness, and national security. Examples span a wide range of fields:

Fundamental science. National Laboratory researchers have answered fundamental questions about the laws of nature and the cosmos, with discoveries that include the detection of the neutrino, 22 new elements in the periodic table, and the accelerating expansion of the universe. As a result, National Laboratory scientists have won the Nobel Prize 118 times. National Laboratory scientists also publish more than 14,000 papers each year, with 456 designated as "highly cited" since 2019 according to the Web of Science Core Collection.

Sustainable energy. National Laboratories have led the way in the creation of technologies for sustainable energy production and conservation. They have led or contributed to the development of nuclear power, biofuels, thin-film batteries, wind energy technologies, geothermal energy, photovoltaics, electric vehicles, and more efficient windows and appliances that have yielded more than $388B in economic returns on a $12B investment.[5]

Supercomputers. National Laboratories drove the creation and evolution of supercomputing and its application to myriad problems. From the Univacs of the 1950s to the petascale supercomputers in operation today at DOE's Leadership Computing Facilities to emerging exascale and quantum computers, the National Laboratories have helped to maintain U.S. leadership in high-performance computing.

Radioisotopes. National Laboratories initiated large-scale isotope production in the 1940s and continue to provide leadership in nuclear medicine and in isotope development for fundamental science, medical applications, threat reduction, homeland security, industrial applications, and environmental science.

Accelerators. The National Laboratory system boasts a suite of particle accelerators used to study the origins of our universe, investigate the subatomic structure of the world around us, and advance research in medicine, environmental clean-up, and more. In addition, National Laboratory scientists are developing new compact laser plasma accelerators that in the future could transform accelerator-based science of all types and their underlying technologies, including high-repetition-rate lasers.

Biology. National Laboratories bring substantial strength in bioenergy production, carbon biosequestration, environmental contaminants processing, and computational and experimental platforms to generate and test hypotheses. Their approaches include new genomic technologies, computational and data science, advanced bioimaging, and new sensing technologies. This research creates a foundation for targeted manipulations of growth rates, biomass accumulation, resistance to stresses, and the accumulation of desired feedstocks for biofuels and bioproducts in fundamental biology to bioprocessing and bioengineering to address DOE mission needs.

BACK TO TABLE OF CONTENTS

Materials. The National Laboratories are creating a new generation of materials (including biological and bio-inspired materials) to underpin advances in energy generation, storage, transmission, efficiency, and security. Creating such materials requires a level of comprehension of the relationships between structure and function, and across many spatial and time scales, which is not yet fully supported by our understanding of the physical world. The National Laboratories have the expertise and unique facilities to be world leaders in this endeavor.

OPERATING UNIQUE SCIENTIFIC FACILITIES

The scientific facilities at the National Laboratories are operated as a resource for the broader national research community. Many are designated as "national user facilities" and made available at no charge to researchers doing nonproprietary work. In 2019, these facilities served about 40,000 users from academia, industry, and government laboratories, including users from all fifty states and the District of Columbia. Thus, much of the funding provided to the National Laboratories for the operation of these facilities supports research conducted by users who are not DOE or National Laboratory employees, the majority from universities.

The capabilities across the National Laboratory system include advanced light sources, neutron sources, particle accelerators, supercomputers, high-power laser systems, biological characterization tools, high-resolution electron microscopy and imaging techniques, nanoscience laboratories, and test beds for new carbon-free energy concepts, additive manufacturing, energy storage, and energy efficiency in buildings.

These capabilities are housed in highly specialized facilities and run by highly trained technical staffs. Supporting both open scientific research and classified work, they continually advance the state-of-the-art, including through incorporation of artificial intelligence and machine learning techniques. No companies or universities in the United States or abroad have the resources to design, construct, and operate facilities on this scale—or to maintain the large, scientifically diverse research staff needed to support them.

SERVING THE NATIONAL INTEREST

While most of their work is supported by DOE, the National Laboratories represent a national resource for the entire federal government. Their roles in ensuring the safety, security, and reliability of the U.S. nuclear arsenal have provided them with unique capabilities for protecting the nation against high-consequence threats through the effective use of science, technology, and systems solutions. As a result, the National Laboratories have well-established roles in providing R&D support to agencies such as the Department of Homeland Security, the Department of Defense, and the Intelligence Community. The National Laboratories also work with the State Department and the International Atomic Energy Agency on nonproliferation, civilian nuclear power R&D, nuclear waste recycling, and scientific diplomacy.

The National Laboratories also bring their resources to bear on other problems of national importance. Their nuclear capabilities and infrastructure support the deep space missions of the National Aeronautics and Space Administration (NASA). Their expertise in developing and operating leading-edge computational resources has also helped support other federal agencies, including the National Science Foundation, the National Oceanic and Atmospheric Administration, and other agencies. Capabilities developed to support DOE's missions in bioenergy, climate, and the environment are applied to the needs of NASA, the National Institutes of Health, the U.S. Environmental Protection Agency, and the Food and Drug Administration. In each case, the federal agency leveraged the National Laboratories' unique expertise and capabilities rather than duplicating them at great expense.

Finally, the National Laboratories constitute a readily available technical response capability. Many of the agencies listed above have called upon the National Laboratories during national and international emergencies, such that DOE scientists and engineers played key roles in responding to the terrorist attacks on 9/11/2001, the 2009 Christmas Day airline bomb attempt, the BP Deepwater Horizon oil spill in 2010, and the nuclear accident at Fukushima in 2011. More recently, the 17 National Laboratories came together to form the National Virtual Biotechnology Laboratory in 2020, leveraging their deep expertise to address the challenges of the COVID-19 pandemic in areas such as supply chain shortages, the modeling of disease spread and community response, development of new testing protocols, and identification of potential drug candidates. In each of the events outlined above, when the U.S. Government needed immediate impartial technical advice, it turned to the National Laboratories, and these labs responded with technical staff on the ground within 24 hours. State and local governments also rely on National Laboratory scientists for technical advice, for example, to inform regulatory policies.

BACK TO TABLE OF CONTENTS

MOVING INNOVATION TO THE MARKETPLACE

The National Laboratories deploy capabilities, experts, and intellectual assets to companies, entrepreneurs, and other organizations through their Technology Transfer (T2) missions, helping overcome complex technical challenges, create cutting-edge products and services, achieve greater national security, increase our U.S. global competitiveness, and create cleaner environments to live in. T2 mechanisms include user facility agreements, the licensing of intellectual property (IP), Cooperative R&D Agreements, Strategic Partnerships Projects, and Agreements to Commercialize Technology.

These mechanisms enable the National Laboratories to build on their history of successfully working with industry to transfer technology to the marketplace. In addition to winning 38 of this year's annual R&D 100 awards from *R&D Magazine,* in 2020, the National Laboratories won 8 of the 14 awards for excellence in technology transfer presented by the Federal Laboratory Consortium for Technology Transfer.

The National Laboratories also foster economic development at local, state, and regional levels. Activities include development of science and technology parks, venture capital and assistance networks, entrepreneurial leave programs, technical assistance programs, and participation in economic development organizations.

The innovative spirit and entrepreneurial enthusiasm within the National Laboratories is further evidenced by the large number of patents and licensing agreements that they execute each year. National Laboratory scientists and engineers work closely with industry to ensure that these technology breakthroughs are commercialized. Over the decades, the laboratories have spun out thousands of technologies and hundreds of companies that have enhanced U.S. economic competitiveness and created high-quality jobs. Through partnerships with industry and knowledge sharing, the National Laboratories also enable and contribute to the creation and advancement of such industries as nuclear energy, semiconductors, medical imaging, and solar energy.

In summary, the National Laboratories are invaluable intellectual assets. They have repeatedly demonstrated the ability to anticipate national needs and have delivered high-quality solutions over more than seven decades. Collectively, the National Laboratories:

- Solve important problems in fundamental science, energy, and national security;
- Steward vital scientific and engineering capabilities that are essential to our nation's continued science and technology primacy in a rapidly changing world;
- Design, build, and operate unique scientific instrumentation and facilities that serve tens of thousands of scientists and engineers from academia and industry as they collaborate on solutions to pressing and complex problems; and
- Promote innovation that advances U.S. economic competitiveness and contributes to our future prosperity.

PART II: Stewardship and Management

The National Laboratories are stewarded by the U.S. Department of Energy on behalf of the nation. The underlying stewardship model, which dates to the Manhattan Project (and hence predates the DOE) has proven to be remarkably adaptable. One scholar cites this stewardship model as one of the contributing factors to the National Laboratories' ability to adapt over time to meet changing national needs, specifically with respect to their post-Cold War transition.[7]

IMPORTANCE OF THE GOVERNMENT-OWNED, CONTRACTOR-OPERATED MODEL

To put today's stewardship (and associated management) model in context, it is helpful to recall the early days of the Manhattan Project. Faced with the national imperative to develop an atomic bomb, the U.S. Government turned to academia and industry to quickly identify and organize the necessary scientific and engineering talent. Facilities were established at several locations, some near universities (to leverage talent) and others remote (for security purposes). Although the government originally intended to disband these efforts at the end of the war, it soon realized that the talent and resources it had amassed should be maintained in service of the nation. In the ensuing years, the number of National Laboratories increased, and it was necessary to put in place a more formal management structure. Over time, these facilities became Federally Funded R&D Centers (FFRDCs). They were owned by the government but managed by private contractors (typically academic, industrial, and/or not-for-profit entities).

This government-owned, contractor-operated (GOCO) management model affords maximum flexibility in the management and operation of the National Laboratories. It has held up remarkably well over time, as borne out by numerous studies.[8] In particular, the widely acclaimed quality of the National Laboratories' science and technology is often attributed to the GOCO model. Sixteen of the seventeen DOE National Laboratories

BACK TO TABLE OF CONTENTS

are government-owned and contractor-operated.[9] In this model, the government competitively awards a management and operations (M&O) contract to the private sector entity, whether a university, not-for-profit research institute, for-profit company, or some combination thereof. This approach allows the DOE to tap the best management talent in the country to operate the National Laboratories. Table 1 includes M&O contractors for each of the National Laboratories.

All sixteen of the GOCO National Laboratories have been designated as FFRDCs, as are many other entities, including Lincoln Labs, the Jet Propulsion Laboratory, and the Institute for Defense Analyses. FFRDCs maintain capabilities (staff, facilities, and equipment) deemed critical by the federal government and to which it wants assured access. The FFRDC designation codifies a special relationship between the entity and the federal government. In particular, it allows the government to utilize the expertise and resources of the FFRDC in a way that would be inappropriate for non-FFRDCs, including the sharing of information, joint planning, and directed work.

The GOCO model represents a partnership between the government and private sector. The private sector contractor is expected to bring best practices, especially in personnel and research management, to the National Laboratories. This model is most effective when DOE specifies the mission and high-level objectives (the "what") and grants the contractor freedom to determine the best means and methods to achieve them (the "how"). The DOE evaluates contractor performance annually; and superior performance is incented through a variety of mechanisms, including contract term extensions and contract extensions.

The GOCO model affords the government several benefits, including the flexibility needed to manage scientific institutions that must be able to recruit and retain world-class technical talent and adapt quickly to changing national research priorities and S&T advances. The consistent recognition of the National Laboratories as world-leading research institutions, with records of sustained scientific excellence and mission contributions, has often been attributed to these benefits. Similar observations about the quality of GOCO-managed FFRDCs outside of DOE (e.g., Lincoln Labs and the Jet Propulsion Lab) further strengthens the case for the GOCO model.

STEWARDING A WORLD-CLASS SCIENTIFIC AND ENGINEERING WORKFORCE

The National Laboratories collectively employ a world-class workforce of approximately 70,000 people, about half of whom are scientists and engineers, including a large number of PhD researchers. This uniquely talented, scientifically oriented workforce is dedicated to the service of the nation. These dedicated people, along with the unique scientific facilities and instrumentation they maintain and use, comprise an unparalleled intellectual asset that has consistently delivered innovative solutions to address some of the most complex problems for the American people.

Private sector personnel practices, including competitive pay and benefits, allow contractors to recruit and retain the best talent from around the world. The researchers who make up this workforce would otherwise work in academia or industry, thus depriving the nation of the talent needed to address significant S&T challenges. The quality of this workforce is further enhanced through a culture of performance accountability for managers and workers alike. For example, private sector practices employed by contractors regarding succession planning, incentive compensation, recognition, and employee performance management are particularly effective in encouraging collaborative and innovative outcomes. Other important workforce management practices are also maintained and addressed including retention, professional growth, career development, and individual performance management. At the same time, contractors promote a culture of "academic freedom" at the National Laboratories. This culture results in intellectual independence and autonomy that helps ensure that the government obtains unbiased technical advice.

The benefit of this contractor model for workforce management is the agility to reshape and refresh the National Laboratory workforce quickly in response to changing national priorities and fluctuating budgets. For example, the National Laboratories can respond to new opportunities or project terminations with aggressive hiring and/or targeted selective reductions in force. Additionally, private sector personnel practices facilitate flexible workforce acquisition and management including practices such as hiring bonuses, temporary employment arrangements, and work practices to accommodate individual needs. These private sector practices are more complicated and onerous to implement in the civil service. In short, the GOCO model efficiently deploys the right resources against the right priorities at the right time.

LEVERAGING PRIVATE-SECTOR BEST PRACTICES TO BENEFIT THE GOVERNMENT

Contractors who operate National Laboratories for DOE are selected for both their technical expertise and management excellence. As a group, they bring intellectual independence and a high degree of interdisciplinary capability needed to address complex scientific and technical challenges. They also exercise initiative and ingenuity in carrying out their work and have substantial autonomy to apply best private-sector management and business practices in their operations. Moreover, by employing several different contractors, DOE benefits from a diversity of approaches and competition of ideas.

Contractors can bring innovation and best practices from the private sector to day-to-day laboratory operations with greater ease than could the government. Federal practices are designed to evolve slowly over time to accommodate a broad range of interests. In this respect, the private sector is much more agile and creative. The use of alternative financing to modernize facilities and infrastructure is one example where the private sector was able to accomplish an objective with which the federal sector has struggled. Moreover, it was able to do so more quickly and at lesser expense. As a result, modern infrastructure to support federal needs was delivered sooner and at lower cost to the federal government.

National Laboratory contractors use governance practices, contractor oversight, and contractor assurance programs to give DOE confidence that the focus is on mission accomplishment and that appropriate performance standards are maintained. Contractor governance practices include structures that provide clear lines of authority and accountability, access to external expertise, and internal corporate staff and leaders for additional resources. The National Laboratories have defined and implemented transparent contractor assurance programs that enable the government to track and understand laboratory performance. Collaboratively, the National Laboratories and DOE are able to identify notable practices and needed improvements and, in this spirit of continuous improvement, drive efficiency in oversight activities and reduce the need for DOE oversight.

DELIVERING COST-EFFECTIVE R&D TO THE U.S. TAXPAYER

The National Laboratories strive to maximize research productivity, providing a natural incentive for effective and efficient management and operations. Funds conserved through reduced operating costs and management improvement initiatives enable increased research productivity and mission impact through the conduct of additional programmatic work and/or investment in new capabilities, including new staff.

DOE encourages efficiency through its performance evaluation plans. Specifically, DOE challenges National Laboratory management to develop innovative, novel, and cost-effective approaches to operations. An idea demonstrated at one laboratory is then suggested to others, ensuring the promulgation and adoption of best practices throughout the complex. Examples include: integrated management systems; electronic security measures in lieu of a larger protective force; and the leveraging of the corporate parent's buying power through discounts and negotiated agreements (such as travel discounts and software agreements).

The cost of doing business varies across the seventeen National Laboratories. In general, the smaller, single-program laboratories are slightly less expensive due to their simpler structure. Indirect costs are also difficult to compare since each contractor has its own system tailored to the unique characteristics of the laboratory being managed. Despite this diversity in business practices, there are some common attributes. Typically, the costs of benefits, space, utilities, and management are among those added to a researcher's salary. For most of DOE's National Laboratories, the price paid for these support activities is approximately two to three times the cost of a researcher's base salary.[10] (This factor of 2–3 is called the "labor multiplier," and it provides a basis for comparing fully burdened labor costs.)

Comparing the cost of doing business at the National Laboratories with non-DOE laboratories is challenging because of their notable differences. For example, the National Laboratories have major scientific facilities that exist nowhere else in the world and a mission that often requires high-hazard and/or high-security operations. Nevertheless, there are some parallels and conclusions that can be drawn. Consider first not-for-profit research institutes,[11] which have missions and cost-allocation structures that are similar to those of the DOE laboratories. An analysis shows that the labor multiplier averages 3.5,

which is substantially higher than the 2.8 average of the National Laboratories. This benchmark comparison demonstrates that the National Laboratories are cost effective when equivalent missions are considered.

Comparing the National Laboratories to universities is more difficult, but a similar conclusion is reached. Universities often lower their costs by employing students (as part of their education and training) and subsidizing faculty research time (by covering many fixed costs at the institutional level). Universities also charge substantially more overhead to non-labor costs than a DOE National Laboratory does,12 lowering the university's burdened labor rate but shifting more overhead cost to non-labor. Further, universities generally allocate their time

in percentages over a month, meaning that ancillary activities (which are charged to overhead at the National Laboratories) are effectively direct-charged to the sponsor. If all of this is normalized to the practices at a National Laboratory, one finds that the cost of performing research at a university does not differ that much from a National Laboratory's cost.

In short, DOE's National Laboratory contractors maximize the availability of funding for scientific programs through the use of effective cost management strategies for laboratory operations. The normalized benchmarks suggest that the cost for research performed at these world-class facilities is comparable to, and in some cases lower than, the cost at other major research institutions.

the public good and support the global community, the National Laboratories' expertise keeps our nation at the forefront of science and technology. Now, as our country—and the planet—face the multiple challenges of producing clean energy and water, mitigating and adapting to climate change, ensuring security, and enhancing human health, the National Laboratories offer the expertise, facilities, and capabilities that can assist us in finding urgently required solutions and in creating the new scientific knowledge essential for a sustainable future.

Summary

As Vannevar Bush wrote in his 1945 report, *Science: The Endless Frontier,* "Scientific progress is one essential key to our security as a nation, to our better health, to more jobs, to a higher standard of living, and to our cultural progress."[13] Bush's report led to the modern-day U.S. Department of Energy, whose National Laboratories

have been changing and improving the lives of millions of people for nearly 75 years. National Laboratory discoveries have spawned industries, saved lives, generated new products, fired the imagination, and helped to reveal the secrets of the universe. Rooted in the need to serve the public good and support the global community, the National Laboratories' expertise keeps our nation at the forefront of science and technology. Now, as our country—and the planet—face the multiple challenges of producing clean energy and water, mitigating and adapting to climate change, ensuring security, and enhancing human health, the National Laboratories offer the expertise, facilities, and capabilities that can assist us in finding urgently required solutions and in creating the new scientific knowledge essential for a sustainable future.

BACK TO TABLE OF CONTENTS

ENDNOTES

1 The present white paper borrows heavily from several previous National Laboratory Directors' Council (NLDC) documents, especially "The Future of the DOE National Laboratories" (2008, 2012) and "The Value of the DOE National Laboratory System" (2011). The paper also borrows from the NLDC document, "Future Science and Technology Opportunities" (May 2020).

2 The NLDC consists of the directors of all seventeen DOE National Labs.

3 See, for example, "75 Breakthroughs by America's National Laboratories," available at www.energy.gov/downloads/75-breakthroughs-americas-national-laboratories.

4 Peter J. Westwick, 2003, *The National Labs: Science in an American System, 1947–1974,* Harvard University Press, Cambridge, MA, p. 299.

5 U.S. DOE, Aggregate Economic Return on Investment in the U.S. DOE Office of Energy Efficiency and Renewable Energy, https://www.energy.gov/sites/prod/files/2017/11/f46/Aggregate%20ROI%20impact%20for%20EERE%20RD%20-%2010-31-17%20%28002%29%20-%2011-17%20%28optimized%29.pdf, 2017.

6 National Research Council, National Laboratories and Universities: Building New Ways to Work Together–Report of a Workshop, National Academies Press, Washington, D.C., 2005.

7 Peter J. Westwick, 2003, *The National Labs: Science in an American System, 1947–1974,* Harvard University Press, Cambridge, MA, p. 299.

8 These studies, which date to the early 1990s, generally affirm the value and benefits of the GOCO model but have raised concerns about the faithfulness of its implementation.

9 The sole exception is the National Energy Technology Laboratory, which is both government-owned and government-operated.

10 See "Overhead at the DOE National Laboratories," prepared by the National Laboratory Chief Financial Officers (2012), for a detailed discussion of laboratory overhead and cost comparisons; available at www.nationallabs.org.

11 Not-for-profit research institutes include Battelle Memorial Institute, Midwest Research Institute, Research Triangle Institute, Southern Research Institute, Southwest Research Institute, and SRI International.

12 Universities are required by OMB Circular A-21 to use a Modified Total Direct Cost (MTDC) overhead base, which allocates substantial amounts of overhead to non-labor-related costs.

13 Vannevar Bush, 1945, *Science The Endless Frontier: A Report to the President,* by V. Bush, Director of the Office of Scientific Research and Development, July. United States Government Printing Office, Washington; available at https://www.nsf.gov/od/lpa/nsf50/vbush1945.htm#summary.

Congressional and Intergovernmental Activities Overview

DOE activities fall within the jurisdiction of several congressional authorization committees and appropriations subcommittees. The Department's primary authorizing committees are: Senate Energy and Natural Resources; Senate Armed Services; House Science and Technology; House Armed Services; and the House Energy and Commerce. Each year the Secretary, Deputy Secretary, Under Secretaries, Assistant Secretaries, and other senior Departmental officials interact with congressional committees, starting with briefings and hearings on the President's Budget Request for the Department, and continuing with program and oversight hearings. Senior officials also interact with individual congressional members, and key staff on committees of jurisdiction and from States affected by DOE activities.

Within the Department, the Assistant Secretary for Congressional and Intergovernmental Affairs (CI) manages overall relations with Members of Congress and supports the Secretary as the chief strategic advisor on all congressional interactions. CI's Congressional Services and Information Team advances Departmental officials' interactions with congressional committees by managing written testimony as well as managing responses in writing to questions for the record (QFRs), which become part of the official hearing record. In preparation for hearings, CI also works with the Office of Public Affairs (PA) to develop oral testimony given before committees that discuss the Administration's proposed policies, budget, and other priorities.

CI also facilitates the confirmation process of all DOE Senate confirmed officials and notifies Congressional members and State officials of DOE announcements, initiatives, proposals, and grants which may affect their respective jurisdictions across the full range of DOE's energy, national security, environmental, and science and technology missions; and assures any appropriate follow-up is provided. Further, CI works with Departmental programs to ensure the Department provides a timely response to written inquiries from Congressional members and State elected officials.

The National Nuclear Security Administration (NNSA), in coordination with CI, also provides congressional liaison services for its programs. The Chief Financial Officer (CF), in coordination with CI, leads the Department's communication and coordination with the Energy and Water Development Appropriations Subcommittees, and CI coordinates with CF when engaging other appropriations subcommittees on an as needed basis.

CI also manages the Department's intergovernmental and external affairs relationships, including governors of the states and territories; sovereign tribal nations; locally elected officials; community organizations; trade associations; educational institutions; and stakeholder groups with interests in DOE activities. The Department has a physical presence in 30 states and many of these engagements focus on the 12 states where multiple ongoing DOE missions are executed. These efforts are also supported through a network of Program Office staff in Headquarters and field locations that maintain regular engagements with state and local elected officials; community organizations; and stakeholder groups with interests in DOE activities.

The following is a listing of the current congressional leadership, congressional committees of jurisdiction, and select intergovernmental organizations.

Congressional Leadership
116th Congress (2019-21)

Senate

- **Republican Leadership**
  - Majority Leader Mitch McConnell (KY)
  - Majority Whip John Thune (SD)
- **Democratic Leadership**
  - Minority Leader Chuck Schumer (NY)
  - Minority Whip Dick Durbin (IL)

BACK TO TABLE OF CONTENTS

< previous page | next page >

House of Representatives

- **Republican Leadership**
  - Minority Leader Kevin McCarthy (CA)
  - Minority Whip Steve Scalise (LA)
- **Democratic Leadership**
  - Speaker Nancy Pelosi (CA)
  - Majority Leader Steny Hoyer (MD)
  - Majority Whip James Clyburn (SC)

Senate Congressional Committees of Jurisdiction

116th Congress (2019-20)

Appropriations

- **Full Committee**
  - Chairman: Richard Shelby (R-AL)
  - Ranking: Patrick Leahy (D-VT)
- **Subcommittee: Energy & Water Development**
  - Chairman: Lamar Alexander (R-TN)
  - Ranking: Dianne Feinstein (D-CA)

General Jurisdiction: *Responsible for funding decisions and oversight of federal funds for all DOE programs, including NNSA.*

Armed Services

- **Full Committee**
  - Chairman: Jim Inhofe (R-OK)
  - Ranking: Jack Reed (D-RI)
- **Subcommittee: Strategic Forces**
  - Chairman: Deb Fischer (R-NE)
  - Ranking: Martin Heinrich (D-NM)

General Jurisdiction: *Authorizing of legislation and oversight of programs relating to nuclear weapons, nuclear non-proliferation, environmental management, and other defense or security related activities. DOE programs and offices include the National Nuclear Security Administration; Environmental Management; Legacy Management; Enterprise Assessments; and Environment, Health, Safety and Security.*

Energy and Natural Resources

- **Full Committee**
  - Chairman: Lisa Murkowski (R-AK)
  - Ranking: Joe Manchin (D-WV)
- **Subcommittee: Energy**
  - Chairman: Bill Cassidy (R-LA)
  - Ranking: Martin Heinrich (D-NM)

General Jurisdiction: *Authorizing of legislation and oversight of energy related research and development; DOE National Laboratories; government petroleum and fuel reserves; oil, gas and coal production and distribution; commercial nuclear and nuclear waste policy; energy emergency response; Federal energy conservation programs; climate change; energy development impacts on water resources; science; loan programs; and other national energy policy matters. Interest generally focuses on non-defense related matters, although jurisdiction may touch upon all matters under the purview of the Secretary of Energy.*

Other subcommittees with jurisdiction include National Parks, and Water and Power.

Environment and Public Works

- **Full Committee**
  - Chairman: Ron Johnson (R-WI)
  - Ranking: Gary Peters (D-MI)
- **Subcommittee: Investigations**
  - Chairman: Rob Portman (R-OH)
  - Ranking: Tom Carper (D-DE)

General Jurisdiction: *Oversight and investigation relating to all governmental agencies.*

Other subcommittees with jurisdiction include Federal Spending Oversight and Emergency Management, and Regulatory Affairs and Federal Management.

Homeland Security and Governmental Affairs

- **Full Committee**
  - Chairman: Ron Johnson (R-WI)
  - Ranking: Gary Peters (D-MI)

- **Subcommittee: Investigations**
  - Chairman: Rob Portman (R-OH)
  - Ranking: Tom Carper (D-DE)

  General Jurisdiction: *Oversight and investigation relating to all governmental agencies.*

Other subcommittees with jurisdiction include Federal Spending Oversight and Emergency Management, and Regulatory Affairs and Federal Management.

Other Senate Committees with DOE Interest

- **Intelligence**
- **Foreign Relations**
- **Indian Affairs**

House Congressional Committees of Jurisdiction

116th Congress (2019-20)

Appropriations

- **Full Committee**
  - Chairman: Nita Lowey (D-NY)
  - Ranking: Kay Granger (R-TX)
- **Subcommittee: Energy & Water Development**
  - Chairman: Marcy Kaptur (D-OH)
  - Ranking: Mike Simpson (R-ID)

  General Jurisdiction: *Responsible for funding decisions and oversight of federal funds for all DOE programs, including NNSA.*

Armed Services

- **Full Committee**
  - Chairman: Adam Smith (D-WA)
  - Ranking: Mac Thornberry (R-TX)
- **Subcommittee: Strategic Forces**
  - Chairman: Jim Cooper (D-TN)
  - Ranking: Michael Turner (R-OH)

  General Jurisdiction: *Authorizing of legislation and oversight of programs relating to nuclear weapons, nuclear non-proliferation, environmental management, and other defense or security related activities. DOE programs and offices include the National Nuclear Security Administration; Environmental Management; Legacy Management; Enterprise Assessments; and Environment, Health, Safety and Security.*

Energy and Commerce

- **Full Committee**
  - Chairman: Frank Pallone (D-NJ)
  - Ranking: Greg Walden (R-OR)
- **Subcommittee: Energy**
  - Chairman: Bobby Rush (D-IL)
  - Ranking: Fred Upton (R-MI)
- **Subcommittee: Environment & Climate Change**
  - Chairman: Paul Tonko (D-NY)
  - Ranking: John Shimkus (R-IL)
- **Subcommittee: Oversight & Investigations**
  - Chairman: Diana DeGette (D-CO)
  - Ranking: Brett Guthrie (R-KY)

  General Jurisdiction: *Authorizing of legislation and oversight of the general management of the Department of Energy and the activities of non-defense programs within the Department, national energy policy, conservation of energy resources, energy information generally, regulation of the domestic nuclear energy industry, and nuclear facilities.*

Science, Space, and Technology

- **Full Committee**
  - Chairman: Eddie Bernice Johnson (D-TX)
  - Ranking: Frank Lucas(R-OK)
- **Subcommittee: Investigations**
  - Chairman: Lizzie Fletcher (D-TX)
  - Ranking: Randy Weber (R-TX)
- **Subcommittee: Oversight**
  - Chairman: Bill Foster (D-IL)
  - Ranking: Ralph Norman (R-SC)

  General Jurisdiction: *Authorizing of legislation and oversight of all energy research, development, and demonstration activities; DOE laboratories; commercial application of energy technologies; loan programs; and scientific issues related to environmental policy, including climate change. The Committee exercises expansive oversight jurisdiction.*

Other subcommittees with jurisdiction include Environment, and Research and Technology.

Oversight and Government Reform

- **Full Committee**
  - Chairman: Carolyn Maloney (D-NY)
  - Ranking: James Comer (R-KY)

  General Jurisdiction: *Oversight and investigation relating to all governmental agencies.*

Natural Resources

- **Full Committee**
  - Chairman: Raul Grijalva (D-AZ)
  - Ranking: Rob Bishop (R-UT)
- **Subcommittee: Energy & Mineral Resources**
  - Chairman: Alan Lowenthal (D-CA)
  - Ranking: Paul Gosar (R-AZ)

  General Jurisdiction: *Authorizing of legislation and oversight of geothermal resources; conservation of U.S. uranium supply; rights of way over public lands for underground energy-related transportation; generation and marketing of electric power from federal water projects by power marketing authorities (PMAs); and Native American affairs.*

Other subcommittees with jurisdiction include Water, Power &Oceans, and Oversight and Investigations.

Other Senate Committees with DOE Interest

- **Intelligence**
- **Foreign Affairs**
- **Small Business**

Intergovernmental Organizations

- **"Big Seven"**
  - National Governors Association (NGA)
  - U.S. Conference of Mayors (USCM)
  - National Conference of State Legislatures (NCSL)
  - Council of State Governments
  - National League of Cities (NLC)
  - National Association of Counties (NACo)
  - International City/County Management Association
- **Other Intergovernmental Organizations**
  - Coalition of Northeastern Governors (CONEG)
  - Southern Governors Association
  - Western Governors Association (WGA)
  - National Congress of American Indians (NCAI)
- **Energy Specific Intergovernmental Organizations**
  - Energy Communities Alliance (ECA)
  - National Association of Regulatory Utility Commissioners (NARUC)
  - National Association of State Energy Officials (NASEO)
  - National Association of State Utility Consumer Advocates (NASUCA)
  - Southern States Energy Board (SSEB)

DOE Rulemaking

The Department of Energy (DOE) promulgates regulations essential to achieving its critical mission and to implementing major initiatives. Among other things, the Energy Policy and Conservation Act (EPCA) requires DOE to set appliance efficiency standards at levels that achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified for both consumer products and commercial equipment. These rulemakings are expected to save American consumers billions of dollars in energy costs. As demonstrated by the listing below, DOE has a demanding rulemaking schedule for the appliance program. In addition, DOE has rulemaking proceedings that cover a wide range of additional subjects including: (1) Federal buildings; (2) health, safety and security; (3) procurement and financial assistance; (4) loan guarantees; (5) electricity transmission and the grid; (6) the environment; and (7) nuclear issues, such as ensuring the safe and secure operation of DOE nuclear facilities.

The listing below shows those rulemakings that are projected to have action taken by January 20, 2021, as well as those rules with projected action dates after January 20, 2021. All final actions that DOE has published since January, 2018, through October 1, 2020, are also included.

Department of Energy Rulemaking Documents Published Since January 1, 2018
(through October 1, 2020)

Name	Current Stage	Action Date
Inflation Adjustment of Civil Monetary Penalties	Final Rule	01/11/2018
Human Reliability Program (1992-AA44)	Final Rule	04/26/2018
Energy Conservation Standards for Ceiling Fan Light Kits (1904-AC87)	Final Rule	05/16/2018
Small-Scale Natural Gas Exports (1901-AB43)	Final Rule	07/25/2018
Test Procedures for Central Air Conditioners and Heat Pumps (1904-AD71)	Lifting of Administrative Stay	08/13/2018
Test Procedures for Integrated Light-Emitting Diode Lamps (1904-AD74)	Final Rule	09/21/2018
Eliminating End Use Reporting Provision in Authorizations for the Export of Liquefied Natural Gas	Policy Statement	12/19/2018
Nuclear Classification and Declassification (1992-AA49)	Final Rule	12/21/2018
Inflation Adjustment of Civil Monetary Penalties	Final Rule	12/26/2018
Energy Conservation Standards for Certain External Power Supplies (1904-AE23)	Final Rule	01/29/2019
Energy Conservation Standards for Residential Furnace Fans; Correction (1904-AC22)	Final Rule; Correcting Amendments	02/07/2019
Administrative Updates to Personnel References, Office of Electricity (1901-AB49)	Final Rule	02/21/2019
Test Procedures for Cooking Products and Test Procedures for Portable Air Conditioners (1904-AC71; 1904-AD22)	Final Rule; Correcting Amendments	02/21/2019
Energy Conservation Standards for Ceiling Fan Light Kits (1904-AC87)	Final Rule; Correcting Amendments	03/08/2019
SPR Standard Sales Provisions (1901-AB29)	Final Rule	03/12/2019
Cost Sharing: Energy Policy Act of 2005 (1991-AC13)	Final Rule	04/01/2019
Revisions to the DOE Contractor Employee Protection Program (1903-AA09)	Final Rule	08/02/2019
Inclusion of Early Stage Technology Demonstration in Authorized Technology Transfer Activities (1991-AC-14)	Final Rule; Technical Amendments	08/27/2019
Definition for General Service Lamps (1904-AE26)	Final Rule; Withdrawal of Final Rules Published on 01/19/17	09/05/2019
Revisions to the Office of Hearings and Appeals Procedural Regulations (1903-AA10)	Final Rule	10/30/2019

(Continued on next page)

BACK TO TABLE OF CONTENTS

(Continued from previous page)

Department of Energy Rulemaking Documents Published Since January 1, 2018 (through October 1, 2020)		
Name	**Current Stage**	**Action Date**
Elemental Mercury Management and Storage Fees (1903-AA11)	Final Rule	12/23/2019
Energy Conservation Standards for General Service Incandescent Lamps (1904-AE76)	Final Rule	12/27/2019
Inflation Adjustment of Civil Monetary Penalties	Final Rule	01/08/2020
Energy Conservation Standards for Commercial Packaged Boilers (1904-AD01)	Final Rule	01/10/2020
Energy Conservation Standards for Air Compressors (1904-AC83)	Final Rule	01/10/2020
Energy Conservation Standards for Uninterruptible Power Supplies (1904-AD69)	Final Rule	01/10/2020
Energy Conservation Standards for Portable Air Conditioners (1904-AD02)	Final Rule	01/10/2020
Energy Conservation Standards (RINS 1904-AD01, 1904-AD02, 1904-AC83 and 1904-AD69)	Final Action; Implementation of Court Order	01/10/2020
Energy Conservation Standards for Uninterruptible Power Supplies; Correction (1904-AD69)	Final Rule; Correcting Amendments	01/21/2020
Administrative Updates to Personnel References (1901-AB50)	Final Rule	01/21/2020
Procedures for Use In New or Revised Energy Conservation Standards and Test Procedures for Consumer Products and Commercial/Industrial Equipment (1904-AD38)	Final Rule	02/14/2020
Critical Electric Infrastructure Information: New Administrative Procedures (1901-AB44)	Final Rule	03/16/2020
Test Procedures for Portable Air Conditioners; Correction (1904-AD22)	Final Rule; Correcting Amendments	03/16/2020
Materials Allocation and Priority Performance Under Contracts or Orders to Maximize Domestic Energy Supplies and Energy Priorities and Allocations System; Administrative Updates to Personnel References (1901-AB52)	Final Rule	05/27/2020
Financial Assistance Regulations-Deviation Authority (1991-AC15)	Final Rule	06/01/2020
Test Procedures for Cooking Products (1904-AE36)	Final Rule	08/18/2020
Procedures for Evaluating Statutory Factors for Use in New or Revised Energy Conservation Standards (1904-AE84)	Final Rule	08/19/2020
Extending Natural Gas Export Authorizations to Non-Free Trade Agreement Countries Through the Year 2050	Policy Statement	08/25/2020
Test Procedure for Fluorescent Lamp Ballasts (1904-AD67)	Final Rule	09/14/2020

Department of Energy Rulemakings with Action Expected after January 1, 2020 through January 20, 2021 (Based on Fall 2020 Government-wide Agenda of Federal Regulatory and De-Regulatory Actions)			
Category	**Name**	**Current Stage**	**Action Date**
Energy Efficiency Appliance Rulemakings	Test Procedures for Traffic Signal Modules and Pedestrian Modules (1904-AC73)	RFI	11/00/2020
	Energy Conservation Standards for Residential Conventional Cooking Products (1904-AD15)	SNPRM	11/00/2020
	Energy Conservation Standards for Commercial Water Heating Equipment (1904-AD34)	SNPRM/ Proposed Determination	11/00/2020
	Test Procedure for Residential Clothes Dryers (1904-AD46)	Final Action	11/00/2020
	Energy Conservation Standards for Pool Heaters (1904-AD49)	NPRM/ Proposed Determination	11/00/2020

(Continued on next page)

BACK TO TABLE OF CONTENTS

(Continued from previous page)

Department of Energy Rulemakings with Action Expected after January 1, 2020 through January 20, 2021 (Based on Fall 2020 Government-wide Agenda of Federal Regulatory and De-Regulatory Actions)			
Category	**Name**	**Current Stage**	**Action Date**
	Energy Conservation Standards for Fluorescent Lamp Ballast (1904-AD51)	Final Action	11/00/2020
	Test Procedures for Fluorescent Lamp Ballasts (1904-AD67)	Final Action	11/00/2020
	Test Procedures for Walk-In Coolers and Walk-In Freezers (1904-AD78)	RFI	11/00/2020
	Test Procedures for Walk-In Coolers and Walk-In Freezers (1904-AD78)	RFI	11/00/2020
	Energy Conservation Standards for Walk-In Coolers and Freezers (1904-AD79)	RFI	11/00/2020
	Test Procedures for Automatic Commercial Ice Makers (1904-AD81)	NPRM	11/00/2020
	Energy Conservation Standards for Commercial Refrigeration Equipment (1904-AD82)	RFI	11/00/2020
	Test Procedures for Commercial Refrigeration Equipment (1904-AD83)	RFI	11/00/2020
	Test Procedure for General Service Fluorescent Lamps, General Service Incandescent Lamps, and Incandescent Reflector Lamps (1904-AD85)	NPRM	11/00/2020
	Energy Conservation Standards for Commercial Unfired Hot Water Storage Tanks (1904-AD90)	ANPRM/ Proposed Determination	11/00/2020
	Test Procedures for Commercial Unitary Air Conditioning and Heating Equipment (1904-AD93)	NPRM/ Proposed Determination	11/00/2020
	Test Procedure for Dishwashers (1904-AD96)	NPRM/ Proposed Determination	11/00/2020
	Energy Conservation Standards for Consumer Clothes Washers (1904-AD98)	ANPRM/ Proposed Determination	11/00/2020
	Energy Conservation Standards for Consumer Clothes Dryers (1904-AD99)	ANPRM/ Proposed Determination	11/00/2020
	Energy Conservation Standards for Microwave Ovens (1904-AE00)	ANPRM/ Proposed Determination	11/00/2020
	Test Procedures for Microwave Ovens (1904-AE01)	Final Action	11/00/2020
	Test Procedures for Water Closets and Urinals (1904-AE03)	NPRM	11/00/2020
	Test Procedures for Furnace Fans (1904-AE15)	RFI	11/00/2020
	Test Procedure for Metal Halide Lamp Fixtures (1904-AE17)	NPRM	11/00/2020
	Test Procedure for Three-Phase Commercial Air-Cooled Air Conditioners and Heat Pumps Less Than 65,000 Btu/h (1904-AE06)	NPRM	11/00/2020
	Energy Conservation Standards for Water-Cooled and Evaporatively-Cooled Commercial Package Air Conditioners (1904-AE07)	ANPRM/ Proposed Determination	11/00/2020
	Test Procedures for Small Electric Motors and Other Electric Motors (1904-AE18)	Final Action	11/00/2020
	Test Procedures for Distribution Transformers (1904-AE19)	RFI#2	11/00/2020
	Test Procedure Interim Waiver Process (1904-AE24)	Final Action	11/00/2020
	Amendments to the Test Procedure Waiver Process for Consumer Products and Commercial and Industrial Equipment (1904-AE25)	NPRM	11/00/2020
	Test Procedures for Direct Heating Equipment (1904-AE30)	NPRM	11/00/2020
	Test Procedures for Direct Heating Equipment (1904-AE31)	ANPRM/ Proposed Determination	11/00/2020
	Energy Conservation Standards for Residential Dishwashers (1904-AE32)	RFI	11/00/2020

(Continued on next page)

BACK TO TABLE OF CONTENTS

DOE CORPORATE OVERVIEW | *DOE Rulemaking*

< previous page | next page >

90

(Continued from previous page)

Department of Energy Rulemakings with Action Expected after January 1, 2020 through January 20, 2021 (Based on Fall 2020 Government-wide Agenda of Federal Regulatory and De-Regulatory Actions)			
Category	**Name**	**Current Stage**	**Action Date**
	Establishment of a New Product Class for Residential Dishwashers (1904-AE35)	Final Action	11/00/2020
	Test Procedures for Consumer Warm Air Furnaces (1904-AE37)	NPRM	11/00/2020
	Test Procedure and Labeling Requirements for Dedicated-Purpose Pool Pump Motors (1904-AE38)	NPRM	11/00/2020
	Energy Conservation Standards for Residential Furnaces and Commercial Water Heaters, Response to Petition for Rulemaking and Notice of Proposed Interpretive Rule (1904-AE39)	NPRM	11/00/2020
	Test Procedures for Variable Refrigerant Flow Multi-Split Air Conditioners and Heat Pumps (1904-AE43)	NPRM	11/00/2020
	Test Procedures for Computer Room Air Conditioners (1904-AE45)	NPRM	11/00/2020
	Test Procedures for Dedicated Outdoor Air Systems (1904-AE46)	NPRM	11/00/2020
	Energy Conservation Standards for Automatic Commercial Ice Makers (1904-AE47)	RFI	11/00/2020
	Energy Conservation Standards for Battery Chargers (1904-AE50)	RFI	11/00/2020
	Test Procedure for Ceiling Fan Light Kits (1904-AE51)	RFI	11/00/2020
	Energy Conservation Standards for Ceiling Fan Light Kits (1904-AE52)	RFI	11/00/2020
	Test Procedures for Commercial and Industrial Pumps (1904-AE53)	RFI; Early Assessment Review	11/00/2020
	Energy Conservation Standards for Commercial and Industrial Pumps (1904-AE54)	RFI; Early Assessment Review	11/00/2020
	Test Procedure for Dehumidifiers (1904-AE60)	RFI	11/00/2020
	Energy Conservation Standards for Dehumidifiers (1904-AE61)	RFI	11/00/2020
	Energy Conservation Standards for Furnace Fans (1904-AE64)	RFI	11/00/2020
	Energy Conservation Standards for Furnace Fans (1904-AE65)	RFI	11/00/2020
	Energy Conservation Standards for Packaged Terminal Air Conditioners/Heat Pumps (1904-AE66)	RFI	11/00/2020
	Test Procedures for Refrigerated Beverage Vending Machines (1904-AE67)	RFI	11/00/2020
	Energy Conservation Standards for Refrigerated Beverage Vending Machines (1904-AE73)	Response to Petition for Rulemaking	11/00/2020
	Test Procedures for Showerheads and Faucets (1904-AE75)	RFI	11/00/2020
	Response to Petition for Rulemaking: Test Procedure for Commercial and Industrial Fans (1904-AE88)	NPRM	11/00/2020
	Coverage Determination and Energy Conservation Standards for Commercial and Industrial Fans (1904-AE89)	Final Action	11/00/2020
	Certification and Compliance for Ceiling Fan Light Kits (1904-AE90)	NPRM	11/00/2020
	Test Procedures for Pool Heaters (1904-AE91)	RFI	11/00/2020
	Energy Conservation Standards for Ceiling Fans (1904-AE99)	RFI; Early Assessment Review	11/00/2020
	Energy Conservation Standards for Miscellaneous Residential Refrigeration (1904-AF00)	RFI; Early Assessment Review	11/00/2020
	Energy Conservation Standards for Certain Categories of Commercial Air Conditioning and Heating Equipment ASHRAE 90.1-2019 (1904-AF01)	NODA	11/00/2020
	Test Procedure for Walk-in Coolers and Walk-in Freezers (1904-AF02)	NPRM	11/00/2020

(Continued on next page)

BACK TO TABLE OF CONTENTS

(Continued from previous page)

Department of Energy Rulemakings with Action Expected after January 1, 2020 through January 20, 2021 (Based on Fall 2020 Government-wide Agenda of Federal Regulatory and De-Regulatory Actions)			
Category	**Name**	**Current Stage**	**Action Date**
	Test Procedure for Portable Air Conditioners (1904-AF03)	RFI; Early Assessment Review	11/00/2020
	Test Procedure for Light Emitting Diode Lamps (1904-AF10)	RFI; Early Assessment Review	11/00/2020
	Energy Conservation Standards for General Service Lamps (1904-AD09)	SNPRM	12/00/2020
	Energy Conservation Standards for Consumer Refrigerators, Refrigerator-Freezers, and Freezers (1904-AD80)	ANPRM/ Proposed Determination	12/00/2020
	Test Procedure for Single-Package Vertical Air Conditioners and Heat Pumps (1904-AD94)	NPRM	12/00/2020
	Energy Conservation Standards for Variable Refrigerant Flow Multi-Split Air Conditioners and Heat Pumps (1904-AE42)	NPRM	12/00/2020
	Showerhead Definition Rule (1904-AE85)	Final Action	12/00/2020
	Product Class Rule for Short-Cycle Clothes Washers and Clothes Dryers (1904-AE86)	Final Action	12/00/2020
	Certification and Compliance of White Goods (1904-AD26)	NPRM	01/00/2021
	Test Procedure for Ceiling Fans (1904-AD88)	SNPRM/Final Action	01/00/2021
Other Energy Efficiency Rulemakings	Energy Efficiency Standards for New Federal Commercial and Multi-Family High-Rise Residential Buildings Baseline Standards Update (1904-AE44)	Final Action	11/00/2020
	Clarifying Amendments to the Error Correction Rule (1904-AE87)	NPRM	11/00/2020
	Energy Efficiency Standards for Manufactured Housing (1904-AC11)	Supplemental NPRM	12/00/2020
Health, Safety, and Security Rulemakings	Workplace Substance Abuse Programs at DOE Sites (1992-AA53)	NPRM	11/00/2020
	Nuclear Safety Management (1992-AA57)	Final Action	11/00/2020
	Title 10 Code of Federal Regulations Part 1017, Identification and Protection of Unclassified Controlled Nuclear Information (1992-AA58)	NPRM	12/00/2020
National Nuclear Security Administration	Assistance to Foreign Atomic Energy Activities: Civil Penalties (1994-AA05)	Final Action	12/00/2020
Other	Update of DOE's NEPA's Regulations: Natural Gas Categorical Exclusion (1990-AA49)	Final Action	11/00/2020
	Procedures for the Issuance of Guidance Documents (1990-AA50)	Final Action	11/00/2020
	Executive Order 13920 "Securing the United States Bulk-Power System" (1901-AB53)	NPRM	11/00/2020
	Financial Assistance Regulations-Deviation Authority (1991-AC15)	Final Action	11/00/2020
	Amendments to the Regulation Governing Testimony of Agency Employees and Production of Agency Records and Information (1990-AA47)	NPRM	12/00/2020
	Revisions to DOE's NEPA Regulations (1990-AA48)	NPRM	12/00/2020

Notes: (1) The term "NPRM" means Notice of Proposed Rulemaking; (2) The term "SNPRM" means Supplemental Notice of Proposed Rulemaking; (3) The term "ANPRM" means Advanced Notice of Proposed Rulemaking; (4) The term RFI means Request for Information; (5) The term "NODA' means Notice of Data Availability.

BACK TO TABLE OF CONTENTS

Rulemakings with Action After January 20, 2021 (Based on Fall, 2020 Government-wide Agenda of Federal Regulatory and De-Regulatory Actions)			
Category	**Name**	**Current Stage**	**Action Date**
Energy Efficiency Appliance Rulemakings	Test Procedures for Dedicated-Purpose Pool Pumps (1904-AE96)	RFI; Early Assessment Review	01/00/2021
	Test Procedure for Compact Fluorescent Lamps (1904-AF07)	RFI; Early Assessment Review	01/00/2021
	Energy Conservation Standards for Small Electric Motors & Other Electric Motors (1904-AD29)	Final Action	02/00/2021
	Test Procedure for External Power Supplies (1904-AD86)	Final Action	02/00/2021
	Energy Conservation Standards for Consumer Water Heaters (1904-AD91)	ANPRM/ Proposed Determination	02/00/2021
	Energy Conservation Standards for Distribution Transformers (1904-AE12)	ANPRM/ Proposed Determination	02/00/2021
	Energy Conservation Standards for Consumer Boilers (1904-AE82)	RFI; Early Assessment Review	02/00/2021
	Test Procedures for Illuminated Exit Signs (1904-AC72)	NPRM	03/00/2021
	Test Procedures for Consumer Refrigerators, Refrigerator-Freezers, and Freezers (1904-AD84)	Final Action	03/00/2021
	Certification and Compliance for Various Heating and Cooling Consumer Products and Industrial Equipment (1904-AE10)	NPRM	03/00/2021
	Energy Conservation Standards for General Service Fluorescent Lamps and Incandescent Reflector Lamps (1904-AE40)	ANPRM	03/00/2021
	Test Procedures for Electric Motors (1904-AE62)	NPRM	03/00/2021
	Test Procedure for Certain Categories of General Service Lamps (1904-AF09)	RFI; Early Assessment Review	03/00/2021
	Test Procedures for Water-Source Commercial Heat Pumps (1904-AE05)	NPRM	04/00/2021
	Test Procedures for Commercial Pre-Rinse Spray Valves (1904-AE55)	NPRM	04/00/2021
	Enforcement Program for Consumer Products and Commercial and Industrial Equipment (1904-AE34)	Final Action	04/00/2021
	Energy Conservation Standards for Commercial Air-Cooled Unitary Air Conditioners and Heat Pumps, and Commercial Warm Air Furnaces (1904-AE59)	ANPRM/ Proposed Determination	04/00/2021
	Energy Conservation Standards for Five Exempt Lamp Types (1904-AE93)	NODA	04/00/2021
	Test Procedure for Commercial Water Heaters (1904-AF06)	RFI	04/00/2021
	Certification and Compliance for Water Products (1904-AE09)	NPRM	05/00/2021
	Test Procedure for Uninterruptible Power Supplies (1904-AF11)	RFI; Early Assessment Review	05/00/2021
	Test Procedure for Battery Chargers (1904-AE49)	NPRM	05/00/2021
	Test Procedures for Commercial Warm Air Furnaces (1904-AE57)	NPRM	05/00/2021
	Test Procedure for Consumer Water Heaters and Residential-Duty Commercial Water Heaters (1904-AE77)	NPRM	05/00/2021
	Test Procedure for Commercial Packaged Boilers (1904-AF05)	RFI; Early Assessment Review	05/00/2021

(Continued on next page)

BACK TO TABLE OF CONTENTS

(Continued from previous page)

Rulemakings with Action After January 20, 2021 (Based on Fall, 2020 Government-wide Agenda of Federal Regulatory and De-Regulatory Actions)			
Category	**Name**	**Current Stage**	**Action Date**
	Test Procedure for Air Compressors (1904-AF08)	RFI; Early Assessment Review	05/00/2021
	Energy Conservation Standards for Residential Non-Weatherized Gas Furnaces and Mobile Home Gas Furnaces (1904-AD20)	SNPRM	06/00/2021
	Test Procedure for Room Air Conditioners (1904-AD47)	Final Action	06/002021
	Test Procedure for Consumer Clothes Washers (1904-AD95)	NPRM	06/00/2021
	Certification and Compliance for Lighting and Electronics (1904-AE08)	NPRM	06/00/2021
	Energy Conservation Standards for Commercial Pre-Rinse Spray Valves (1904-AE56)	ANPRM	06/00/2021
	Energy Conservation Standards for Electric Motors (1904-AE63)	ANPRM	06/00/2021
	Test Procedure for Consumer Boilers (1904-AE83)	NPRM	06/00/2021
	Energy Conservation Standards for External Power Supplies (1904-AD87)	ANPRM	07/00/2021
	Test Procedures for Dedicated-Purpose Pool Pumps (1904-AE95)	RFI; Early Assessment Review	08/00/2021
	Energy Conservation Standards for Dedicated-Purpose Pool Pumps (1904-AE97)	RFI; Early Assessment Review	08/00/2021
	Energy Conservation Standards for Metal Halide Lamp Fixtures (1904-AD79)	Final Action	09/00/2021
	Energy Conservation Standards for General Service Fluorescent Lamps and Incandescent Reflector Lamps (1904-AE41)	ANPRM/ Proposed Determination	09/00/2021
	Energy Conservation Standards for Dedicated Outdoor Air Systems (1904-AD92)	NPRM	10/00/2021
	Energy Conservation Standards for Room Air Conditioners (1904-AD97)	ANPRM/ Proposed Determination	11/00/2021
	Energy Conservation Standards for Single Package Vertical Air Conditioners and Heat Pumps (1904-AE78)	ANPRM/ Proposed Determination	11/00/2021
	Energy Conservation Standards for Water-Sourced Commercial Heat Pumps (1904-AE74)	ANPRM	03/00/2022
	Energy Conservation Standards for Refrigerated Beverage Vending Machines (1904-AE68)	ANPRM/ Proposed Determination	04/00/2022
	Test Procedure for Televisions (1904-AD70)	NPRM	Undetermined
	Modifying the Energy Conservation Program to Implement a Market-Based Approach (1904-AE11)	Next Action Undetermined	Undetermined
Other	Assistance to Foreign Atomic Energy Activities (1904-AA04)	NPRM	02/00/2021
	Energy Savings Performance Contract Procedures and Methods (1904-AC49)	NPRM	02/00/2021
	Export of Previously Imported Liquefied Natural Gas (1901-AB51)	NPRM	03/00/2021
	Convention on Supplementary Compensation for Nuclear Damage Contingent Cost Allocation (1990-AA39)	SNPRM	09/00/2021
	Human Reliability Program (1992-AA44)	NPRM (Phase 2)	10/00/2021
	Safeguarding of Restricted Data and Formerly Restricted Data by Federal Employees and Contractors (1992-AA48)	NPRM	10/00/2021
	Procedures for the Export of Electricity (1901-AB35)	NPRM	10/00/2021

(Continued on next page)

BACK TO TABLE OF CONTENTS

(Continued from previous page)

Rulemakings with Action After January 20, 2021 (Based on Fall, 2020 Government-wide Agenda of Federal Regulatory and De-Regulatory Actions)			
Category	**Name**	**Current Stage**	**Action Date**
	Procedures for Permitting Electricity Transmission Facilities at International Boundaries (1901-AB47)	NPRM	10/00/2021
	Energy Efficiency Standards for the Design and Construction of New Federal Low-Rise Residential Buildings (1904-AF04)	Final Action	10/00/2021
	Elemental Mercury Management and Storage Fees (1903-AA12)	NPRM	11/00/2021
	Rescission of Obsolete Property Management Regulations (1991-AB73)	Final Action	11/00/2021
	Chronic Beryllium Disease Prevention Program (1992-AA39)	Final Action	12/00/2021
	Workplace Substance Abuse Programs at DOE Sites (1992-AA53)	NPRM	Undetermined
	Procedures for Determining Eligibility for Access to Classified Matter or Special Nuclear Material (1992-AA59)	NPRM	Undetermined
	Fossil Fuel-Generated Energy Consumption Reduction for New Federal Buildings and Major Renovations of Federal Buildings (1904-AB96)	Next Action Undetermined	Undetermined
	Sustainable Design Standards for New Federal Buildings and Major Renovations (1904-AD62)	Next Action Undetermined	Undetermined

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BACK TO TABLE OF CONTENTS

Pending Litigation

The Office of General Counsel provides comprehensive legal services to the Secretary, Deputy Secretary, and all Departmental elements, representing the Department as counsel before Federal, State, and other governmental agencies and courts. The following provides a summary list of significant matters currently in litigation involving the Department that are likely to continue into the next Presidential term.

1. State of Washington Consent Decree Negotiations

In State of Washington v. Brouillette and U.S. Department of Energy (E.D. Wash.), the parties are engaged in mediation regarding a September 4, 2019, letter from DOE informing the State there is a "serious risk" that certain milestones in the amended consent decree may not be met. This case involves an ongoing 2010 consent decree governing the construction and initial operations of the Waste Treatment Plant ("WTP") at the Hanford Site and the retrieval of mixed waste from 19 single-shell storage tanks at the site, which was entered into to resolve a complaint by the State of Washington against DOE under the Resource Conservation and Recovery Act ("RCRA") related to missed milestones under the Tri-Party Agreement ("TPA") that more broadly governs environmental remediation at the Hanford Site.

2. Washington State Workers' Compensation Act Challenge

United States v. State of Washington (9th Cir) is a case in which we continue to work with the Department of Justice in challenging the constitutionality of a Washington State workers' compensation law that is targeted exclusively at Hanford, and which we assert violates the doctrine of intergovernmental immunity under the Supremacy Clause because it discriminates against the Federal Government and those with whom it deals, and directly regulates the Federal Government.

3. Piketon Litigation

A series of four putative class action lawsuits have been filed, principally against several current and former DOE contractors at the Portsmouth Site for alleged property damage and, in some cases, personal injury, due to purported contamination from radioactive and hazardous materials. The fourth case in this series of lawsuits adds claims against individuals, including two former DOE officials in their individual capacities.

4. Los Alamos Hazardous Waste Case

Nuclear Watch New Mexico v. U.S. Department of Energy & Los Alamos National Security, LLC (D.N.M.), is an action in which the plaintiff Nuclear Watch New Mexico filed a complaint under the citizen suit provisions of the Resource Conservation and Recovery Act ("RCRA"), alleging that DOE and Los Alamos National Security, LLC ("LANS"), the operator of Los Alamos National Laboratory have failed to comply with various deadlines required by a 2005 Compliance Order on Consent entered into with the New Mexico state regulator. The district court has granted the Government's motion to dismiss the plaintiff's claims seeking declaratory and injunctive relief, but denied the motion to dismiss as to those claims seeking monetary penalties for alleged past violations.

5. Spent Nuclear Fuel Litigation

In accordance with the Nuclear Waste Policy Act, the Department entered into more than 68 Standard Contracts with utilities in which, in return for payment of fees into the Nuclear Waste Fund, the Department agreed to begin disposal of Spent Nuclear Fuel (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. A significant amount of litigation claiming damages for partial breach of contract ensued, and continues, as a result of this delay.

6. USEC Pension Case

United States Enrichment Corporation v. United States (Fed. Cl.). In this action, USEC filed a complaint alleging breach of contract for the failure to reimburse pension and postretirement benefits costs that USEC incurred performing work for DOE in the amount of $42,805,965 ($35.7 M for pensions and $7.1 M for PRBs).

BACK TO TABLE OF CONTENTS

7. General Service Incandescent Lamp (GSIL) and General Service Lamp (GSL) litigation

This case concerns the definitions of general service incandescent lamp (GSIL) and general service lamp (GSL) under the Energy Policy and Conservation Act (EPCA). Congress defined the terms in the statute and expressly excluded from their scope a number of specialty lighting applications and bulb shapes. On January 19, 2017, DOE issued two rules amending the definitions of these terms to expand the scope of lamps considered to be GSLs. On September 5, 2019, DOE published a withdrawal of the two 2017 regulations, which reverted the definitions of GSL and GSIL back to their statutory definitions, and in which DOE further explained that the 45 lumen-per-watt backstop has not been triggered. Lawsuits were filed challenging DOE's 2019 withdrawal rule. Those lawsuits are pending before the U.S. Court of Appeals for the Second Circuit.

8. Process Rule litigation

On February 14, 2020, DOE published a final rule in the Federal Register to modernize the so-called "Process Rule", the methodology and interpretations DOE applies in its administration of the Appliance Standards Program. The revised Process Rule was designed to increase transparency and consistency, with highlights including: setting a "significant energy savings" threshold, making the Process Rule provisions binding on DOE, establishing an early assessment process, and extending its scope to commercial equipment and test procedures. A number of state attorneys general and public interest groups filed Petitions for Review with the U.S. Court of Appeals for the Ninth Circuit on April 14, 2020, challenging the Process Rule final rule, and three industry trade associations subsequently filed a motion to intervene in support of the Department on May 14, 2020 (see Case No. 20-71068).

9. Boiler energy conservation standards litigation

On March 9 and 10, 2020, three parties filed suit in different Federal circuit courts of appeal challenging a final rule published by DOE on January 10, 2020, amending energy conservation standards applicable to commercial packaged boilers. The three suits were consolidated into one proceeding currently pending in the U.S. Court of Appeals for the D.C. Circuit. The challenges alleged both statutory issues, concerning the applicability of a statutory "clear and convincing evidence" standard to DOE's decision in this rulemaking, and record issues, alleging failings in DOE's analysis in support of the rule.

BACK TO TABLE OF CONTENTS


DEPARTMENT OF ENERGY
UNITED STATES OF AMERICA