DOE/CF-0113

Department of Energy

FY 2016 Congressional Budget Request

Budget in Brief

February 2015 Office of Chief Financial Officer

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OVERVIEW

The Department of Energy (DOE) is entrusted with critical responsibilities for America's security and prosperity:

- Sustaining the nuclear deterrent without testing; in an age of global terrorism, advancing the President's commitment to controlling and eliminating nuclear materials worldwide; supporting the Navy nuclear propulsion program

- Enabling the transition to a low-carbon secure energy future, especially by developing low-cost, all-of-the-above energy technologies and a 21st century resilient energy infrastructure;

- Providing the backbone for America's research community, especially in the physical sciences, as the foundation for discovery and innovation;

- Protecting public health and safety through a long term commitment to cleaning up the Cold War legacy from nuclear weapons production, and by developing and maintaining emergency response capabilities for nuclear and radiological incidents and energy infrastructure disruptions.

The seventeen DOE national laboratories are core scientific and technical assets for carrying out these missions.

DOE requests $29.9 billion for fiscal year (FY) 2016, an increase of $2.5 billion from the FY 2015 Enacted level.

The domestic energy revolution is one of the great success stories of this new century. The economy is growing at the fastest pace in eleven years, with sustained job creation, in part because of energy. DOE programs have contributed to this revolution through continued progress in our understanding of the scientific foundations of energy sciences and technology; clean energy technological innovation and advanced manufacturing research and demonstration; credit support for early commercial deployments; and new technologies and standards to enhance end use energy efficiency. Yet major opportunities and challenges remain for continued technological innovation that reduces cost and enhances performance, for educating and training the workforce for tomorrow's energy economy, and for modernizing our domestic energy infrastructure for the 21st century economy. The DOE FY 2016 Budget Request includes $10.7 billion, an increase of $1.3 billion from the FY 2015 Enacted level, to address these challenges. The strategic framework for the budget proposals is provided by the Administration's all-of-the-above energy strategy and the President's Climate Action Plan, as described further in the Department's Strategic Plan.

The Budget Request highlights new investments in energy infrastructure technology to improve the resilience of the electric grid and to reduce methane emissions from natural gas systems; supports state-level energy assurance planning; and funds maintenance of the Strategic Petroleum Reserve and other critical energy infrastructure. These efforts will be further delineated in the Quadrennial Energy Review to be released in early 2015. The Request also strengthens DOE's world-leading discovery research in the physical, chemical, biological, environmental, and computational sciences. The FY 2016 Budget Request also supports six crosscutting research initiatives, acknowledging that multi-disciplinary, cross-program activities are needed to adequately address our energy challenges. These enterprise-wide approaches to research efforts will produce more effective outcomes and broaden the potential for material impacts on our energy and security goals.

The FY 2016 Budget Request for nuclear security is $12.6 billion for the National Nuclear Security Administration (NNSA), an increase of $1.2 billion over the FY 2015 Enacted level, to maintain a safe, secure, and effective nuclear weapons stockpile in the absence of nuclear testing and manage the research, development, and production activities and associated infrastructure maintenance and modernization needed to meet national nuclear security requirements. The Request funds efforts to reduce the global threat posed by nuclear weapons, nuclear proliferation and unsecured or excess nuclear materials, and it supports activities that provide safe and effective propulsion for the U.S. nuclear Navy.

The FY 2016 Budget Request for Departmental management and performance activities is $6.5 billion. The largest portion of this Request is $5.8 billion to support the world's largest cleanup effort to remediate the environmental legacy of over six decades of nuclear weapons and nuclear research, development, and production. Management and Performance also includes funding to expand efforts to strengthen effective and cost-efficient management and mission support across the

Department. The Budget Request supports efforts to institutionalize enhanced program and project management, and invests in maintaining and upgrading world class research facilities and other mission-critical, departmental infrastructure.

SCIENCE AND ENERGY

The FY 2016 Budget Request for the Department of Energy's science and energy programs supports the President's all-of-the-above energy strategy to innovate across a diverse portfolio of clean energy technologies to enhance economic competitiveness and secure America's long-term energy security and infrastructure. The Request also continues to implement the President's Climate Action Plan (CAP) through the development and deployment of clean energy technologies that reduce carbon pollution. The $10.7 billion science and energy Budget Request, $1.3 billion above the FY 2015 Enacted level, sustains DOE's role as the largest federal sponsor of basic research in the physical sciences and develops and operates cutting-edge scientific user facilities at the National Laboratories to maintain the nation's primacy in science and innovation. The Request also supports transformational research and development (R&D) in critical technology areas, including advanced manufacturing, renewable energy, advanced transportation technology, energy efficiency, electricity grid technology modernization, advanced safe nuclear reactor technology, fossil energy technologies with carbon capture and storage, and cross-cutting R&D initiatives that have multiple energy resource areas of application. The Request also includes investments to address issues that will be further delineated in the first installment of the Quadrennial Energy Review, which includes a comprehensive analysis of the nation's transmission, storage, and distribution infrastructure. These investments include electricity grid technology modernization, emissions from natural gas systems, and the Strategic Petroleum Reserve infrastructure.

Strategic Goal

Advance foundational science, innovate energy technologies, and inform data-driven policies that enhance U.S. economic growth and job creation, energy security, and environmental quality, with emphasis on implementation of the President's Climate Action Plan to mitigate the risks of and enhance resilience against climate change.

	FY16 $
Supporting DOE Programs	***10.7B***
✓ Electricity Delivery and Energy Reliability	270M
✓ Energy Efficiency and Renewable Energy	2.72B
Sustainable Transportation	*793M*
Renewable Energy	*645M*
Energy Efficiency	*1.03B*
Crosscutting Programs	*255M*
✓ Fossil Energy	842M
✓ Indian Energy Policy and Programs	20M
✓ Nuclear Energy	908M
Subtotal, Applied Energy	*4.8B*
✓ Science	5.34B
✓ Advanced Research Projects Agency—Energy	325M
✓ Energy Information Administration	131M
✓ Energy Policy and Systems Analysis	35M
✓ International Affairs	24M
✓ Loan Programs	17M
✓ Power Marketing Administrations	82M

Within the $10.7 billion, the FY 2016 Budget requests $4.8 billion for applied energy activities, including:

- $2.72 billion for Energy Efficiency and Renewable Energy (EERE), $809 million above the FY 2015 Enacted level, to continue a diverse suite of sustained investment in sustainable transportation technologies ($793 million), renewable energy generation technologies ($645 million), and development of manufacturing technologies and enhanced energy efficiency in our homes, buildings and industries ($1.03 billion).

- $908 million for Nuclear Energy, $74 million above the FY 2015 Enacted level, for ongoing R&D in advanced reactor and fuel cycle technologies as well as small modular reactor licensing technical support. The Request also continues to lay the groundwork for full implementation of the Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High Level Radioactive Waste* released in January 2013, and it provides $99 million for research, development, and integrated waste management system activities in the areas of transportation, storage, disposal, and consent-based siting.

- $842 million for Fossil Energy including: $560 million for Fossil Energy Research and Development, essentially unchanged from the FY 2015 Enacted level, to advance carbon capture and storage and natural gas technologies; and $257 million for the Strategic Petroleum Reserve, $57 million above the FY 2015 Enacted level, to increase the system's durability and reliability and begin addressing the backlog of deferred maintenance.

- $270 million, $123 million above the FY 2015 Enacted level, for Electricity Delivery and Energy Reliability grid modernization activities to support a smart, resilient electric grid for the 21st century and fund critical emergency response and grid security capabilities, including grant programs to update energy assurance plans and a new effort to support state and multi-state electricity reliability. The Request also includes $52 million for R&D to strengthen energy infrastructure against cyber threats.

- $20 million for the Office of Indian Energy Policy and Programs, $4 million above the FY 2015 Enacted level, to support DOE's partnership with the Department of the Interior to address the need for clean, sustainable energy systems on Indian lands, and $11 million for a new Tribal Indian Energy Loan Guarantee Program.

The FY 2016 Budget requests $325 million for the Advanced Research Projects Agency-Energy (ARPA-E), $45 million above the FY 2015 Enacted level, to fund additional early-stage innovative programs as well as to exploit the technological opportunities developed in previous ARPA-E programs, leading to transformational energy technologies. The Request also supports DOE's continued oversight of more than $34 billion in loans, loan guarantees, and conditional commitments, as well as its administration of more than $40 billion in remaining loan and loan guarantee authority to finance projects in the areas of advanced nuclear energy, renewable energy and efficient energy, advanced fossil energy, and advanced technology vehicles manufacturing.

DOE's Office of Science is the largest federal sponsor of basic research in the physical sciences, supporting 22,000 researchers at 17 National Laboratories and more than 300 universities. Informed by the latest science advisory council reports and recommendations, the FY 2016 Budget Request provides $5.34 billion for Science, $272 million above the FY 2015 Enacted level, to continue to lead basic research in the physical sciences and develop and operate cutting-edge scientific user facilities while strengthening the connection between advances in fundamental science and technology innovation. The Science Budget Request includes:

- $1.85 billion for basic energy sciences, $116 million above the FY 2015 Enacted level, to provide the foundations for new energy technologies, to mitigate the environmental impacts of energy use, and to support DOE missions in energy, environment, and national security by understanding, predicting, and ultimately controlling matter and energy, including continued support for Energy Frontier Research Centers (EFRCs) and world-class user facilities.

- $788 million for high energy physics, $22 million above the FY 2015 Enacted level, to understand how the universe works at its most fundamental level by discovering the most elementary constituents of matter and energy, probing the interactions among them, and exploring the basic nature of space and time. The Request supports activities and projects based on the High Energy Physics Advisory Panel (HEPAP) May 2014 strategic plan, including design support for a reconfigured international Long Baseline Neutrino Facility hosted at Fermilab.

- $612 million for biological and environmental research, $20 million above the FY 2015 Enacted level, to support fundamental research and scientific user facilities to achieve a predictive understanding of complex biological, climatic, and environmental systems for a secure and sustainable energy future, including continued funding for three Bioenergy Research Centers (BRCs).

- $625 million, $29 million above the FY 2015 Enacted level, for nuclear physics research aiming to discover, explore, and understand nuclear matter in a variety of different forms, including continued construction of the Facility for Rare Isotope Beams (FRIB).

- $621 million, $80 million above the FY 2015 Enacted level, for advanced scientific computing research in advanced computation, applied mathematics, computer science and networking, as well as development and operation of high-performance computing facilities. Funding is included to accelerate development of capable exascale computing systems with a thousand-fold improvement in performance over current high-performance computers.

- $420 million for fusion energy sciences, $48 million below the FY 2015 Enacted level, to understand the behavior of matter at high temperatures and densities and to develop fusion as a future energy source, including funding for the U.S. contribution to the International Thermonuclear Experimental Reactor (ITER) project.

The FY 2016 Budget Request funds several essential support functions, including the Office of Energy Policy and Systems Analysis (EPSA) and Office of International Affairs. The Request includes $35 million to maintain a robust, comprehensive energy systems modeling and analysis function under EPSA, strengthening institutional support for: cross-cutting activities; integrated energy systems analysis, modeling, and visualization; and the Quadrennial Energy Review (QER). The initial installment of the QER will be released in early 2015, and subsequent work will review other elements of the Nation's energy systems. The FY 2016 Request also provides $24 million for the Office of International Affairs, which coordinates the Department's role in enabling clean energy technology collaborations in support of international energy policy objectives. The priority areas of engagement include advancing international collective energy security objectives with G-7 partners and other allies and friends; advancing the Administration's Power Africa Initiative; enhancing energy security and market integration in North America and the Western Hemisphere; and expanding the role of clean energy technologies to assist China and India in meeting global climate policy objectives.

NUCLEAR SECURITY

The President's 2010 National Security Strategy, the Nuclear Posture Review (NPR), and the ratification of the New Strategic Arms Reduction Treaty underscored the importance of the DOE's nuclear mission, and renewed the mandate for DOE to maintain a safe, secure, and effective stockpile for as long as nuclear weapons exist. DOE advances the President's vision to eliminate and secure nuclear material, reduce nuclear stockpiles, and increase global cooperation.

The FY 2016 Budget Request proposes $12.6 billion for the National Nuclear Security Administration, $1.2 billion above the FY 2015 Enacted level, to invest in our nuclear security by modernizing and maintaining our nuclear security enterprise, refurbishing and extending the life of our nuclear deterrent, reducing the threats of nuclear proliferation, and supporting the safe and reliable operation of our nuclear Navy. The Request fully funds Life Extension Programs as recommended by the Principals' Committee and endorsed in the FY 2015 Budget Request and invests in infrastructure across the enterprise.

Strategic Goal

Strengthen national security by maintaining and modernizing the nuclear stockpile and nuclear security infrastructure, reducing global nuclear threats, providing for nuclear propulsion, improving physical and cybersecurity, and strengthening key science, technology, and engineering capabilities.

Supporting DOE Programs	**FY16 $**
✓ Weapons Activities	8.8B
✓ Defense Nuclear Nonproliferation	1.9B
✓ Naval Reactors	1.4B
✓ Federal Salaries and Expenses	403M
Total, NNSA	*12.6B*

Highlights of the nuclear security Budget Request include:

- $8.8 billion for Weapons Activities, $667 million above the FY 2015 Enacted level, to maintain a credible and effective nuclear deterrent while continuing to reduce the size of the active stockpile. This funding supports the work, as laid out in the Stockpile Stewardship and Management Plan, of the science-based Stockpile Stewardship Program to ensure a safe, secure and effective nuclear stockpile in the absence of underground nuclear testing through a sustained, long-term research program. The Request supports execution of the Nuclear Weapons Council-approved "3+2" strategy to consolidate the stockpile to three ballistic missile warheads and two air delivered systems, reducing the number of weapons in the deployed stockpile and simplifying maintenance requirements. As part of that strategy, the Request continues timely execution of approved Life Extension Programs (LEPs), including the W76 LEP, the B61 LEP, the W88 Alt 370, and the feasibility study and option down-select of the W80-4 LEP. To maintain the current level of operations and the technology critical to maintaining a domestic capability to enrich uranium and tritium for long-term nuclear security requirements, the Request provides $100 million for Domestic Uranium Enrichment and associated research, development, and demonstration. The Request supports execution of a plutonium strategy that achieves 30 pit per year capacity by 2026 and a new uranium strategy to ensure the long term viability of uranium manufacturing capabilities and processes. Funding is also provided for Defense Nuclear Security to support DOE's physical security reform efforts to emphasize mission performance, responsibility, and accountability.

- $1.9 billion for Defense Nuclear Nonproliferation, $325 million above the FY 2015 Enacted level, to continue the critical missions of securing or eliminating nuclear and radiological materials worldwide, countering illicit trafficking of these materials, preventing the proliferation of nuclear weapon technologies and expertise, and ensuring that the U.S. remains ready to respond to high consequence nuclear and radiological incidents at home or abroad, and applying

technical and policy solutions to solve nonproliferation and arms control challenges around the world. The Request includes $345 million for the Mixed Oxide Fuel Fabrication Facility (MFFF), which is the current services projection from the FY 2015 Enacted level. As directed by the FY 2015 National Defense Authorization Act and the Consolidated and Further Continuing Appropriations Act, 2015, analyses of the MFFF construction project and alternative disposition approaches will be completed during FY 2015, and a decision will be reached on outyear funding levels for plutonium disposition. Funding is also requested in this account to sustain emergency response and nuclear counterterrorism capabilities that are applied against a wide range of high-consequence nuclear or radiological incidents and threats.

- $1.4 billion for Naval Reactors, $142 million above the FY 2015 Enacted level, to support the Fleet and maintain progress on current efforts to refuel the land-based research and training reactor. The Request increases funding for Naval Reactor's core objective of ensuring the safe and reliable operation of the Nation's nuclear fleet (73 submarines and 10 aircraft carriers), constituting over 40 percent of the Navy's major combatants. The Budget supports three major projects: continued work on the Ohio-Class Replacement and Land-based Prototype Refueling Overhaul, and the second year of construction for the Spent Fuel Handling Recapitalization Project.

MANAGEMENT AND PERFORMANCE

The FY 2016 Budget Request provides a total of $6.5 billion for Departmental Management and Performance activities, unchanged from the FY 2015 Enacted level. The FY 2015 Budget Request reflected a substantial reorganization of the Department establishing the Under Secretary for Management and Performance, to oversee DOE's environmental cleanup responsibilities and to institutionalize an enterprise-wide focus on improving the efficiency and effectiveness of DOE programs. DOE is aggressively pursuing that charter through a variety of efforts in the FY 2016 Budget Request.

Strategic Goal

Position the Department of Energy to meet the challenges of the 21st century and the nation's Manhattan Project and Cold War legacy responsibilities by employing effective management and refining operational and support capabilities to pursue departmental missions.

Supporting DOE Programs	**FY16 $**
✓ Environmental Management	5.8B
✓ Legacy Management	167M
Subtotal	*6.0B*
Corporate Management Functions	
✓ Chief Financial Officer	50M
✓ Chief Human Capital Officer	25M
✓ Chief Information Officer	84M
✓ Congressional and Intergovernmental Affairs	6M
✓ Environment, Health, Safety and Security	184M
✓ Enterprise Assessments	74M
✓ General Counsel	31M
✓ Hearings and Appeals	6M
✓ Inspector General	46M
✓ Management	76M
✓ Public Affairs	3M
✓ Economic Impact and Diversity	10M
✓ Small and Disadvantaged Business Utilization	3M

The Budget Request includes $5.8 billion for Environmental Management, $43 million below the FY 2015 Enacted level, to position DOE to meet the nation's Manhattan Project and Cold War legacy responsibilities. DOE is responsible for the cleanup of millions of gallons of liquid radioactive waste, thousands of tons of used nuclear fuel and special nuclear material, disposition of large volumes of transuranic and mixed/low-level waste, huge quantities of contaminated soil and water, and deactivation and decommissioning of thousands of excess facilities.

Following the fire and radiation leak that shut down the Waste Isolation Pilot Plant, the Request includes $248 million to maintain critical progress toward returning to normal operations, with a goal of establishing interim operations in 2016. The Request also includes $1.4 billion, $202 million above the FY 2015 Enacted level, to support the Department's proposal to the court to amend the Consent Decree between DOE and the State of Washington for completion of the Waste Treatment Plant and retrieval of waste from 19 Single Shell Tanks. DOE's proposed modification would require DOE to install new infrastructure to allow DOE to begin treating waste by end of 2022, without waiting for completion of facilities affected by the technical issues.

Building on the Department's FY 2015 emphasis on management and performance, the FY 2016 Budget Request funds a number of initiatives that continue to identify and institutionalize improvements across the DOE enterprise. The Request invests in a Secretarial enterprise-wide effort to improve project management by strengthening the Energy Systems Acquisition Advisory Board, establishing the Project Management Risk Committee, and taking other steps to institutionalize

effective project management, such as improving the Department's lines of responsibility and peer review process for projects. The Budget Request also continues implementing the Human Resources (HR) Service Delivery Study to put in place a more efficient and effective HR model across DOE. In addition, the Request supports initial implementation of recommendations from the 120-day Information Technology (IT) Study completed in 2014 aimed at improving DOE's IT infrastructure. The Request also reflects a reorganization of the Department's independent oversight and security, safety, health and environmental policy and support operations to improve the effectiveness and efficiency of Departmental operations. This reorganization includes the establishment of the Office Enterprise Assessments, the Office of the Associate Under Secretary for Environment, Health, Safety and Security, and Chief Security Officer positions within each of the Under Secretariats to ensure clear lines of responsibility, authority, and accountability.

The Request also invests in safe and reliable world class facilities by investing in new infrastructure and establishing a sustainable trajectory for the Department's existing infrastructure by ensuring no increase in the backlog deferred maintenance of facilities.

CROSSCUTTING ACTIVITIES TO ADVANCE NATIONAL ENERGY GOALS

The FY 2016 Budget Request expands the crosscutting initiatives introduced in the FY 2015 Budget Request designed to advance key technology areas that have multiple energy resource applications. Each crosscut reflects a comprehensive and integrated plan of work to optimize programmatic objectives by efficiently allocating resources. Through deliberate and enterprise-wide planning and coordination of these research efforts, the crosscutting initiatives will help bolster DOE's efforts to institutionalize enhanced program management and coordination across program offices, while accelerating progress on key national priorities.

Collaborative Efforts to Advance National Energy Goals

Management collaboration and funding coherence on high-priority efforts	**FY16 $**
✓ Grid Modernization	356M
✓ Supercritical Carbon Dioxide Technology	44M
✓ Subsurface Technology and Engineering	244M
✓ Energy-Water Nexus	38M
✓ Exascale Computing	273M
✓ Cybersecurity	306M

The programs and budgets within the three mission areas include over $1.2 billion in crosscutting R&D across six initiatives focusing on: electricity grid technology modernization, subsurface technology and engineering, supercritical carbon dioxide technology, energy-water nexus, exascale computing, and cybersecurity. These initiatives are the product of a concerted coordination effort among all three DOE Under Secretariats and program offices across the Department in close collaboration with the National Laboratories.

FUNDING BY APPROPRIATION

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Department of Energy Budget by Appropriation						
Energy and Water Development, and Related Agencies						
Energy Programs						
Energy Efficiency and Renewable Energy	1,900,641	1,824,876	1,914,195	2,722,987	+808,792	+42.3%
Electricity Delivery and Energy Reliability	147,242	144,205	146,975	270,100	+123,125	+83.8%
Nuclear Energy	888,376	877,620	833,379	907,574	+74,195	+8.9%
Fossil Energy Programs						
Clean Coal Technology	0	0	-6,600	0	+6,600	+100.0%
Fossil Energy Research and Development	561,931	550,630	560,587	560,000	-587	-0.1%
Naval Petroleum and Oil Shale Reserves	19,999	22,457	19,950	17,500	-2,450	-12.3%
Elk Hills School Lands Fund	0	0	15,580	0	-15,580	-100.0%
Strategic Petroleum Reserve	189,360	189,360	200,000	257,000	+57,000	+28.5%
Northeast Home Heating Oil Reserve	8,000	8,000	1,600	7,600	+6,000	+375.0%
Total, Fossil Energy Programs	**779,290**	**770,447**	**791,117**	**842,100**	**+50,983**	**+6.4%**
Uranium Enrichment Decontamination and Decommissioning Fund	598,574	598,574	625,000	542,289	-82,711	-13.2%
Energy Information Administration	116,999	116,999	117,000	131,000	+14,000	+12.0%
Non-Defense Environmental Cleanup	231,741	231,782	246,000	220,185	-25,815	-10.5%
Science	5,066,372	5,131,038	5,067,738	5,339,794	+272,056	+5.4%
Advanced Research Projects Agency - Energy	280,000	280,000	279,982	325,000	+45,018	+16.1%
Departmental Administration	126,449	126,449	125,130	153,511	+28,381	+22.7%
Indian Energy Programs	0	0	0	20,000	+20,000	N/A
Office of the Inspector General	42,120	42,120	40,500	46,424	+5,924	+14.6%
Title 17 - Innovative Technology						
Loan Guarantee Program	20,000	7,857	17,000	0	-17,000	-100.0%
Advanced Technology Vehicles Manufacturing Loan Program	6,000	6,000	4,000	6,000	+2,000	+50.0%
Tribal Indian Energy Loan Guarantee Program	0	0	0	11,000	+11,000	N/A
Total, Energy Programs	**10,203,804**	**10,157,967**	**10,208,016**	**11,537,964**	**+1,329,948**	**+13.0%**
Atomic Energy Defense Activities						
National Nuclear Security Administration						
Weapons Activities	7,781,000	7,790,197	8,180,359	8,846,948	+666,589	+8.1%
Defense Nuclear Nonproliferation	1,954,000	1,941,983	1,615,248	1,940,302	+325,054	+20.1%
Naval Reactors	1,095,000	1,101,500	1,233,840	1,375,496	+141,656	+11.5%
Office of the Administrator	377,000	370,500	0	0	0	N/A
Federal Salaries and Expenses	0	0	369,587	402,654	+33,067	+8.9%
Total, National Nuclear Security Administration	**11,207,000**	**11,204,180**	**11,399,034**	**12,565,400**	**+1,166,366**	**+10.2%**
Environmental and Other Defense Activities						
Defense Environmental Cleanup	5,000,000	4,999,293	5,453,017	5,527,347	+74,330	+1.4%
Other Defense Activities	755,000	755,000	753,449	774,425	+20,976	+2.8%
Total, Environmental and Other Defense Activities	**5,755,000**	**5,754,293**	**6,206,466**	**6,301,772**	**+95,306**	**+1.5%**
Total, Atomic Energy Defense Activities	**16,962,000**	**16,958,473**	**17,605,500**	**18,867,172**	**+1,261,672**	**+7.2%**
Power Marketing Administrations						
Southeastern Power Administration	0	0	0	0	0	N/A
Southwestern Power Administration	11,892	11,892	11,400	11,400	0	0
Western Area Power Administration	95,930	95,930	91,740	93,372	+1,632	+1.8%
Falcon and Amistad Operating and Maintenance Fund	420	420	228	228	0	0
Colorado River Basins Power Marketing Fund	-23,000	-23,000	-23,000	-23,000	0	0
Total, Power Marketing Administrations	**85,242**	**85,242**	**80,368**	**82,000**	**+1,632**	**+2.0%**
Federal Energy Regulatory Commission	0	0	0	0	0	N/A
Subtotal, Energy and Water Development and Related Agencies	**27,251,046**	**27,201,682**	**27,893,884**	**30,487,136**	**+2,593,252**	**+9.3%**
Uranium Enrichment Decontamination and Decommissioning Fund						
Discretionary Payments	0	0	-463,000	-471,797	-8,797	-1.9%
Excess Fees and Recoveries, FERC	-26,236	-19,686	-28,485	-23,587	+4,898	+17.2%
Title XVII Loan Guarantee Program Section 1703 Negative Credit Subsidy Receipt	0	0	0	-68,000	-68,000	N/A
Total, Discretionary Funding by Appropriation	**27,224,810**	**27,181,996**	**27,402,399**	**29,923,752**	**+2,521,353**	**+9.2%**

FUNDING BY APPROPRIATION (CONTINUED)

(Discretionary dollars in thousands)

	FY 2016 Request	FY 2017 Request	FY 2018 Request	FY 2019 Request	FY 2020 Request
Department of Energy Budget by Appropriation (Preliminary)					
Energy and Water Development, and Related Agencies					
Energy Programs					
Energy Efficiency and Renewable Energy	2,722,987	2,775,541	2,831,051	2,887,672	2,916,549
Electricity Delivery and Energy Reliability	270,100	275,313	280,819	286,436	289,300
Nuclear Energy*	907,574	1,014,511	1,112,401	1,130,649	1,139,956
Fossil Energy Programs					
Fossil Energy Research and Development	560,000	570,808	582,224	593,869	599,807
Naval Petroleum and Oil Shale Reserves	17,500	17,838	18,195	18,558	18,744
Elk Hills School Lands Fund	0	0	0	0	0
Strategic Petroleum Reserve	257,000	261,960	267,199	272,543	275,269
Northeast Home Heating Oil Reserve	7,600	7,747	7,902	8,060	8,140
Total, Fossil Energy Programs	**842,100**	**858,353**	**875,520**	**893,030**	**901,960**
Uranium Enrichment Decontamination and Decommissioning Fund	542,289	552,755	563,810	575,086	580,837
Energy Information Administration	131,000	133,528	136,199	138,923	140,312
Non-Defense Environmental Cleanup	220,185	224,435	228,923	233,502	235,837
Science	5,339,794	5,442,852	5,551,709	5,662,743	5,719,371
Advanced Research Projects Agency - Energy	325,000	331,273	337,898	344,656	348,102
Departmental Administration	153,511	156,474	159,603	162,795	164,423
Indian Energy Programs	20,000	20,386	20,794	21,210	21,422
Office of the Inspector General	46,424	47,320	48,266	49,232	49,724
Title 17 - Innovative Technology					
Loan Guarantee Program	0	0	0	0	0
Advanced Technology Vehicles Manufacturing Loan Program	6,000	6,116	6,238	6,363	6,427
Tribal Indian Energy Loan Guarantee Program	11,000	11,212	11,437	11,665	11,782
Total, Energy Programs	**11,537,964**	**11,850,068**	**12,164,669**	**12,403,962**	**12,526,002**
Atomic Energy Defense Activities					
National Nuclear Security Administration					
Weapons Activities	8,846,948	9,282,292	9,484,527	9,717,748	9,829,656
Defense Nuclear Nonproliferation	1,940,302	1,943,195	1,975,316	1,982,605	2,021,701
Naval Reactors	1,375,496	1,435,120	1,467,751	1,778,387	1,778,317
Federal Salaries and Expenses	402,654	410,393	418,406	428,260	437,326
Total, National Nuclear Security Administration	**12,565,400**	**13,071,000**	**13,346,000**	**13,907,000**	**14,067,000**
Environmental and Other Defense Activities					
Defense Environmental Cleanup	5,527,347	5,634,025	5,746,705	5,861,639	5,920,256
Other Defense Activities	774,425	789,371	805,159	821,262	829,475
Total, Environmental and Other Defense Activities	**6,301,772**	**6,423,396**	**6,551,864**	**6,682,901**	**6,749,730**
Total, Atomic Energy Defense Activities	**18,867,172**	**19,494,396**	**19,897,864**	**20,589,901**	**20,816,730**
Power Marketing Administrations					
Southeastern Power Administration	0	0	0	0	0
Southwestern Power Administration	11,400	11,620	11,852	12,089	12,210
Western Area Power Administration	93,372	95,174	97,078	99,019	100,009
Falcon and Amistad Operating and Maintenance Fund	228	232	237	242	244
Colorado River Basins Power Marketing Fund	-23,000	-24,000	-25,000	-25,000	-25,000
Total, Power Marketing Administrations	**82,000**	**83,027**	**84,167**	**86,350**	**87,464**
Federal Energy Regulatory Commission	0	0	0	0	0
Subtotal, Energy and Water Development and Related Agencies	**30,487,136**	**31,427,490**	**32,146,700**	**33,080,214**	**33,430,196**
Uranium Enrichment Decontamination and Decommissioning Fund Discretionary Payments	-471,797	-480,903	-490,521	-500,331	-505,334
Excess Fees and Recoveries, FERC	-23,587	0	0	0	0
Title XVII Loan Guarantee Program Section 1703 Negative Credit Subsidy Receipt	-68,000	0	0	0	0
Total, Discretionary Funding by Appropriation	**29,923,752**	**30,946,588**	**31,656,179**	**32,579,883**	**32,924,862**

*Integrated Nuclear Waste Management Program funding grows at a unique rate in the outyears to account for program costs and proposed mandatory funding

FUNDING BY ORGANIZATION

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Department of Energy Budget by Organization						
National Nuclear Security Administration						
Weapons Activities	7,781,000	7,790,197	8,180,359	8,846,948	+666,589	+8.1%
Defense Nuclear Nonproliferation	1,954,000	1,941,983	1,615,248	1,940,302	+325,054	+20.1%
Naval Reactors	1,095,000	1,101,500	1,233,840	1,375,496	+141,656	+11.5%
Office of the Administrator	377,000	370,500	0	0	0	N/A
Federal Salaries and Expenses	0	0	369,587	402,654	+33,067	+8.9%
Total, National Nuclear Security Administration	**11,207,000**	**11,204,180**	**11,399,034**	**12,565,400**	**+1,166,366**	**+10.2%**
Science and Energy						
Science	**5,066,372**	**5,131,038**	**5,067,738**	**5,339,794**	**+272,056**	**+5.4%**
Energy						
Energy Efficiency and Renewable Energy	1,900,641	1,824,876	1,914,195	2,722,987	+808,792	+42.3%
Electricity Delivery and Energy Reliability	147,242	144,205	146,975	270,100	+123,125	+83.8%
Fossil Energy	779,290	770,447	791,117	842,100	+50,983	+6.4%
Nuclear Energy	888,376	877,620	833,379	907,574	+74,195	+8.9%
Office of Indian Energy Policy and Programs	2,506	2,506	16,000	20,000	+4,000	+25.0%
Total, Energy	**3,718,055**	**3,619,654**	**3,701,666**	**4,762,761**	**+1,061,095**	**+28.7%**
Total, Science and Energy	**8,784,427**	**8,750,692**	**8,769,404**	**10,102,555**	**+1,333,151**	**+15.2%**
Advanced Research Projects Agency - Energy	**280,000**	**280,000**	**279,982**	**325,000**	**+45,018**	**+16.1%**
Energy Information Administration	**116,999**	**116,999**	**117,000**	**131,000**	**+14,000**	**+12.0%**
Credit Programs						
Title 17 - Innovative Technology						
Loan Guarantee Program	20,000	7,857	17,000	0	-17,000	-100.0%
Advanced Technology Vehicles Manufacturing Loan Program	6,000	6,000	4,000	6,000	+2,000	+50.0%
Tribal Indian Energy Loan Guarantee Program	0	0	0	11,000	+11,000	N/A
Total, Credit Programs	**26,000**	**13,857**	**21,000**	**17,000**	**-4,000**	**-19.0%**
Management and Performance						
Environmental Management	5,830,315	5,829,649	5,861,017	5,818,024	-42,993	-0.7%
Office of Legacy Management	176,983	176,983	171,854	167,180	-4,674	-2.7%
Environment, Health, Safety and Security Mission Support	0	0	180,866	183,798	+2,932	+1.6%
Chief Information Officer	82,062	82,062	71,906	83,800	+11,894	+16.5%
Management	57,599	57,599	62,946	76,227	+13,281	+21.1%
Chief Human Capital Officer	24,488	24,488	24,500	25,400	+900	+3.7%
Hearings and Appeals	5,022	5,022	5,496	5,500	+4	+0.1%
Economic Impact and Diversity	8,956	8,956	9,000	10,000	+1,000	+11.1%
Office of Small and Disadvantaged Business Utilization	0	0	2,253	3,000	+747	+33.2%
Total, Management and Performance	**6,185,425**	**6,184,759**	**6,389,838**	**6,372,929**	**-16,909**	**-0.3%**
Corporate Management						
Office of the Secretary	5,008	5,008	5,008	5,300	+292	+5.8%
Strategic Partnership Projects and Revenues	-59,651	-59,651	-78,099	-77,171	+928	+1.2%
Chief Financial Officer	47,825	47,825	47,053	50,182	+3,129	+6.6%
Congressional and Intergovernmental Affairs	4,700	4,700	4,700	6,300	+1,600	+34.0%
Public Affairs	3,597	3,597	3,431	3,431	0	0
General Counsel	33,053	33,053	31,000	31,000	0	0
International Affairs	15,873	15,873	13,000	23,600	+10,600	+81.5%
Energy Policy and Systems Analysis	19,269	19,269	31,181	35,000	+3,819	+12.2%
Total, Corporate Management	**69,674**	**69,674**	**57,274**	**77,642**	**+20,368**	**+35.6%**
Health, Safety and Security	**251,917**	**251,917**	**0**	**0**	**0**	**N/A**
Specialized Security Activities	**202,242**	**202,242**	**203,004**	**221,855**	**+18,851**	**+9.3%**
Enterprise Assessments	**0**	**0**	**73,480**	**73,534**	**+54**	**+0.1%**
Office of the Inspector General	**42,120**	**42,120**	**40,500**	**46,424**	**+5,924**	**+14.6%**
Power Marketing Administrations	**85,242**	**85,242**	**80,368**	**82,000**	**+1,632**	**+2.0%**
Federal Energy Regulatory Commission	**-26,236**	**-19,686**	**-28,485**	**-23,587**	**+4,898**	**+17.2%**
Title XVII Loan Guarantee Program Section 1703 Negative Credit Subsidy Receipt	**0**	**0**	**0**	**-68,000**	**-68,000**	**N/A**
Total, Discretionary Funding by Organization	**27,224,810**	**27,181,996**	**27,402,399**	**29,923,752**	**+2,521,353**	**+9.2%**

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
National Nuclear Security Administration						
Weapons Activities	7,781,000	7,790,197	8,180,359	8,846,948	+666,589	+8.1%
Defense Nuclear Nonproliferation	1,954,000	1,941,983	1,615,248	1,940,302	+325,054	+20.1%
Naval Reactors	1,095,000	1,101,500	1,233,840	1,375,496	+141,656	+11.5%
Office of the Administrator	377,000	370,500	0	0	0	N/A
NNSA Federal Salaries and Expenses	0	0	369,587	402,654	+33,067	+8.9%
Total, National Nuclear Security Administration	**11,207,000**	**11,204,180**	**11,399,034**	**12,565,400**	**+1,166,366**	**+10.2%**

Appropriation Overview

National Nuclear Security Administration (NNSA) directly contributes to meeting the DOE Strategic Plan Goal for "Nuclear Security" and plays a critical role in meeting many strategic objectives in the "Management and Performance" goal. The primary mission of NNSA is to support the security and safety of our nation. NNSA pursues four major national security endeavors consistent with DOE's Strategic Plan: (1) use science to maintain a safe, secure, and effective nuclear weapons stockpile that deters any adversary and protects our allies; (2) reduce the threat posed by nuclear proliferation and terrorism, including unsecured or excess nuclear and radiological materials both domestically and internationally; (3) prepare to respond to, and mitigate, nuclear and radiological incidents worldwide; and (4) provide safe and effective nuclear propulsion for the U.S. Navy.

The FY 2016 Budget Request supports national security priorities articulated in the 2010 Nuclear Posture Review, the Stockpile Stewardship and Management Plan, and the 2010 National Security Strategy of the United States. These priorities are reflected in the DOE Strategic Plan and guide decisions on allocation of resources in the President's Budget Requests.

Key FY 2014 Accomplishments

- ✓ Maintained 100% of the weapons in the stockpile as safe, secure, reliable, and effective.
- ✓ Maintained schedule to complete dismantlement of weapons retired prior to FY 2009 by the end of FY 2022.
- ✓ Completed all scheduled deliveries of the W76-1 to the Navy; completed the B61-12 first integration testing; and completed the W80 6.1 concept study.
- ✓ Continued meeting scientific challenges of increased understanding of Primary and Secondary performance.
- ✓ Completed removal or disposal of a total of 190 kilograms of vulnerable nuclear material.
- ✓ Helped prevent the illicit trafficking of nuclear and radiological materials, technology and expertise by installing 37 fixed and 22 mobile radiation detection systems worldwide.
- ✓ Secured 142 domestic and international civilian buildings containing high-priority nuclear and radiological material.
- ✓ Maintained organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide.
- ✓ Increased funding for the *Ohio*-Class Replacement reactor and continued the S8G Prototype Refueling projects supporting the Navy's *Ohio*-Class Replacement ship construction schedule and the Navy's nuclear operator training mission.
- ✓ Delivered the first A1B aircraft carrier reactor plant for initial testing.
- ✓ Identified efficiencies, particularly in travel and support services, to support the President's Executive Order "*Promoting Efficient Spending*".
- ✓ Maintained NNSA Federal Salaries and Expenses Federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at 4.1%, less than the FY 2014 target of less than 6%.

Program Highlights

The **Weapons Activities** FY 2016 Budget Request reflects an increase from FY 2015 Enacted levels to meet the Administration's commitments to the programs and capabilities required to maintain a safe, secure, and effective nuclear stockpile. Increases are requested for Directed Stockpile Work – particularly for the W-80-4 life extension program in support of the Air Force Long Range Stand Off program and W-88 stockpile system, as well as a new subprogram, "Nuclear Material Commodities," in order to recognize the investment needed in nuclear materials to maintain the viability of the enduring stockpile. The Weapons Request also includes increases in funding for Defense Nuclear Security to support DOE's physical security reform efforts to emphasize mission performance, responsibility, and accountability. The Infrastructure and Safety program is proposed as a new Government Performance and Reporting Act (GPRA) unit starting in FY 2016, with funding provided to arrest the declining state of NNSA infrastructure. Funding for the Nuclear Counterterrorism Incident Response (NCTIR) and Counterterrorism and Counterproliferation Programs

(CTCP) is requested under the Defense Nuclear Nonproliferation account. Finally, certain activities formerly performed under the Readiness in Technical Base and Facilities (RTBF) and Site Stewardship programs have been consolidated in a new Infrastructure and Safety program.

The **Defense Nuclear Nonproliferation** FY 2016 Budget Request is driven by the imperative for U.S. leadership in nonproliferation initiatives both here and abroad. DNN leads U.S. Government efforts in developing and implementing programs to limit or prevent the spread of nuclear and radiological materials and associated technology and expertise, to advance technologies that detect nuclear and radiological proliferation worldwide, and to eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons. The FY 2016 Request continues to emphasize efforts to eliminate or secure vulnerable nuclear materials from around the world, counter nuclear smuggling, support radiological security, and conduct technology development needed for nonproliferation and arms control missions. NNSA proposes to restructure the budgets under the Defense Nuclear Nonproliferation Appropriation as follows: Material Management and Minimization, Global Material Security, Nonproliferation and Arms Control, Nonproliferation Construction, Defense Nuclear Nonproliferation R&D, and the Nuclear Counterterrorism and Incident Response Program (previously funded under the Weapons Activities appropriation). The requested increase is primarily related to the transfer of NCTIR and CTCP from the Weapons Activities account. The Request also reflects an increase in M^3 for the removal of HEU from miniature neutron source reactors in Africa as well as preparatory activities for future shipments from Europe and Japan, which will be performed with appropriate cost-sharing.

The **Naval Reactors** FY 2016 Budget Request reflects an increase for the Navy's fleet of nuclear-powered aircraft carriers and submarines and funds three major projects. The three consist of the *Ohio*-Class Reactor Plant System Development, the Land-based S8G Prototype Refueling Overhaul, and the Spent Fuel Handling Recapitalization Project, which are needed to deliver Navy-established mission requirements. In addition, the Request funds Naval Reactors' Operations and Infrastructure, Development, and Program Direction activities.

The **NNSA Federal Salaries and Expenses** FY 2016 Budget Request provides for Federal staffing and support expenses needed to meet mission requirements. NNSA is requesting funding for 1,690 full-time equivalents, in accordance with Section 3116 of the FY 2015 National Defense Authorization Act, including projected required cost of living adjustments and benefit escalation.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
National Nuclear Security Administration						
Weapons Activities						
Directed Stockpile Work	2,442,033	2,429,529	2,692,588	3,187,259	+494,671	+18.4%
Science	369,723	368,614	412,091	389,614	-22,477	-5.5%
Engineering	149,911	149,598	136,005	131,377	-4,628	-3.4%
Inertial Confinement Fusion and High Yield	513,957	512,394	512,895	502,450	-10,445	-2.0%
Advanced Simulation and Computing	569,329	568,633	598,000	623,006	+25,006	+4.2%
Readiness	55,407	55,205	0	0	0	N/A
Advanced Manufacturing Development	0	0	107,200	130,056	+22,856	+21.3%
Readiness in Technical Base and Facilities	2,067,425	2,060,379	2,033,400	1,054,481	-978,919	-48.1%
Secure Transportation Asset	210,000	210,000	219,000	251,610	+32,610	+14.9%
Nuclear Counterterrorism Incident Response	228,243	228,521	177,940	0	-177,940	-100.0%
Counterterrorism and Counterproliferation Programs	0	0	46,093	0	-46,093	-100.0%
Infrastructure and Safety	0	0	0	1,466,134	+1,466,134	N/A
Site Stewardship	87,326	86,925	76,531	36,595	-39,936	-52.2%
Defense Nuclear Security	664,981	659,143	636,123	632,891	-3,232	-0.5%
Information Technology and Cybersecurity	145,068	144,442	179,646	157,588	-22,058	-12.3%
Legacy Contractor Pensions	279,597	335,490	307,058	283,887	-23,171	-7.5%
Domestic Uranium Enrichment Research, Development, and Demonstration	62,000	105,952	97,200	0	-97,200	-100.0%
Subtotal, Weapons Activities	**7,845,000**	**7,914,825**	**8,231,770**	**8,846,948**	**+615,178**	**+7.5%**
Use of Prior Year Balances	0	-60,628	0	0	0	N/A
Rescission of Prior Year Balances	-64,000	-64,000	-51,411	0	+51,411	+100.0%
Total, Weapons Activities	**7,781,000**	**7,790,197**	**8,180,359**	**8,846,948**	**+666,589**	**+8.1%**

Appropriation Overview

One of the statutory missions of NNSA is to maintain and enhance the safety, security, and effectiveness of the U.S. nuclear weapons stockpile to meet national security requirements. The mission is carried out in partnership with the Department of Defense (DoD), with NNSA providing research, development, and production activities supporting the U.S. nuclear weapons stockpile.

The work performed by NNSA in the **Weapons Activities** programs ensures the accomplishment of Department of Energy (DOE) Strategic Objective 4 — Maintain the safety, security and effectiveness of the Nation's nuclear deterrent without nuclear testing, as well as Strategic Objective 5 — Strengthen key science, technology and engineering talent, capabilities, and information resources and modernize the infrastructure, especially in nuclear science and technology, to enhance national security.

While the majority of this account supports the nuclear weapons program, NNSA's critical security—both physical and cybersecurity—are also funded here, in direct support of DOE Strategic Goal 6—Reduce global nuclear security threats.

Program Highlights

- **Directed Stockpile Work (DSW)**
  DSW continues significant efforts to meet nuclear security priorities, to conduct the stockpile management program, and to continue leveraging science to enhance national security. The FY 2016 Budget Request is organized by Life Extension Programs (LEPs) and Major Alterations, Stockpile Systems, Weapons Dismantlement and Disposition, Stockpile Services, and Nuclear Material Commodities, and reflects an investment strategy that sustains the existing stockpile while providing a strong basis for transitioning to a smaller nuclear stockpile that continues to be safe, secure and effective. Key stockpile initiatives include continuation of the W76 LEP, B61 LEP, W88 Alt 370, and the feasibility study and option down-select of the W80-4 LEP (supports the Air Force's Long Range Stand Off system; formerly known as the Cruise Missile Warhead LEP). Support activities include the production of tritium, enriched uranium capabilities,

plutonium sustainment as well as surveillance and assessment activities. Additionally, starting in FY 2016, many of these support activities will fall under a new subprogram Nuclear Material Commodities (includes Uranium Sustainment, Plutonium Sustainment, Tritium Sustainment and Domestic Uranium Enrichment programs), in order to recognize the investment needed in nuclear materials to maintain the viability of the enduring stockpile. The requested increase reflects the ramp up of activities for the W80-4; W88 ALT 370 arming, fusing, and firing set development efforts; and the establishment of the Nuclear Material Commodities subprogram.

- **Research, Development, Test and Evaluation (RDT&E)**
  Consistent with the Consolidated and Further Continuing Appropriations Act, 2015, activities formerly carried out under Campaigns are now included under RDT&E. Funding remains relatively stable between FY 2015 and FY 2016, with slight increases in the Advanced Simulation and Computing Program for Advanced Technology Development and Mitigation (ATDM), and in Advanced Manufacturing Development (AMD) for new work related to electronics-based arming, fusing, and firing technologies that requires significant technical effort to reduce the cost of replacing sunset technologies. These increases are largely offset by decreases in the Science and Inertial Confinement Fusion Ignition and High Yield Programs.

- **Science Program**
  The Science Program develops and applies improved capabilities to assess the safety, reliability, and performance of the weapons' nuclear explosive package. The FY 2016 Budget Request provides funding for technical resources required for assessment of LEP options incorporating the reuse or remanufacture of pits, secondaries, other nuclear explosive package components, and other improved safety technologies that may be implemented in future LEPs. Included in the request is funding for experiments and evaluation of options for improved diagnostic capabilities at the U1a facility in Nevada supporting certification and annual assessments.

- **Engineering Program**
  The Engineering Program develops capabilities to assess and improve the safety, reliability, and performance of the non-nuclear and nuclear explosive package engineering components in nuclear weapons. The FY 2016 Request reflects a balanced workload including decreases in activities associated with validation-related testing and aging/lifetime estimates as well as advanced diagnostic development tools required for current stockpile surveillance, assessments, and future refurbishments.

- **Inertial Confinement Fusion Ignition and High Yield Program**
  The Inertial Confinement Fusion Ignition and High Yield Program develops the scientific understanding and experimental capabilities in high-energy-density physics needed to support the stockpile without underground nuclear testing. In FY 2016, experiments in ignition will continue to look at the behavior and physics of ignition targets to improve the predictive capability of the simulations and to provide feedback to resolve the outstanding physics questions and improve target performance. This will be based on an external review conducted in all three ignition concepts (Direct, Indirect, and Pulsed Power) to assess their progress.

Key FY 2014 Accomplishments

- ✓ Continued meeting scientific challenges of increased understanding of Primary and Secondary performance.
- ✓ Significantly increased quarterly shot rate on NIF, with 69 shots in Q4, 191 shots completed in FY 2014, and a plan for 300 in FY 2015.
- ✓ Progress in indirect-drive target performance on NIF, including record neutron yields closer to code predictions.
- ✓ Developed a new supercomputer performance benchmark that is more appropriate for scientific computing.
- ✓ Ran 3D Global Security simulation on Sequoia with over 2 billion computational cells.
- ✓ Completed the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) activity.
- ✓ Completed all scheduled deliveries of the W76-1 to the navy; completed the B61-12 first integration testing; and the completed the W80 6.1 concept study.

- **Advanced Simulation and Computing Program (ASC)**
  ASC provides leading edge, high-end modeling, and simulation capabilities that capture and allow us to apply all that we know about weapons physics and engineering. These capabilities consist of weapon codes, weapons science, platforms, and computer facilities. Applications of these capabilities include the meeting of current stockpile assessment and certification requirements; evaluation of future stockpile manufacturing, safety, and security requirements; and assessment of foreign weapons, potential events and devices. The FY 2016 ASC Budget Request

includes $64 million for the Advanced Technology Development and Mitigation (ATDM) sub-program, established in FY 2014. ATDM funds laboratory code and computer engineering projects that pursue long-term simulation and computing goals relevant to both exascale computing and the broad national security missions of the NNSA. The increase in ATDM funding expands and develops advanced technology research and development with industry.

- **Advanced Manufacturing Development**
  The Advanced Manufacturing Development Program, initiated in Consolidated and Further Continuing Appropriations Act, 2015, reflects the development and evolution of the manufacturing capabilities inherent in the Weapons Activities arena. This program is comprised of Additive Manufacturing, Component Manufacturing Development, and Processing Technology Development. All of these subprograms encompass the technology development efforts for non-weapon specific programmatic investments that shorten production schedules, reduce risks, enable capability and enhance personnel safety. The FY 2016 Request will adequately support production readiness for the B61-12 LEP and W88 Alt 370 with production technologies that have multi-application capability. New work will be initiated related to electronics-based arming, fusing, and firing technologies that requires significant technical effort to reduce the cost of replacing sunset technologies.

- **Readiness in Technical Base and Facilities (RTBF)**
  RTBF provides a defined level of readiness and capability through infrastructure investments and strategy development for special nuclear material processing and inventory management. Plans, prioritizes, and constructs state-of-the-art facilities, infrastructure, and scientific tools for the enterprise within approved baseline costs and schedules. The RTBF program accomplishes this mission by the modernization of NNSA infrastructure through capability investments, strategic development, and line-item construction projects for the enhancement of capabilities. The FY 2016 Request supports re-establishing the capability to convert existing supplies of DUF6 to DUF4, the Capabilities Based Investments (CBI) activities that support recapitalization of Defense Programs capabilities, and increases to the Uranium Processing Facility (UPF) at Y-12 and the Chemistry and Metallurgy Research Replacement (CMRR) Project at the Los Alamos National Laboratory (LANL).

- **Infrastructure and Safety**
  The Infrastructure and Safety program is proposed as a new Government Performance and Reporting Act (GPRA) measure starting in FY 2016. The mission is to maintain, operate, and modernize the NNSA infrastructure in a safe, secure, and cost-effective manner to enable program results. This mission directly supports the Department's Nuclear Security goal to strengthen national security by maintaining and modernizing the nuclear stockpile and nuclear security infrastructure, reducing global nuclear threats, providing for nuclear propulsion, improving physical and cybersecurity, and strengthening key science, technology, and engineering capabilities. Infrastructure and Safety efforts are focused on core, shared, and base infrastructure and organized around five elements – Operations of Facilities, Safety Operations, Maintenance, Recapitalization, and Line Item Construction. Together these elements provide a comprehensive approach to arresting the declining state of NNSA infrastructure. The FY 2016 funding will support vital NNSA program requirements while allowing NNSA to execute additional recapitalization projects that will address critical safety and program risks.

- **Site Stewardship**
  The Site Stewardship is comprised two programs. The mission of Nuclear Materials Integration (NMI) is to ensure the overall health and viability of NNSA's nuclear security enterprise and bring focus on nuclear materials disposition. The goal of the Minority Serving Institution Partnerships Program (MSIPP) is to develop the skills and talent necessary to support NNSA's enduring technical workforce at the laboratories and production plants. In FY 2016, the NMI program will fund Inactive Actinide activities at the Oak Ridge National Laboratory (ORNL), LANL, and Y-12. In FY 2016, the MSI Partnership Program will continue to pursue and cultivate partnerships, collaborations and consortiums that align with the research and resources conducted at NNSA/DOE National Laboratories.

- **Secure Transportation Asset (STA)**
  STA provides for the safe and secure movement of nuclear weapons, special nuclear materials, and weapon components to meet projected DOE and DoD requirements. Program Direction in this account pays for the secure transportation workforce, including Federal Agents. In FY 2016, STA will support the Mobile Guardian Transporter

(MGT) Analysis of Alternatives to include the conceptual design and down select process. Production of the Trailer Communication System (TCS); production of eight Support Vehicles; production of six Replacement Armored Tractors and fifteen Escort Vehicle—Light Chassis; and restoration of Federal Agent staffing levels will also be supported.

- **Defense Nuclear Security (DNS)**
  DNS provides protection for NNSA personnel, facilities, nuclear weapons, special nuclear material, and information from a full spectrum of insider and outsider threats. The physical security budget is based on risk-informed decisions and is consistent with the Department's Graded Security Protection policy. FY 2016 provides for additional protective force Full Time Equivalents (FTEs) to support renewed focus on protective force training and management of shift staff/coverage of posts to reduce the need for overtime. As funds are available, efforts will be made to address aging infrastructure and obsolescence of physical security systems components. The DNS program is able to reduce some risk through existing plans that make greater use of strategic sourcing to reduce procurement costs, improve project management and leverage emerging technologies.

- **Information Technology and Cybersecurity**
  Information Technology and Cybersecurity supports the national nuclear security enterprise, leading Federal efforts to research and develop information technology and cybersecurity solutions, including continuous monitoring, enterprise wireless and security technologies (i.e., identity, credential, and access management) to help meet security, proliferation resistance. In addition, by making the NNSA Data Centers more efficient, the program directly supports the climate goals mission of DOE through climate modeling. In FY 2016, support for the recapitalization of the Enterprise Secure Network, modernize the Cybersecurity infrastructure, implement the Identity Control and Access Management project at NNSA Headquarters and site elements, implement and coordinate Public Key Infrastructure and other Committee on National Security Systems requirements, and to continue to leverage the NNSA Network Vision framework to increase the efficiency and cost-effectiveness of NNSA Information Technology (IT) services, consistent with the DOE IT Modernization Strategy.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
National Nuclear Security Administration						
Defense Nuclear Nonproliferation						
Defense Nuclear Nonproliferation Programs						
Global Material Security	0	0	0	426,751	+426,751	N/A
Material Management and Minimization	0	0	0	311,584	+311,584	N/A
Nonproliferation and Arms Control	0	0	0	126,703	+126,703	N/A
Defense Nuclear Nonproliferation Research and Development	0	0	393,401	419,333	+25,932	+6.6%
Nonproliferation Construction	0	0	0	345,000	+345,000	N/A
Global Threat Reduction Initiative	442,102	444,598	325,752	0	-325,752	-100.0%
Nonproliferation and Verification Research and Development	398,838	461,125	0	0	0	N/A
Nonproliferation and International Security	128,675	135,481	141,359	0	-141,359	-100.0%
International Material Protection and Cooperation	419,625	415,091	270,911	0	-270,911	-100.0%
Fissile Materials Disposition	526,057	585,300	430,000	0	-430,000	-100.0%
Subtotal, Defense Nuclear Nonproliferation Programs	**1,915,297**	**2,041,595**	**1,561,423**	**1,629,371**	**+67,948**	**+4.4%**
Legacy Contractor Pensions	93,703	116,556	102,909	94,617	-8,292	-8.1%
Nuclear Counterterrorism and Incident Response Program	0	0	0	234,390	+234,390	N/A
Subtotal, Defense Nuclear Nonproliferation	**2,009,000**	**2,158,151**	**1,664,332**	**1,958,378**	**+294,046**	**+17.7%**
Use of Prior Year Balances	-55,000	-216,168	-22,963	-18,076	+4,887	+21.3%
Rescission of Prior Year Balances	0	0	-26,121	0	+26,121	+100.0%
Total, Defense Nuclear Nonproliferation	**1,954,000**	**1,941,983**	**1,615,248**	**1,940,302**	**+325,054**	**+20.1%**

Appropriation Overview

The FY 2016 Budget Request supports national security priorities articulated in the 2010 National Security Strategy of the United States and the 2010 Nuclear Posture Review, which are reflected in DOE's Strategic Plan. These priorities include securing or eliminating the world's most vulnerable nuclear weapon materials, disposing of excess nuclear weapon materials in the United States, supporting the development of new technologies for nonproliferation, promoting the secure expansion of nuclear energy, improving capabilities worldwide to deter and detect the illicit movement of nuclear and radiological materials, and providing worldwide nuclear and radiological counterterrorism and incident response capabilities.

Defense Nuclear Nonproliferation Funding (Comparable)

(dollars in thousands)

	FY 2014	FY 2015	FY 2016 Request	FY 2016 vs. FY 2015
Global Material Security	571,646	424,244	426,751	+2,507
Material Management and Minimization	421,565	272,919	311,584	+38,665
Nonproliferation and Arms Control	124,516	125,859	126,703	+844
Defense Nuclear Nonproliferation R&D	461,125	393,401	419,333	+25,932
Nonproliferation Construction	462,743	345,000	345,000	0
Legacy Contractor Pensions	116,556	102,909	94,617	-8,292
Nuclear Counterterrorism and Incident Response	228,521	224,033	234,390	+10,357
Subtotal	**2,386,672**	**1,888,365**	**1,958,378**	**+70,013**
Use of Prior Year Balances	(216,168)	(22,963)	(18,076)	+4,887
Rescissions	0	(26,121)	0	+26,121
Total, Defense Nuclear Nonproliferation	**2,170,504**	**1,839,281**	**1,940,302**	**+101,021**

The FY 2016 Budget Request proposes the transfer of the Nuclear Counterterrorism Incident Response (NCTIR) and the Counterterrorism and Counterproliferation (CTCP) Programs from the Weapons Activities to the Defense Nuclear Nonproliferation (DNN) appropriation. Further, the Request proposes to combine the NCTIR and CTCP programs to eliminate confusion about NNSA nuclear counterterrorism programs and activities, and to change the NCTIR name to Nuclear Counterterrorism *and* Incident Response Program. These transfers align all NNSA funding for to prevent, counter, and respond to nuclear proliferation and terrorism in one appropriation. The DNN Appropriation will support two enduring mission areas: 1) Defense Nuclear Nonproliferation and 2) Nuclear Counterterrorism and Incident Response (NCTIR).

To achieve these nuclear security and organizational strategic objectives, NNSA proposes to restructure the budgets under the Defense Nuclear Nonproliferation Appropriation as follows: Material Management and Minimization, Global Material Security, Nonproliferation and Arms Control, Nonproliferation Construction, Defense Nuclear Nonproliferation R&D, and the Nuclear Counterterrorism and Incident Response Program. These six programs support the following five major mission functions to: 1) prevent the spread of materials, technology, and expertise relating to weapons of mass destruction (WMD); 2) advance the technologies to detect the proliferation of WMD worldwide; 3) eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons; 4) respond to nuclear or radiological incidents worldwide; and 5) sustain counterterrorism capabilities through innovative technology and policy-driven solutions. DOE/NNSA also works to strengthen regulatory, safety, security, and safeguards infrastructure in countries new to nuclear power and provide technical support, analytical support, and capability development for meeting and monitoring compliance with nuclear nonproliferation and arms control treaties.

Program Highlights

- **Global Material Security (GMS)**
  Supports the President's nuclear security agenda and the Secretary's goal of enhancing nuclear security through nonproliferation by working with partner countries to increase the security of vulnerable stockpiles of nuclear weapons, weapons-usable nuclear materials, and radiological materials and to improve partner countries' abilities to deter, detect, and interdict illicit trafficking. Elements of the former Global Threat Reduction Initiative (GTRI) program, International Material Protection and Cooperation program, and Nonproliferation and International Security program are being combined in GMS, in order to better integrate capabilities required to support DNN's enduring mission. The slight funding increase for GMS activities in the FY 2016 Budget Request over the FY 2015 Enacted level is driven by efforts to accelerate the protection of International Atomic Energy Agency Category 1 radiological sources in order to meet the 2014 Nuclear Security Summit commitment to secure these sources by 2016. The funding increase for this work is largely offset by decreases in funding requested for Material Protection Control and Accounting (MPC&A) sustainability activities in Former Soviet Union (FSU) countries and the return to planned funding levels for Nuclear Smuggling Detection and Deterrence after an increase in FY 2015 to complete high-priority sites.

- **Material Management and Minimization (M^3)**
  M^3 presents an integrated approach to addressing the persistent threat posed by nuclear materials through a full cycle of materials management and minimization efforts. Consistent with the priorities articulated in the National Security Strategy of the United States and the Nuclear Posture Review, the primary objective of the program is to achieve permanent threat reduction by minimizing and, when possible, eliminating weapons-usable nuclear material around the world. It includes elements of the former GTRI and Fissile Materials Disposition Programs. M^3 program funding increases in the FY 2016 Request are primarily for the removal of HEU from miniature neutron source reactors in Africa as well as preparatory activities for future shipments from Europe and Japan, which will proceed with appropriate cost-sharing.

Key FY 2014 Accomplishments

- ✓ Completed removal or disposal of a total of 190 kilograms of vulnerable nuclear material.
- ✓ Helped prevent the illicit trafficking of nuclear and radiological materials, technology and expertise by installing 37 fixed and 22 mobile radiation detection systems worldwide.
- ✓ Enhanced U.S. ability to monitor arms control treaties and detect foreign nuclear programs.
- ✓ Secured 142 domestic and international civilian buildings containing high-priority nuclear and radiological material.
- ✓ Supported two IAEA international training courses on identification and prevention of the insider threat to nuclear material (India, Indonesia).
- ✓ Maintained organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide.

- **Nonproliferation and Arms Control (NPAC)**
  NPAC supports NNSA efforts to prevent the proliferation or use of WMD, including dual-use materials, equipment, technology, and expertise, by state and non-state actors. The NPAC program focuses on strengthening the nonproliferation and arms control regimes in order to reduce proliferation and terrorism risks. This is accomplished by applying unique expertise to develop and implement programs and strategies to: strengthen international nuclear safeguards; control the spread of dual-use WMD material, equipment, technology, and expertise; verify nuclear reductions and compliance with nonproliferation and arms control treaties and agreements; and develop proposals for and implement nonproliferation and arms control policy options. The FY 2016 Request reflects a slight funding

increase over the FY 2015 Enacted level for statutorily mandated activities (export license and interdiction case reviews), international export control outreach, and activities to make the NPAC 10 CFR Part 810 application process ISO 9001 compliant.

- **Defense Nuclear Nonproliferation Research and Development (DNN R&D)**
  DNN R&D drives the innovation of unilateral and multi-lateral technical capabilities to detect, identify, and characterize: 1) foreign nuclear weapons programs, 2) illicit diversion of special nuclear materials, and 3) nuclear detonations. To meet national and Departmental nuclear security requirements, DNN R&D leverages the unique facilities and scientific skills of the Department of Energy, academia, and industry to perform research, including counterterrorism-related R&D, conduct technology demonstrations, and develop prototypes for integration into operational systems. In FY 2016, increased funding is requested for nuclear and energetic materials characterization experiments and development of advanced diagnostic equipment capabilities for long-range nuclear detonation detection, and technical forensics research. This increase over the FY 2015 Enacted level is partially offset by a return to baseline funding for the Proliferation Detection subprogram after a one-time Congressional increase in FY 2015 for test bed development and field experiments.

- **Nonproliferation Construction**
  Nonproliferation Construction consolidates construction costs for DNN projects previously contained within each program budget. Currently, the MOX Fuel Fabrication Facility (MFFF) is the only project in this program. The FY 2016 Request for MFFF is the current services projection from the FY 2015 Enacted level. The FY 2015 National Defense Authorization Act and the FY 2015 Consolidated and Further Continuing Appropriations Act, 2015, each directed the Department to conduct additional analyses of the MFFF construction project, including independent cost and schedule estimates as well as an analysis of alternative approaches for disposition of the 34 metric tons of weapons grade plutonium and their relationship to the Plutonium Management Disposition Agreement (PMDA). The Department has requested Aerospace Corporation, a federally funded research and development center, to perform these analyses. These analyses will be completed during FY 2015, and a decision will be reached on outyear funding levels for plutonium disposition. The FY 2016 Request acknowledges that while the Department continues to evaluate disposition paths (including the Mixed Oxide Fuel Fabrication Facility) to determine the most responsible path forward, any viable alternative will require a robust funding profile.

- **Nuclear Counterterrorism and Incident Response (NCTIR)**
  The FY 2016 Request proposes the combination of the NCTIR and CTCP programs to eliminate confusion about NNSA nuclear counterterrorism programs and activities, and to change the NCTIR name to Nuclear Counterterrorism ***and*** Incident Response Program. The program strategically manages and deploys expert scientific teams and equipment to provide a technically trained, rapid response to nuclear or radiological incidents and accidents worldwide. NCTIR evaluates and assesses nuclear or radiological threats, and leverages that knowledge to provide interagency policy and contingency planning, training and support to national and international counterterrorism, and incident response capabilities. Finally, NCTIR also executes the DOE's Emergency Management and Operations Support program that manages the Emergency Operations Centers, Emergency Communications Network and COOP activities. Increased funding in FY 2016 is requested to support standoff disablement activities.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
National Nuclear Security Administration						
Naval Reactors						
Naval Reactors Operations and Infrastructure	356,300	362,800	390,000	445,196	+55,196	+14.2%
Naval Reactors Development	414,298	414,298	411,180	444,400	+33,220	+8.1%
Ohio Replacement Reactor Systems Development	126,400	126,400	156,100	186,800	+30,700	+19.7%
S8G Prototype Refueling	144,400	144,400	126,400	133,000	+6,600	+5.2%
Program Direction	43,212	43,212	41,500	45,000	+3,500	+8.4%
Construction	24,373	24,373	113,320	121,100	+7,780	+6.9%
Subtotal, Naval Reactors	**1,108,983**	**1,115,483**	**1,238,500**	**1,375,496**	**+136,996**	**+11.1%**
Use of Prior Year Balances	-13,983	-13,983	0	0	0	N/A
Rescission of Prior Year Balances	0	0	-4,660	0	+4,660	+100.0%
Total, Naval Reactors	**1,095,000**	**1,101,500**	**1,233,840**	**1,375,496**	**+141,656**	**+11.5%**

Appropriation Overview

Naval Reactors' (NR) activities directly contribute to meeting the DOE strategic goal for "Nuclear Security" and NR plays a critical leadership role in meeting Strategic Objective 7, to provide safe and effective integrated nuclear propulsion systems for the U.S. Navy. The Naval Reactors program has responsibility for all naval nuclear propulsion work, from reactor plant technology development and design, continuing through reactor plant operation and maintenance, and ending with reactor plant disposal.

Program Highlights

Funding for the program supports continued safe and reliable operation of the Navy's nuclear-powered fleet (73 submarines, 10 aircraft carriers, and 4 research, development, and training platforms), constituting over 45 percent of the Navy's major vessels. The Program's development work consists of refining and improving existing technology to ensure that the U.S. Navy's nuclear propulsion plants are increasingly efficient and effective and will be capable of meeting future threats to national security.

Key FY 2014 Accomplishments

- ✓ Provided technical resolution support while the nuclear fleet steamed over two million miles.
- ✓ Advanced the *Ohio*-Class Replacement and the S8G Prototype Refueling projects supporting the Navy's *Ohio*-Class Replacement ship construction schedule and the Navy's nuclear operator training mission.
- ✓ Delivered the first A1B reactor plant for initial testing. This next-generation aircraft carrier reactor increases core energy, provides nearly three times the electric plant generating capability, and requires half the number of reactor department sailors as compared to today's aircraft carriers.

In addition to supporting the existing nuclear fleet, Naval Reactors has three major DOE initiatives: the *Ohio*-Class Replacement Reactor System Development, the Land-based S8G Prototype Refueling Overhaul, and the Spent Fuel Handling Recapitalization Project.

Naval Reactors supports the President's national security strategy with the continued development of the reactor plant system for the *Ohio*-Class Replacement submarine and stewardship of naval nuclear infrastructure. Ensuring the continuity of a sea-based strategic deterrent, the Budget Request provides for the research, design, and development of the reactor plant system for the *Ohio*-Class Replacement submarine, to include the development of a life-of-ship reactor core. The budget further provides funding for the refueling and overhaul of the Land-based S8G Prototype reactor, a critical research and development asset for the long-term. Lastly, the Spent Fuel Handling Recapitalization Project will ensure the continued capability to refuel and defuel aircraft carriers and submarines, which is critical to maintaining the nuclear fleet's operational availability for national security missions.

- **Naval Reactors Operations and Infrastructure**
  The increase over the FY 2015 Enacted level will support critical prototype maintenance during planned S8G prototype availability period, facility and systems maintenance and regulatory requirements across the Program's four DOE sites, and necessary general plant projects and capital equipment to recapitalize aging infrastructure and equipment.

- **Naval Reactors Development**
  The increase over the FY 2015 Enacted level will support the Advanced Test Reactor at the Idaho National Laboratory, the procurement of a high performance computer to support reactor plant performance modeling efforts, and additional reactor core material development and radioactive test and evaluation efforts.

- **S8G Prototype Refueling**
  The S8G Prototype Refueling funding increases over the FY 2015 Enacted level as development efforts and equipment designs are completed and efforts transition to supporting production and performing analysis needed to support future operation.

- ***Ohio*-Class Replacement Reactor System Development**
  The increase over the FY 2015 Enacted level will support reactor plant system and long lead time component development and production plans.

- **Construction**
  The increase over the FY 2015 Enacted level is driven by the Spent Fuel Handling Recapitalization Project and funds the Materials Characterization Laboratory at Knolls Atomic Power Laboratory, Engineroom Team Trainer Facility at the Kesselring Site, the Naval Reactors Facility Overpack Storage Expansion 3 in Idaho, and the Security Upgrades and Fire System Upgrades at Knolls Atomic Power Laboratory.

- **Program Direction**
  The increase over the FY 2015 Enacted level is due to the Consolidated and Further Continuing Appropriations Act, 2015, adjustments to NR's program direction funding and reflects general inflationary increases to place the Program in a position to execute its mission and provide oversight of the three DOE-funded projects.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
National Nuclear Security Administration						
NNSA Federal Salaries And Expenses						
Office of the Administrator	377,000	370,500	0	0	0	N/A
Federal Salaries and Expenses	0	0	370,000	402,654	+32,654	+8.8%
Subtotal, NNSA Federal Salaries and Expenses	**377,000**	**370,500**	**370,000**	**402,654**	**+32,654**	**+8.8%**
Rescission of Prior Year Balances	0	0	-413	0	+413	+100.0%
Total, NNSA Federal Salaries And Expenses	**377,000**	**370,500**	**369,587**	**402,654**	**+33,067**	**+8.9%**

Appropriation Overview

NNSA's **Federal Salaries and Expenses** provides for a well-managed and accountable organization by supporting a highly-educated and skilled federal workforce to provide effective federal program oversight and financial management in close partnership with the National Laboratories and our production facilities. The NNSA workforce consists of a diverse cadre of project managers, scientists, engineers, and foreign affairs specialists who execute the NNSA's critical nuclear and national security mission. This appropriation also provides for mission support functions that provide financial management, human capital management, corporate project management, legal services, procurement and contract management, safety and health, and cost estimating and program evaluation (CEPE). The account also funds NNSA contributions to the Department's Working Capital Fund (WCF), NNSA space and occupancy expenses, and other administrative expenses.

In addition to NNSA organizations located in the Washington, DC, metro area; Germantown, Maryland; and Albuquerque, New Mexico, the organization includes seven federal site offices that oversee NNSA laboratory and production facility operations, including: Lawrence Livermore, Los Alamos, and Sandia National Laboratories; the NNSA Production Office including the Pantex Plant and the Y-12 National Security Complex; Kansas City Plant; the Savannah River Site; and the Nevada National Security Site.

Key FY 2014 Accomplishments

- ✓ As responsible stewards of taxpayer money, NNSA has taken steps to reduce spending on federal program direction.
- ✓ Offered early retirement incentives to help right-size the workforce and as a cost savings measure.
- ✓ Reduced federal FTEs by 10.4% relative to the FY 2012 level of 1,886 FTEs.
- ✓ Identified efficiencies, particularly in travel and support services, to support the President's Executive Order "*Promoting Efficient Spending*".
- ✓ Maintained NNSA Federal Salaries and Expenses Federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at 4.1%, less than the FY 2014 target of less than 6%.

Program Highlights

The FY 2016 Budget Request provides funding for 1,690 full-time equivalents (FTEs) and support expenses needed to meet mission requirements. The Request also reflects an increase of $1,482,000 from the FY 2015 planned execution level of $401,172,000. The increase reflects pay escalation, including a 1.3 percent cost of living adjustment and benefit escalation, additional support to stand up the Cost Estimating and Program Evaluation (CEPE) office in accordance with Section 3112 of the FY 2014 National Defense Authorization Act (NDAA), and funding to improve financial systems integration within the nuclear security enterprise in accordance with Section 3128 of the FY 2014 NDAA.

In FY 2016, NNSA will continue its on-going efforts to plan strategically to meet current and future workforce needs by analyzing how evolving missions are affecting job requirements. In order to meet mission requirements within reduced staffing levels, reshaping of the workforce over the next several years will be essential. Reshaping involves both obtaining the right size and skill sets. NNSA will also continue to identify efficiencies, particularly in travel and support services, to provide a lean and efficient organization and to support the President's Executive Order "*Promoting Efficient Spending*".

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Science and Energy						
Science	5,066,372	5,131,038	5,067,738	5,339,794	+272,056	+5.4%
Energy Efficiency and Renewable Energy	1,900,641	1,824,876	1,914,195	2,722,987	+808,792	+42.3%
Electricity Delivery and Energy Reliability	147,242	144,205	146,975	270,100	+123,125	+83.8%
Fossil Energy	779,290	770,447	791,117	842,100	+50,983	+6.4%
Nuclear Energy	888,376	877,620	833,379	907,574	+74,195	+8.9%
Indian Energy Policy and Programs	2,506	2,506	16,000	20,000	+4,000	+25.0%
Advanced Research Projects Agency - Energy	280,000	280,000	279,982	325,000	+45,018	+16.1%
Energy Information Administration	116,999	116,999	117,000	131,000	+14,000	+12.0%
Loan Programs	26,000	13,857	21,000	17,000	-4,000	-19.0%
Energy Policy and Systems Analysis	19,269	19,269	31,181	35,000	+3,819	+12.2%
International Affairs	15,873	15,873	13,000	23,600	+10,600	+81.5%
Total, Science and Energy	9,242,568	9,196,690	9,231,567	10,634,155	+1,402,588	+15.2%

Overview

The Department of Energy's Science and Energy programs support an all-of-the-above strategy to achieve energy security, advance clean energy technologies, and support manufacturing innovation to promote economic growth and job creation. The FY 2016 Budget Request for Science and Energy programs directly contributes to the Department's Strategic Plan (Goal 1) by leading in foundational science and transformational research, development, demonstration, and deployment of an extensive range of clean energy and efficiency technologies. Important linkages exist across the Department's basic and applied energy programs, and the FY 2016 Budget Request puts forth a balanced, efficient portfolio that builds upon these links.

The FY 2016 Budget Request includes robust funding levels for clean energy technologies that advance American leadership in nuclear power, fossil energy, renewables, efficiency, and grid security for the 21st century. To sustain the Nation's primacy in scientific discovery, the Request also increases funding for basic research. The Climate Action Plan frames the Department's Request, and program proposals are informed by analytical efforts pursued through the Quadrennial Technology Review and the first installment of the Quadrennial Energy Review, both of which will be published in 2015.

Building on pilot efforts in FY 2015, the FY 2016 Budget Request also includes a set of coordinated, multi-program crosscutting initiatives that focus unique program and national laboratory expertise around shared challenges and opportunities. DOE's science and energy programs contribute to the Cybersecurity crosscutting initiative and play a central role in the Energy-Water Nexus, Exascale Computing, Grid Modernization, Subsurface Technology and Engineering, and Supercritical CO_2 technology crosscutting initiatives. Funding for these initiatives is in the program offices' budget requests.

Other areas of emphasis in this Budget Request include clean energy manufacturing activities – especially critical materials manufacturing research – to enhance manufacturing competitiveness while advancing progress towards the Nation's energy goals, traineeship and STEM programs to augment the Nation's domestic clean energy workforce, expanded financial support for deployment projects on tribal and Alaska Native land, a heightened focus on technology transfer, and infrastructure investments to maintain and renew DOE's laboratory capabilities.

Program Highlights

The Office of Science (SC) FY 2016 Budget Request funds basic research programs in physics, chemistry, materials science, biology, environmental science, applied mathematics, and computational science. The Budget Request includes expanded funding for exascale computing system research and development, sustained funding for Energy Frontier Research Centers and the DOE Bioenergy Research Centers, research to build the scientific foundation needed to develop a fusion energy source, as well as robust funding levels to support scientific inquiry in the fields of high energy and nuclear physics at universities and laboratories. The Budget Request also maintains operations of SC's scientific user facilities, and continues

construction of critical, new user facilities and provides increased investment in infrastructure renewal to sustain the SC enterprise.

The Energy Efficiency and Renewable Energy (EERE) FY 2016 Budget Request provides significantly increased funding for high-impact applied research, development, demonstration and deployment activities in sustainable transportation, renewable power, and end-use energy efficiency. The Request includes a strong focus on applied materials research, subsurface technology, and grid integration activities, and fully supports deployment of two additional Clean Energy Manufacturing Innovation Institutes, while funding expanded technology programs in Vehicles, Solar Energy, and Advanced Manufacturing.

The Electricity Delivery and Energy Reliability (OE) FY 2016 Budget Request reflects a substantial increase from FY 2015 Enacted levels to facilitate transformation of our energy infrastructure so that consumers have access to secure, reliable, and clean sources of energy. In conjunction with private industry and Federal, state, local, and tribal governments, OE supports a variety of initiatives to modernize the electric grid, including energy system measurement, modeling and risk analysis, technology research and development (R&D) around distribution networks, enhanced research and tool development for cybersecurity incident management, enhanced energy storage R&D, and two new energy reliability and assurance grant programs to support states, localities, and tribal governments.

The Fossil Energy Research and Development (FER&D) FY 2016 Budget Request advances technologies related to the reliable, efficient, affordable, and environmentally sound use of fossil fuels. The FER&D Request funds post- and pre-combustion CO_2 capture and compression technologies, including an increase for a new emphasis on optimizing carbon capture from natural gas systems and a larger scale pilot test for post-combustion capture; additional funding for carbon storage funding to support research priorities identified through the Subsurface crosscut; and investment in materials and water management R&D. The Request also includes substantial funding to support a 10MW demonstration of supercritical CO_2 technology. The Request supports FER&D's contributions to multi-agency research and development efforts on safe and environmentally sound shale gas development; technologies to reduce the surface and subsurface footprint, emissions, and water use in unconventional natural gas resource development; and new programs to detect, quantify, mitigate, and communicate to stakeholders about methane emissions. The FER&D Request also funds the first stage of a refresh process of the National Energy Technology Laboratory's supercomputer.

The Fossil Energy Strategic Petroleum Reserve (SPR) FY 2016 Budget Request supports the full operational readiness and drawdown capability of the SPR. Increased funding over the FY 2015 Enacted level supports more cavern remediation and enhanced infrastructure investment for timely replacement of equipment and physical systems and to reduce the deferred maintenance backlog. The FE 2016 Request also supports continued inventory maintenance for the Northeast Home Heating Oil Reserve. The Northeast Gasoline Supply Reserve is fully funded through FY 2017 from the use of prior year balances from the SPR test sale.

The Nuclear Energy (NE) FY 2016 Budget Request supports efforts to research and develop nuclear energy technologies, including generation, safety, waste storage and management, and security technologies, to help meet energy security, proliferation resistance, and climate goals. The NE Request includes increased R&D funding for deep borehole disposal research and supports R&D on extended storage of high burnup used nuclear fuel, continued implementation of the activities to lay the groundwork for interim storage and transportation of nuclear waste, and activities associated with exploring potential alternative disposal options for some DOE-managed spent nuclear fuel and high-level radioactive waste. The Request also supports work on accident tolerant fuels, a new radiochemistry traineeship program, the ongoing small modular reactor licensing technical support program, and the supercritical CO_2 demonstration project co-funded with FE. The Request also funds critical safeguards and security upgrades at Idaho National Laboratory (INL) and increases infrastructure spending to refurbish INL's power distribution infrastructure.

The Indian Energy Policy and Programs (IE) FY 2016 Budget Request supports ongoing technical assistance, education, and capacity building; research and analysis; and financial assistance to Indian Tribes, Alaska Native Tribes and corporations, and Tribal energy resource development organizations. The increased funding over the FY 2015 Enacted level supports expanded technical assistance and competitive grant programs to support clean energy development, energy efficiency

improvements, electrification projects, remote community renewable energy hybrid systems, microgrid deployment, and water-energy project support for Tribes.

The Advanced Research Projects Agency—Energy (ARPA-E) FY 2016 Budget Request catalyzes and accelerates energy technologies that will enhance the economic and energy security of the United States through the development of transformational technologies that reduce imports of energy from foreign sources, increase energy efficiency, and reduce energy-related emissions, including greenhouse gas emissions and which can be meaningfully advanced with a modest investment over a defined period of time.

The Energy Information Administration (EIA) FY 2016 Budget Request funds data collection, analysis, forecasting, and dissemination activities that provide 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.

The FY 2016 Budget Request proposes funding for administrative expenses and credit subsidies for the Tribal Indian Energy Loan Guarantee Program (TELGP), which will provide, or expand the provision of, electricity on Indian land. The Request also provides for administrative expenses for the Title 17 Innovative Technology Loan Guarantee Program, which encourages early commercial use of new or significantly improved technologies in energy projects, and the Advanced Technology Vehicles Manufacturing (ATVM) Loan Program, which supports the development of advanced technology vehicles and associated components in the United States.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Science						
Advanced Scientific Computing Research	478,093	463,472	541,000	620,994	+79,994	+14.8%
Basic Energy Sciences	1,711,929	1,662,702	1,733,200	1,849,300	+116,100	+6.7%
Biological and Environmental Research	609,696	593,610	592,000	612,400	+20,400	+3.4%
Fusion Energy Sciences Program	504,677	495,855	467,500	420,000	-47,500	-10.2%
High Energy Physics	796,521	774,920	766,000	788,000	+22,000	+2.9%
Nuclear Physics	569,138	554,802	595,500	624,600	+29,100	+4.9%
Workforce Development for Teachers and Scientists	26,500	26,500	19,500	20,500	+1,000	+5.1%
Science Laboratories Infrastructure	97,818	97,818	79,600	113,600	+34,000	+42.7%
Safeguards and Security	87,000	87,000	93,000	103,000	+10,000	+10.8%
Program Direction	185,000	185,000	183,700	187,400	+3,700	+2.0%
Small Business Innovation Research	0	193,205	0	0	0	N/A
Subtotal, Science	**5,066,372**	**5,134,884**	**5,071,000**	**5,339,794**	**+268,794**	**+5.3%**
Use of Prior Year Balances	0	-3,846	0	0	0	N/A
Rescission of Prior Year Balances	0	0	-3,262	0	+3,262	+100.0%
Total, Science	**5,066,372**	**5,131,038**	**5,067,738**	**5,339,794**	**+272,056**	**+5.4%**

Appropriation Overview

Science (SC) is the single largest supporter of basic research in the physical sciences in the United States and funds programs in physics, chemistry, materials science, biology, environmental science, applied mathematics, and computational science. The Office of Science portfolio has two principal thrusts: direct support of scientific research, and direct support of the design, development, construction, and operation of unique, open-access scientific user facilities. SC supports researchers at all of the DOE laboratories and approximately 300 universities and other institutions of higher learning nationwide. Approximately 31,000 researchers from universities, National Laboratories, industry, and international partners are expected to use SC user facilities in FY 2016. SC programs invest in foundational science, including basic research in clean energy, to transform our understanding of nature and support advances in fundamental science and technology innovation.

Program Highlights

- **Advanced Scientific Computing Research**
  Advanced Scientific Computing Research (ASCR) increases by $80.0 million, or 14.8 percent, relative to the FY 2015 Enacted level. The Request provides for significantly expanded investments in Research and Engineering Prototypes (REP) to develop critical technologies and system integration for exascale, including initiation of exascale node and system architecture design efforts. ASCR supports advanced computational research, applied mathematics, computer science, and networking as well as development and operation of multiple, large high performance and leadership computing user facilities and high performance networking. The Request funds:

  - Research, development, and design to ultimately achieve capable exascale systems with a thousand fold improvement in true application performance over current high performance computers.
  - Core research in applied mathematics and computer science.
  - Research on the application of high performance computer simulation and modeling to science problems, including computational partnerships under the Scientific Discovery through Advanced Computing program.
  - Research in data-intensive science to address end-to-end data management challenges, including the massive quantities of data generated by SC facilities and collaborations.
  - Operations and preparation for upgrades at ASCR's four scientific user facilities.

- **Basic Energy Sciences**
  Basic Energy Sciences (BES) increases by $116.1 million, or 6.7 percent, from the FY 2015 Enacted level. The Request continues support for on-going core research at approximately the FY 2015 Enacted level, supports operations of five synchrotron light sources, five nanoscale research centers, and two neutron scattering centers, and funds construction for the Linac Coherent Light Source-II (LCLS-II) and Advanced Photon Source (APS) Upgrade. BES supports fundamental research to understand, predict, and ultimately control matter and energy to provide the foundations for new energy technologies, to mitigate the environmental impacts of energy use, and to support DOE missions in energy, environment, and national security. The Request funds:

  - Core research activities in the broad disciplines of condensed matter and materials physics, chemistry, geosciences, and aspects of physical biosciences to discover new materials and design novel chemical processes.
  - Energy Frontier Research Centers (EFRCs) to overcome hurdles in basic science that hinder advances in energy technologies.
  - The Fuels from Sunlight and the Batteries and Energy Storage Energy Innovation Hubs.
  - Computational materials sciences to develop community codes for the design of functional materials.
  - A new investment in mid-scale instrumentation for developing ultrafast electron scattering tools.
  - Operation of BES user facilities at near optimal levels: five x-ray light sources including the first full year of operations of the National Synchrotron Light Source-II (NSLS-II) at Brookhaven National Laboratory, two neutron scattering centers, and five research centers for nanoscale science with electron beam characterization capabilities.
  - Continued construction of the Linac Coherent Light Source-II (LCLS-II) at SLAC National Accelerator Laboratory.
  - Support for the Advanced Photon Source Upgrade and the NSLS-II Experimental Tools Major Item of Equipment projects.

Key FY 2014 Accomplishments

- ✓ *In Understanding Mercury Toxicity.* Supercomputer simulations run at NERSC show for the first time how mercury, a toxic environmental pollutant, binds preferentially to sulfur-containing molecules rather than those with oxygen and other similar atoms. The simulations revealed that an interaction between mercury and water molecules is important to the process, a finding that establishes a basis for understanding the chemistry of mercury that is impossible from experimentation alone. These results are critical for understanding toxicity, bioavailability, transport, and environmental fate of this major global pollutant.
- ✓ *Advances in fundamental science for superior batteries*. Through the use of sophisticated modeling and experiments, the basic processes that are foundational to the complex systems that comprise batteries are being unraveled to aid in the development of new, superior ways to store energy. Atomistic calculations allowed the tailored design of a new binder for lithium-sulfur batteries that resulted in record breaking performance in capacity and lifetime. Analytical characterization of operating batteries demonstrated that the superior charge/discharge rate observed in lithium iron phosphate electrodes is related to the formation of a series of unexpected non-equilibrium compounds during the charge/discharge cycle, opening up the potential composition space for future cathode materials for lithium ion batteries.
- ✓ *RHIC's luminosity sets new records in FY 2014*. Improvements designed to increase luminosity have been underway at RHIC for several years; the higher the luminosity, the higher the probability that rare nuclear events will occur frequently enough to enable new discoveries about the state of matter that existed under the extreme conditions that occurred soon after the Big Bang. In 2014, a technology breakthrough to prevent beam losses from the interaction of densely bunched beam particles, as well as the fully commissioned Electron Beam Ion Source, led to an integrated luminosity for gold on gold (Au-Au) collisions exceeding the sum of all previous Au-Au runs—the average heavy ion luminosity is now 25 times the design value. This record-setting heavy ion luminosity allowed sufficient progress that a third, previously unscheduled beam species (He3), could be run to test the interpretation of new data from RHIC and the LHC that appear to show that particle flow similar to that found in the discovery of the Quark Gluon Plasma may also occur in violent proton-lead, proton-proton and light nucleus-nucleus collisions.

- **Biological and Environmental Research**
  Biological and Environmental Research (BER) increases by $20.4 million, or 3.4 percent, above the FY 2015 Enacted level to support for core research in Genomic Science, three DOE Bioenergy Research Centers (BRC), and research to understand the interdependencies of water, energy, and climate change. BER supports fundamental research to understand how genomic information is translated to functional capabilities, and how that knowledge can enable more confident redesign of microbes and plants for sustainable biofuels production and improved carbon

storage. BER also supports research to advance our understanding of the role of atmospheric, terrestrial, ocean, and subsurface interactions in determining climate dynamics to predict future climate change and plan for future energy and resource needs. The Request funds:

- Research in foundational genomics, including the three DOE Bioenergy Research Centers, to provide advances fundamental biological system science, using approaches that include genome sequencing, proteomics, metabolomics, structural biology, high-resolution imaging and characterization, and integration of information into computational models that can be iteratively tested and validated to advance a predictive understanding of biological systems from molecules to mesoscale.
- Fundamental research on clouds, aerosols, and the terrestrial carbon cycle over a range of environmental conditions at diverse climate-sensitive locations to advance understanding of how the Earth's dynamical, physical, and biogeochemical systems (the atmosphere, land, oceans, sea ice, and subsurface) interact and influence climate and environmental change.
- Research in climate model development and validation, combining advanced software code development, numerical methods and Earth system models with human systems components to understand the interdependencies of water, energy and climate change applied to spatial scales as small as 10 kilometers.
- Integrated data management through the Climate and Environmental Data, Analysis and Visualization activity.
- Operation of the three BER scientific user facilities, the DOE Joint Genome Institute (JGI), the Atmospheric Radiation Measurement Climate Research Facility (ARM), and the Environmental Molecular Sciences Laboratory (EMSL).

- **Fusion Energy Sciences**
  Fusion Energy Sciences (FES) decreases by $47.5 million, or 10.2 percent, from the FY 2015 Enacted level. The Request supports research to understand matter at very high temperatures and densities and to build the scientific foundation needed to develop a fusion energy source. The Request funds:

  - Experimental and theoretical research on enhanced performance of high-temperature magnetically confined plasmas.
  - Research carried out through international partnerships, high-performance computer simulations based on theoretical models, advanced materials development, measurement technique innovation, and discoveries in basic plasma science and high energy density laboratory plasma physics.
  - Operation of three major scientific user facilities: the DIII-D facility; the NSTX-U at Princeton Plasma Physics Laboratory, which has resumed operations after completion of its upgrade; and the Alcator C-Mod, which will cease operations at the end of FY 2016.
  - Activities of eight Scientific Discovery Through Advanced Computing (SciDAC) centers, three in partnership with Advanced Scientific Computing Research.
  - The U.S. Contribution to the International Thermonuclear Experimental Reactor (ITER) project.

- **High Energy Physics**
  High Energy Physics (HEP) increases by $22.0 million, or 2.9 percent, above the FY 2015 Enacted level and is consistent with the High Energy Physics Advisory Panel (HEPAP) (P5) report recommendations. HEP supports research to understand how the universe works at its most fundamental level by discovering the most elementary constituents of matter and energy, probing the interactions among them, and exploring the basic nature of space and time. The Request funds:

  - Activities and projects highly recommended by the high energy physics community and described in the High Energy Physics Advisory Panel (HEPAP) May 2014 strategic plan, including support for developing an enhanced Long Baseline Neutrino Facility hosted at Fermilab, with international partners.
  - Core research and user facility operations that maintains a productive program while new investments are being made.
  - Upgrades to the CMS and ATLAS detectors at the Large Hadron Collider to maintain their capabilities; and continued support for the operation of the current detectors and associated research activities.

- Muon to Electron Conversion Experiment (Mu2e) project proceeding to the construction phase, to provide a unique window into charged lepton flavor violation.
- New, next-generation projects to search for dark matter, LZ and SuperCDMS-SNOlab; and to further studies of dark energy, the Dark Energy Spectroscopic Instrument.

- **Nuclear Physics**
  Nuclear Physics (NP) increases $29.1 million, or 4.9 percent, above the FY 2015 Enacted level to support research and construction of the Facility for Rare Isotope Beams (FRIB). NP supports research to discover, explore, and understand nuclear matter in a variety of different forms. The Request funds:

  - Core research in Nuclear Physics at universities and laboratories that will foster significant advances in nuclear structure, nuclear astrophysics, the study of matter at extreme conditions, hadronic physics, fundamental properties of the neutron, and neutrinoless double beta decay.
  - Relativistic Heavy Ion Collider (RHIC) operations to continue research that explores new states of matter at high energy and density.
  - Beam development and commissioning activities for the 12 GeV Continuous Electron Beam Accelerator Facility (CEBAF) upgrade, which will open the opportunity for new discoveries and an improved understanding of quark confinement.
  - Argonne Tandem Linac Accelerator System operations to research the properties of nuclei and stellar nucleosynthesis.
  - Facility for Rare Isotope Beam (FRIB) construction at Michigan State University to provide world-class capability and new discovery potential in nuclear structure and nuclear astrophysics.

- **Workforce Development for Teachers and Scientists**
  Workforce Development for Teachers and Scientists (WDTS) increases by $1.0 million, or 5.1 percent, over the FY 2015 Enacted level, and ensures that DOE has the sustained pipeline of science, technology, engineering, and mathematics (STEM) workers to meet national goals and objectives, now and in the future.

- **Science Laboratories Infrastructure**
  Science Laboratories Infrastructure (SLI) increases by $34.0 million, or 42.7 percent, above the FY 2015 Enacted level to support three ongoing construction projects and three new infrastructure improvement projects. SLI sustains mission-ready infrastructure and safe and environmental responsible operations by providing the infrastructure necessary to support leading edge research by the SC National Laboratories in the area of basic scientific research, now and in the future.

- **Safeguards and Security**
  Safeguards and Security (S&S) program increases $10.0 million, or 10.8 percent, over the FY 2015 Enacted level. S&S ensures appropriate security measures are in place to support the SC mission requirement of open scientific research and to protect critical assets within SC Laboratories.

- **Science Program Direction**
  Program Direction (PD) increases $3.7 million, or 2.0 percent, over the FY 2015 Enacted level. PD supports a skilled and motivated Federal workforce to develop and oversee SC investments in world-leading research and scientific user facilities. PD also provides public access to DOE scientific findings to further leverage the Federal science investment and advance the scientific enterprise.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Energy Efficiency and Renewable Energy						
Sustainable Transportation						
Vehicle Technologies	289,737	282,201	280,000	444,000	+164,000	+58.6%
Bioenergy Technologies	232,290	182,327	225,000	246,000	+21,000	+9.3%
Hydrogen and Fuel Cell Technologies	92,928	89,518	97,000	103,000	+6,000	+6.2%
Total, Sustainable Transportation	**614,955**	**554,046**	**602,000**	**793,000**	**+191,000**	**+31.7%**
Renewable Energy						
Solar Energy	257,058	254,305	233,000	336,700	+103,700	+44.5%
Wind Energy	88,126	87,035	107,000	145,500	+38,500	+36.0%
Water Power	58,565	57,834	61,000	67,000	+6,000	+9.8%
Geothermal Technologies	45,775	44,802	55,000	96,000	+41,000	+74.5%
Total, Renewable Energy	**449,524**	**443,976**	**456,000**	**645,200**	**+189,200**	**+41.5%**
Energy Efficiency						
Advanced Manufacturing	180,471	175,400	200,000	404,000	+204,000	+102.0%
Federal Energy Management Program	28,248	28,248	27,000	43,088	+16,088	+59.6%
Building Technologies	177,868	173,631	172,000	264,000	+92,000	+53.5%
Weatherization and Intergovernmental Program	230,862	230,862	243,000	318,499	+75,499	+31.1%
Total, Energy Efficiency	**617,449**	**608,141**	**642,000**	**1,029,587**	**+387,587**	**+60.4%**
Corporate Support						
Facilities and Infrastructure	45,973	45,973	56,000	62,000	+6,000	+10.7%
Program Direction	162,000	162,000	160,000	165,330	+5,330	+3.3%
Strategic Programs	23,540	23,540	21,000	27,870	+6,870	+32.7%
Total, Corporate Support	**231,513**	**231,513**	**237,000**	**255,200**	**+18,200**	**+7.7%**
Subtotal, Energy Efficiency and Renewable Energy	**1,913,441**	**1,837,676**	**1,937,000**	**2,722,987**	**+785,987**	**+40.6%**
Use of Prior Year Balances	-2,382	-2,382	0	0	0	N/A
Rescission of Prior Year Balances	-10,418	-10,418	-22,805	0	+22,805	+100.0%
Total, Energy Efficiency and Renewable Energy	**1,900,641**	**1,824,876**	**1,914,195**	**2,722,987**	**+808,792**	**+42.3%**

Appropriation Overview

The Office of Energy Efficiency and Renewable Energy (EERE) is the U.S. Government's primary clean energy technology organization. EERE works with many of America's best innovators and businesses to support high-impact applied research, development, demonstration, and deployment (RDD&D) activities in sustainable transportation, renewable power, and end-use energy efficiency. EERE implements a range of strategies aimed at reducing U.S. reliance on oil, saving American families and businesses money, creating jobs, and reducing pollution. EERE works to ensure that the clean energy technologies of today and tomorrow are not only invented in America, but also manufactured in America.

Program Highlights

Sustainable Transportation

- **Vehicle Technologies**
  The FY 2016 Request supports a number of aggressive vehicle technology goals: battery energy storage, electric drive research and development (R&D), and advanced power electronics initiatives in support of the EV Everywhere Grand Challenge; improvements in lightweight materials performance; more efficient combustion engine technologies; a new SuperTruck II initiative to achieve improved freight hauling efficiency goals and alternative fuel vehicle community partner projects, which are new competitively-awarded projects to build strategically-placed, high-impact, community-scale demonstrations of alternative fuel vehicles. Major funding changes are the result of enhanced support for these activities, in particular increased investment in vehicle electrification and grid infrastructure, SuperTruck II, natural gas storage, magnesium sheet, co-optimization of fuels and engines, and partnerships to build high-impact community-scale demonstrations of alternative fuel vehicles.

- **Bioenergy Technologies**
  The FY 2016 Request emphasizes development of innovative processes to convert cellulosic and algal-based feedstocks to bio-based gasoline, jet, and diesel fuels at a cost of $3.00 per gallon gasoline equivalent (gge). In collaboration with the U.S. Departments of Navy and Agriculture, the program will demonstrate commercial-scale biorefineries to produce military-specification fuels. Additionally, the Request will support R&D to advance new technologies from the lab bench to the commercial market.

Key FY 2014 Accomplishments

- ✓ $300/kWh Modeled Li-Ion Battery Pack Cost Achieved
- ✓ Cost Effective Cellulosic Ethanol Demonstrated at Pilot Scale ($2.15/gal)
- ✓ Nation's first offshore wind projects selected to achieve operation by 2017
- ✓ Spearheaded DOE's contribution to the establishment of the National Network for Manufacturing Innovation (NNMI)
- ✓ Standards enacted since 2009 are projected to avoid a cumulative total of 2.2 billion metric tons of carbon emissions by 2030
- ✓ More than 200 organizations partnering with DOE through Better Buildings Challenge to achieve 20% energy savings

- **Hydrogen and Fuel Cell Technologies**
  The FY 2016 Request supports the goal to reduce the cost and increase the durability of transportation fuel cell systems, with a targeted cost of $40/kW and durability of 5,000 hours, equivalent to 150,000 miles, by 2020. In addition, the program is working to reduce the cost of hydrogen from renewable resources to less than $4.00/gge – dispensed and untaxed – by 2020. In FY 2016, Fuel Cell R&D will focus on stack component R&D, stack and component operation and performance, systems and system integration, balance of plant components, testing, technical analysis, and high-throughput combinatorial approaches. Hydrogen Fuel R&D will focus on materials and process development to enable hydrogen production from diverse renewable resources. Funding will also provide resources to rapidly advance the development of quality control tools for the manufacturing of fuel cell components and systems.

Renewable Power

- **Solar Energy**
  The FY 2016 Request supports the SunShot Initiative goal to make solar power cost-competitive without subsidies by 2020, equivalent to a cost of solar power of $.06/kWh. This includes solar photovoltaic R&D; activities that enable a 50% reduction in non-hardware "soft costs"; and development and demonstration of innovative solar energy manufacturing technologies to increase U.S. competitiveness, in support of DOE's Clean Energy Manufacturing Initiative. The Request also supports development of advanced thermal storage so that concentrated solar power can achieve base-load grid parity. Major funding changes are the result of increased investments for developing transformative solutions that are critical to enabling high penetration of solar into the grid and new efforts focusing on commercial scale solar to reduce barriers to the deployment of solar energy.

- **Wind Energy**
  The FY 2016 Request supports three advanced offshore wind demonstration projects planned for operation by 2017, as well as an Atmosphere to Electrons initiative, to optimize entire wind farm performance and lower the cost of wind energy. The Request also supports DOE's Clean Energy Manufacturing Initiative enabling new designs, materials and manufacturing processes for longer blades to capture greater wind resource, address transportation barriers, and to achieve full market cost competition for wind energy.

- **Water Power**
  The FY 2016 Request supports the launch of HydroNEXT, a new EERE initiative that focuses on conducting R&D to enable increased hydropower opportunities at non-powered dams, water conveyance systems, and new stream reach development; development of new low cost modular systems will minimize civil works and environmental impact and maximize design for manufacturing. The Request also supports marine and hydrokinetic activities, including front end engineering and design for a grid-connected open-water test facility.

- **Geothermal Technologies**
  The FY 2016 Request supports full implementation of the Subsurface Technology and Engineering RD&D crosscut. The crosscut is a critical effort for advancing innovative RD&D under the Hydrothermal subprogram to reduce the cost and risk of geothermal development, by targeting opportunities to leverage advances in other subsurface sectors. The Request continues moving the Frontier Observatory for Research in Geothermal Energy (FORGE) toward field

operations. FORGE is a dedicated site that enables testing of novel technologies and techniques for Enhanced Geothermal Systems optimization and validation. The Request also accelerates "play fairway" analyses, which provide assessments of exploration risk and the probability of finding new geothermal resources on a regional scale, resulting in maps and studies that reduce the industry's drilling and development risks.

Energy Efficiency

- **Advanced Manufacturing**
  The FY 2016 Request fully supports the deployment of two additional Clean Energy Manufacturing Innovation Institutes, along with continued support of four existing institutes, as part of the larger interagency National Network of Manufacturing Institutes, which is aimed at bringing together universities, companies, and the government to jointly invest in solving industry-relevant problems and improving U.S. manufacturing competitiveness. The Request also supports high-impact R&D focused on advanced manufacturing and materials that will enable U.S. manufacturers to realize significant gains in energy productivity, environmental performance, product yield, and economic competitiveness

- **Federal Energy Management Program**
  The FY 2016 Request supports major Administration initiatives to better assist all federal agencies in meeting aggressive energy, water, greenhouse gas and other sustainability goals, as well as share solutions, such as best practices, tools, and process improvements, more broadly throughout the economy to provide the greatest impact for its efforts. Major funding changes are a result of a $15 million investment to assist agencies to invest in priority projects for efficiency and renewables with the greatest impact.

- **Building Technologies**
  The FY 2016 Request supports an increased emphasis on emerging technologies R&D in key technology areas such as lighting, heating and cooling and building envelope, needed to support the reduction of the Nation's energy use by 50%; supports the equipment and appliance standards programs to establish minimum energy efficiency requirements pursuant to federal statutes; and supports building to grid integration activities focused on improving the efficiency and resiliency of the electric grid, including connected buildings and building systems. The Request also supports a new advanced building envelope and refrigerant materials manufacturing R&D effort; assists home owners and builders in adopting energy efficiency solutions; and improves the information, tools, and resources available to the commercial sector with a goal of achieving 20 percent reduction in energy use by 2020.

- **Weatherization and Intergovernmental Program**
  The FY 2016 Request supports the Weatherization Assistance Program which provides access to home weatherization services for low-income households across the country, including approximately 33,000 homes in FY 2016. The State Energy Program will continue to disseminate best practices with a goal of helping government facilities and operations reduce annual energy use by 2 percent by 2020 and focus on energy planning and analysis. The Request also establishes a new local program that will provide competitive grants and technical assistance to local governments, creating partnerships to catalyze investments in the advancement of the U.S. clean energy economy.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Electricity Delivery and Energy Reliability						
Clean Energy Transmission and Reliability	32,383	31,474	34,262	40,000	+5,738	+16.7%
Smart Grid Research and Development	14,592	14,125	15,439	30,000	+14,561	+94.3%
Cybersecurity for Energy Delivery Systems	43,476	42,301	45,999	52,000	+6,001	+13.0%
Energy Storage	15,192	14,706	12,000	21,000	+9,000	+75.0%
Transformer Resilience and Advanced Components	0	0	0	10,000	+10,000	N/A
National Electricity Delivery	5,997	5,997	6,000	7,500	+1,500	+25.0%
Infrastructure Security and Energy Restoration	7,996	7,996	6,000	14,000	+8,000	+133.3%
State Energy Reliability and Assurance Grants	0	0	0	63,000	+63,000	N/A
Program Direction	27,606	27,606	27,606	32,600	+4,994	+18.1%
Subtotal, Electricity Delivery and Energy Reliability	**147,242**	**144,205**	**147,306**	**270,100**	**+122,794**	**+83.4%**
Rescission of Prior Year Balances	0	0	-331	0	+331	+100.0%
Total, Electricity Delivery and Energy Reliability	**147,242**	**144,205**	**146,975**	**270,100**	**+123,125**	**+83.8%**

Appropriation Overview

Electricity Delivery and Energy Reliability (OE) leads the Department's efforts to strengthen, transform, and improve our energy infrastructure so that consumers have access to reliable, secure, and clean sources of energy. To accomplish this critical mission, the Office works with private industry and Federal, state, local, and tribal governments on a variety of initiatives to modernize the electric grid. Grid modernization is critical to addressing aging infrastructure, achieving public policy objectives, sustaining economic growth, supporting environmental stewardship, and mitigating risks to secure the Nation. The goal for the future grid is to provide a platform for U.S. economic prosperity and energy innovation in a global clean energy economy. It will deliver reliable, affordable, and clean electricity to consumers where, when, and how they want it.

The OE mission is reflected in the Strategic Objective 2, support a more economically competitive, environmentally responsible, secure and resilient U.S. energy infrastructure, in the DOE Strategic Plan. OE also plays a critical role in implementation of the President's Climate Action Plan to mitigate the risks and enhance resilience against climate change.

The Request supports the Administration's all-of-the-above strategy and emphasizes priorities that increase electric grid resilience, including managing risks, increasing system flexibility and robustness, increasing visualization and situational awareness, and deploying advanced control capabilities.

The Request also continues crosscutting programs that coordinate across the Department and seek to tap DOE's full capability to effectively and efficiently address the United States' energy, environmental, and national security challenges. OE is part of the Grid Modernization and Cybersecurity crosscuts.

The FY 2016 increase over the FY 2015 appropriation is primarily due to several new activities: State Energy Reliability and Assurance Grants, Advanced Distribution Management Systems and Market-Based Control Signals within the Smart Grid program, and a Virtual Energy-Sector Forensics Analysis Platform within the Cybersecurity for Energy Delivery Systems program.

Program Highlights

- **Clean Energy Transmission and Reliability**
  The Clean Energy Transmission and Reliability (CETR) program ($40,000,000) improves energy system decision-making through system measurement, modeling, and risk analysis. The program's efforts will help lay the foundation for a modern grid and ensure that investments made to improve energy infrastructure appropriately factor risk and uncertainty as a key element. The Request supports development of value-added synchrophasor applications for transmission owners, expansion of university research in mathematics for power systems, the development and application of risk analysis, and a competitive solicitation to improve operational reliability and security of the grid.

- **Smart Grid Research and Development**
  The Smart Grid program ($30,000,000) focuses primarily on the development of technologies, tools, and techniques to modernize the distribution portion of the electric delivery system. The program conducts R&D on microgrids and resilient grids while building on grid modernization efforts to improve reliability, operational efficiency, resiliency, and outage recovery. The Request also promotes higher performing grids by integrating new assets and information streams with advanced distribution management systems and explores new market-based control paradigms that can integrate distributed generation resources more efficiently.

- **Cybersecurity for Energy Delivery Systems**
  The Cybersecurity for Energy Delivery Systems program ($52,000,000) reflects the critical need to accelerate and expand efforts to strengthen the energy infrastructure against current and future cyber threats. Working closely with the Energy Sector and government partners, the Request supports research on cutting edge cybersecurity solutions, information sharing to enhance situational awareness, implementing tools to help industry improve their cybersecurity posture, and building an effective, timely, and coordinated cyber incident management capability in the energy sector. The Request establishes a virtual collaborative environment for conducting real-time advanced digital forensics analysis, which can be used to analyze untested and untrusted code, programs, and websites without allowing the software to harm the host device.

Key FY 2014 Accomplishments

In support of the U.S. Energy Infrastructure Agency Priority Goal:

- ✓ Cutting edge cybersecurity solutions transitioned to the energy sector in 2014 include substation control system components and field devices designed to allow only expected cyber-activity, strengthening protections against unauthorized access, communications and executable processes.
- ✓ OE supported responses to 24 energy emergency events, physical security events, wild fires, winter storms, fuel shortages, national security events, storms, and typhoons.
- ✓ In support of an MOU between DOE and New Jersey, OE completed a resiliency assessment and feasibility study for constructing and operating a microgrid to support NJ TRANSIT. Based on the OE design, the microgrid is being built by NJ TRANSIT, under a competitive grant from the Federal Transit Administration, to fortify its multimodal transportation network.
- ✓ OE released the Lantern Live mobile app to provide helpful information regarding electrical outages and locating gas stations during emergencies.
- ✓ OE work in redox battery and cell optimization led to a bench-top battery with 4 times the power and a 50 percent greater current density, compared to the 2013 state of the art.

- **Energy Storage**
  The Energy Storage program ($21,000,000) develops and demonstrates new and advanced energy storage technologies that will enable the stability, resiliency, and surety of the future electric utility grid as it transforms into a resilient grid, as well as support increased levels of renewables. The Request addresses challenges in cost competitive energy storage technology, validated reliability and safety, an equitable regulatory environment, and industry acceptance.

- **Transformer Resilience and Advanced Components**
  Transformer Resilience and Advanced Components ($10,000,000) addresses the unique challenges facing transformers and other critical components for transporting energy from where it is generated to where it is used. The program will advance the understanding of impacts of geomagnetic disturbances and electromagnetic pulses on large power transformers and grid components. In addition, the Request supports advanced component work including power electronics R&D.

- **National Electricity Delivery**
  The National Electricity Delivery program ($7,500,000) supports policies, planning and practices related to electricity delivery to assist the electric power industry, state regulators and policymakers, and Federal agencies respond to major new challenges and opportunities. The program provides, upon request, technical and policy expertise to states, regions, and tribes to encourage the development and deployment of reliable and affordable electricity infrastructure. It also authorizes the import and export of electricity, issues permits for cross-border transmission lines, and coordinates Federal transmission permitting on Federal lands. The Request provides an increase to strengthen the modeling and analytical tools available to state regulators and policymakers to assist in developing long-term integrated system reliability plans.

- **Infrastructure Security and Energy Restoration**
  The Infrastructure Security and Energy Restoration program ($14,000,000) leads the Department's efforts as the Energy Sector-Specific Agency on national efforts, in cooperation with public and private sector stakeholders to enhance the reliability, survivability, and resiliency of the U.S. energy infrastructure. The Request includes a series of regional energy assurance training workshops to assess state and local government response to energy events.

- **State Energy Reliability and Assurance Grants**
  The State Energy Reliability and Assurance Grants program ($63,000,000) is a new initiative in FY 2016 that would provide grants to states, localities, and tribal governments in support of electricity transmission, storage, and distribution reliability and energy assurance. States are excellent test beds for the evolution of the electric power system and, with Federal support, can provide innovative ways to address new trends through more coordinated and efficient processes that allow the electric sector to reliably provide services that meet environmental, resilience, efficiency, and energy assurance goals. The Department is uniquely positioned to facilitate the coordination of these planning processes within states and across state lines.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Fossil Energy Research and Development						
Coal						
CCS and Power Systems						
Carbon Capture	92,000	89,231	88,000	116,631	+28,631	+32.5%
Carbon Storage	108,766	105,493	100,000	108,768	+8,768	+8.8%
Advanced Energy Systems	99,500	96,505	103,000	39,385	-63,615	-61.8%
Cross Cutting Research	41,925	40,732	49,000	51,242	+2,242	+4.6%
NETL Coal Research and Development	50,011	50,011	50,000	34,031	-15,969	-31.9%
STEP (Supercritical CO2)	0	0	10,000	19,300	+9,300	+93.0%
Total, Coal	**392,202**	**381,972**	**400,000**	**369,357**	**-30,643**	**-7.7%**
Natural Gas Technologies	20,600	19,980	25,121	44,000	+18,879	+75.2%
Unconventional Fossil Energy Technologies from Petroleum - Oil Technologies	15,000	14,549	4,500	0	-4,500	-100.0%
Program Direction	120,000	120,000	119,000	114,202	-4,798	-4.0%
Plant and Capital Equipment	16,032	16,032	15,782	18,044	+2,262	+14.3%
Fossil Energy Environmental Restoration	5,897	5,897	5,897	8,197	+2,300	+39.0%
Super Computer	0	0	0	5,500	+5,500	N/A
Special Recruitment Programs	700	700	700	700	0	0
Subtotal Fossil Energy Research and Development	**570,431**	**559,130**	**571,000**	**560,000**	**-11,000**	**-1.9%**
Use of Prior Year Balances	-8,500	-8,500	0	0	0	N/A
Rescission of Prior Year Balances	0	0	-10,413	0	+10,413	+100.0%
Total, Fossil Energy Research and Development	**561,931**	**550,630**	**560,587**	**560,000**	**-587**	**-0.1%**

Appropriation Overview

Fossil Energy Research and Development (FER&D) advances technologies related to the reliable, efficient, affordable, and environmentally sound use of fossil fuels that are an important component of the President's "All of the Above" energy strategy to ensure our Nation's security and economic prosperity. FER&D leads Federal research, development, and demonstration (RD&D) efforts on advanced carbon capture and storage (CCS) technologies to facilitate achievement of the President's climate goals. It also conducts research and development (R&D) associated with the prudent, safe, and sustainable development of our unconventional domestic resources.

Program Highlights

- **Coal**

  The Carbon Capture and Storage (CCS) and Power Systems program conducts research to reduce carbon emissions by advancing the environmental performance and efficiency of fossil energy systems integrated with CCS technologies. FER&D manages the Clean Coal Power Initiative (CCPI) program along with two American Recovery and Reinvestment Act (ARRA) CCS demonstration programs: FutureGen 2.0 and the Industrial Carbon Capture and Storage program under the CCS Demos program.

  - **Carbon Capture**

    The Carbon Capture activity is focused on the development of post-combustion and pre-combustion CO_2 capture and compression technologies for new and existing coal and natural gas power plants and industrial sources. Post-combustion CO_2 capture technology R&D is focused on capturing CO_2 from flue gas after the fuel has been consumed/combusted. Pre-combustion CO_2 capture is applicable to systems that capture and separate the CO_2 from mixed gas streams prior to combustion or utilization of the gas. The increase in the FY 2016 Budget Request over the FY 2015 Enacted level funds a new emphasis on optimizing carbon capture on natural gas systems, funds ongoing projects, and proceeds to larger scale pilot tests of technologies on both coal and natural gas. These efforts will support the program's commitment to deliver a demonstration project that captures and stores more than 75 percent of the carbon emissions from a natural gas power system of at least 50 MWe capacity by 2020

using what has been determined to be the best available carbon capture technology available for demonstration at the time.

- **Carbon Storage**
  The overall goal of the Carbon Storage Program is to develop and validate technologies to ensure safe and permanent geologic storage of captured CO_2. Development and validation of these technologies is critical to ensure industry and regulatory agencies have the capability to assess, monitor and mitigate risks for geologic carbon storage, and to ensure its viability as an effective technology solution that can be implemented on a large-scale to mitigate carbon emissions. Technologies developed and validated through the Carbon Storage Program will improve storage efficiency and reduce the overall cost of CCS with a goal of ensuring cost effective capabilities to measure and account for 99 percent of injected CO_2 in all storage types while minimizing the environmental footprint of carbon storage activities. The increase in the FY 2016 Budget Request over the FY 2015 Enacted level will fund new and existing projects that support Carbon Storage Program efforts and the Department's cross-functional SubTER technical team in developing laboratory- and bench-scale technologies for identifying and obtaining new subsurface signals, ensuring wellbore integrity, and increasing understanding of stress state and induced seismicity.

Key FY 2014 Accomplishments

- ✓ In FY 2014 Petra Nova started construction on its post-combustion CCS project. The project will integrate Mitsubishi Heavy Industries CO2 capture technology on a 240MWe flue gas slipstream at NRG's commercial 600MWe PC coal fired W.A. Parish Plant in Thompson, TX.
- ✓ In FY 2014, the Department of Energy together with the Department of the Interior and the Environmental Protection Agency published the Federal Multiagency Collaboration on Unconventional Oil and Gas Research: A Strategy for Research and Development.

- **Advanced Energy Systems (AES)**
  The AES mission is to increase the availability and efficiency of fossil energy systems integrated with CO_2 capture, while maintaining the highest environmental standards at the lowest cost. The program elements focus on gasification, oxy-combustion, advanced turbines, and solid oxide fuel cells. While the primary focus is on coal-based power systems, improvements in these technologies will result in positive spillover benefits that also reduce the cost of converting other carbon-based materials, such as biomass, petcoke or natural gas, into power and value-added products in an environmentally-acceptable manner. The program will focus on the most promising technologies in these areas.

- **Cross-cutting Research**
  The Cross-cutting Research activity fosters the development of innovative systems for improving availability, efficiency, and environmental performance of advanced energy systems with CCS. The Program serves as a bridge between basic and applied research by targeting concepts that offer the potential for transformational breakthroughs and step change benefits in the way energy systems are designed, constructed, and operated. In addition, the Cross-cutting Research Program leads efforts that support University-based energy research including science and engineering education at minority colleges and universities.

- **NETL Coal Research and Development**
  The NETL Coal R&D activity supports the NETL staff directly associated with conducting in-house research activities for the Coal Research and Development programs. The in-house R&D activities are conducted by a staff of scientists, engineers, technicians, and administrative personnel along with contractor support staff to support the various Coal program activities. Funding has not been requested for Rare Earth Minerals in FY 2016.

- **Supercritical Carbon Dioxide Technology**
  Supercritical Carbon Dioxide Technology (sCO2) is a new subprogram within the CCS and Power Systems. It supports the Department's s CO_2 crosscut which is focused on technology development for supercritical carbon dioxide-based power conversion cycles. These cycles can be applied to most heat sources, including fossil, nuclear, solar and geothermal applications, while offering significant improvements in efficiency, cost, footprint, and water use. FER&D's ultimate goal is a directly-fired supercritical CO_2 fuel cycle which could also significantly reduce the costs of carbon capture and storage. The major thrusts of the crosscut are a coordinated R&D effort in high temperature technology development/component validation, and the Supercritical Transformational Electric Power Generation (STEP) initiative to design, construct and operate a 10MW pilot test bed. The increase in the FY 2016 Budget Request over the FY 2015 Enacted level will enable FER&D to issue a solicitation for a 10 MW pilot in FY 2016.

- **Natural Gas Technologies**
  The Natural Gas Technologies program will focus on continued implementation of priority collaborative research and development, together with the Department of the Interior and the Environmental Protection Agency, to ensure that shale gas development is conducted in a manner that is environmentally sound and protective of human health and safety. The program will focus on technologies to reduce the surface and subsurface footprint, emissions, and water use in order to enable safe and responsible development of unconventional domestic natural gas resources. The program will initiate emission reductions from the natural gas infrastructure program focused on advanced cost-effective technologies to detect and mitigate methane emissions from natural gas transmission, distribution, and storage facilities and to communicate results on methane emissions mitigation to stakeholders. In addition, the program will initiate an emissions quantification from natural gas infrastructure program focused on better quantifying methane emission from the natural gas value chain for updating the national Greenhouse Gas Inventory.

- **Program Direction**
  The FY 2016 Budget Request for Program Direction provides the funding for all headquarters and field personnel and operational expenses in Fossil Energy R&D. In addition, it provides support for day-to-day project management functions and operational expenses for the National Energy Technology Laboratory (NETL). The Request also includes support for the Import/Export Authorization program, which will continue regulatory reviews and oversight of the transmission of natural gas across the U.S. borders.

- **Plant & Capital Equipment**
  NETL has 117 buildings and related infrastructure located in Morgantown, West Virginia; Pittsburgh, Pennsylvania; and Albany, Oregon. The Plant and Capital Equipment program is essential for maintenance of these buildings, critical Lab infrastructure, and for ensuring compliance with life safety standards for NETL employees and the public.

- **Environmental Restoration**
  The FY 2016 Budget Request for Environmental Restoration provides for the environmental cleanup of former and present Fossil Energy project sites, security and safeguard services for NETL, and health, safety, and environmental protection programs for NETL and the public.

- **Supercomputer**
  The NETL Supercomputer, commissioned in 2012, is currently scheduled to begin an update/refresh process in FY 2016. Given the rapid advances in computing technology, Supercomputers typically have an expected life cycle of approximately three years after which standard warranties run out, replacement parts are not readily available, and maintenance costs rapidly escalate. The funding requested in FY 2016 will cover the cost of the first stage of the refresh process. Thanks to advances in technology, the computational power of the next generation equipment will be much greater. It is anticipated that the refresh will upgrade the processing speed to 5 PFLOPS, a 10-fold increase.

- **Special Recruitment Programs**
  FE developed the Mickey Leland Energy Fellowship (MLEF) Program to provide students majoring in science, technology, engineering and mathematics (STEM) disciplines the opportunity to enhance their education and knowledge of fossil fuels. The goal of the program is to support an increase in the number of females and under-represented minorities entering the scientific and engineering career fields within the U.S. workforce.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Fossil Energy Petroleum Accounts						
Naval Petroleum and Oil Shale Reserves						
Production Operations	12,999	15,457	13,271	13,330	+59	+0.4%
Management	7,000	7,000	6,679	4,170	-2,509	-37.6%
Total, Naval Petroleum and Oil Shale Reserves	**19,999**	**22,457**	**19,950**	**17,500**	**-2,450**	**-12.3%**
Total, Elk Hills School Lands Fund	**0**	**0**	**15,580**	**0**	**-15,580**	**-100.0%**
Strategic Petroleum Reserve (SPR)						
Facilities Development and Operations	164,714	164,714	174,999	229,710	+54,711	+31.3%
Management for SPR Operations	24,646	24,646	25,001	27,290	+2,289	+9.2%
Total, Strategic Petroleum Reserve	**189,360**	**189,360**	**200,000**	**257,000**	**+57,000**	**+28.5%**
Northeast Home Heating Oil Reserve						
Northeast Home Heating Oil Reserve	8,000	8,000	7,600	7,600	0	0
Rescission of Prior Year Balances	0	0	-6,000	0	+6,000	+100.0%
Total, Northeast Home Heating Oil Reserve	**8,000**	**8,000**	**1,600**	**7,600**	**+6,000**	**+375.0%**
Total, Fossil Energy Petroleum Accounts	**217,359**	**219,817**	**237,130**	**282,100**	**+44,970**	**+19.0%**

Appropriation Overview

Fossil Energy Petroleum Accounts consist of three energy security programs authorized under the Energy Policy and Conservation Act: the Strategic Petroleum Reserve located at government-owned Gulf Coast storage sites as well as the Northeast Home Heating Oil Reserve & the Northeast Gasoline Supply Reserve (NEGSR) – both stored in Northeast commercial terminals. DOE is also responsible for legacy environmental clean-up/remediation at the previously-sold Naval Petroleum Reserve No. 1 (NPR-1 at Elk Hills, California) as well as the disposition of Naval Petroleum Reserve No. 3 (NPR-3 at Casper, Wyoming).

Key FY 2014 Accomplishments

- ✓ In FY 2014 the Strategic Petroleum Reserve successfully conducted a "Test Sale" of nearly 5 million barrels of crude oil from the Reserve to demonstrate key operational and distribution capabilities and to identify potential systemic or infrastructural bottlenecks requiring future corrective action.
- ✓ Additionally, the program established the Northeast Gasoline Supply Reserve which stocks 1 million barrels of gasoline available for drawdown under national or regional emergencies.

Program Highlights

- **Strategic Petroleum Reserve**

  The Strategic Petroleum Reserve (SPR) provides strategic and economic security against foreign and domestic disruptions in oil supplies via an emergency stockpile of crude oil. The program fulfills U.S. obligations under the International Energy Program, which avails the U.S. of International Energy Agency assistance through its coordinated energy emergency response plans, and provides a deterrent against energy supply disruptions. In 2014, the SPR performed an operational Test Sale that completed delivery of 4,998,146 barrels of crude oil over a 47 day period resulting in $468,564,599 in receipts. This sale helped evaluate how changes in the TEXOMA distribution group impacts SPR's ability to distribute crude oil. A portion of these receipts ($235,587,000) were the source for all Northeast Gasoline Supply Reserve requirements including 4.5 years of commercial storage, 1MMB of government-owned, commingled gasoline stocks, third-party quality assurance and inventory certifications and sales platform readiness.

  The FY 2016 Budget Request will provide the program with full SPR operational readiness and drawdown capability. The program will continue the degasification of crude oil inventory at the West Hackberry site to ensure its availability. Wellbore testing and cavern remediation will also continue to ensure the availability of caverns for drawdown and to meet regulatory compliance. Major changes from FY 2015 include: an increase in the number of cavern remediations from 6 to 10; the addition of a custody transfer flow metering skid to provide distribution flexibility and reliability; and

increased funding for the Major Maintenance construction program for timely replacement of equipment and physical systems and to reduce the deferred maintenance backlog.

- **Naval Petroleum and Oil Shale Reserves**
  Following the 1998 sale of the government's interests in NPR-1 (Elk Hills, CA), environmental cleanup/remediation activities under the Corrective Action Consent Agreement with the State of California Department of Toxic Substances Control (DTSC) began. Of 131 areas of concern (AOCs) for which DOE is responsible for the environmental cleanup, 13 Areas of Concern (AOCs) have received a DTSC certification of "No Further Action"; 7 AOCs are under DTSC review; 46 AOCs require additional testing; and 65 AOCs are awaiting field investigation or remediation activities. In FY 2016, NPR-1 will continue these assessment and remediation activities.

  The account also funds activities at the Naval Petroleum Reserve 3 (NPR-3) in Wyoming (Teapot Dome field), a stripper well oil field. Transfer of NPR-3 to private ownership through a competitive sale is anticipated to be completed in the second quarter of FY 2015. In FY 2016, NPR-3/RMOTC will complete Phase III of the disposition plan - the closeout of the Casper office - with activities including closure of contracts, preparation of field IT and equipment for disposal, records management processing, and disposal of personal property.

- **Northeast Home Heating Oil Reserve**
  The Northeast Home Heating Oil Reserve (NEHHOR) FY 2016 Budget continues to maintain a 1 million barrel inventory of ultra-low sulfur distillate (ULSD), in Northeast commercial storage terminals, as a short-term supplement to the Northeast systems' commercial supply of heating oil for deployment in the event of an emergency supply disruption. FY 2016 activity will focus on an acceptable and effective transition to the new storage terminal contracts, solicited in FY 2015. The Program will continue to focus its oversight and management with quality analysis of the Reserve as well as information technology support for the sales system.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Nuclear Energy						
Integrated University Program	5,500	5,500	5,000	0	-5,000	-100.0%
STEP R&D	0	0	5,000	5,000	0	0
SMR Licensing Technical Support	110,000	110,000	54,500	62,500	+8,000	+14.7%
Reactor Concepts Research, Development and Demonstration	112,822	109,212	133,000	108,140	-24,860	-18.7%
Fuel Cycle Research and Development	186,205	181,207	197,000	217,760	+20,760	+10.5%
Nuclear Energy Enabling Technologies	71,109	68,833	101,000	86,387	-14,613	-14.5%
Radiological Facilities Management	24,968	24,968	25,000	6,800	-18,200	-72.8%
Idaho Facilities Management	196,276	196,276	206,000	211,826	+5,826	+2.8%
Idaho Sitewide Safeguards & Security	94,000	94,000	104,000	126,161	+22,161	+21.3%
International Nuclear Energy Cooperation	2,496	2,496	3,000	3,000	0	0
Program Direction	90,000	90,000	80,000	80,000	0	0
Subtotal, Nuclear Energy	**893,376**	**882,492**	**913,500**	**907,574**	**-5,926**	**-0.6%**
Transfer from Department of State	0	128	0	0	0	N/A
Use of Prior Year Balances	-5,000	-5,000	0	0	0	N/A
Rescission of Prior Year Balances	0	0	-80,121	0	+80,121	+100.0%
Total, Nuclear Energy	**888,376**	**877,620**	**833,379**	**907,574**	**+74,195**	**+8.9%**

Appropriation Overview

Nuclear Energy (NE) supports the diverse civilian nuclear energy programs of the U.S. Government, leading Federal efforts to research and develop nuclear energy technologies, including generation, safety, waste storage and management, and security technologies, to help meet energy security, proliferation resistance, and climate goals.

Program Highlights

- **STEP R&D**
  FY 2016 activities will include efforts to support the STEP pilot scale demonstration project through technical evaluations of risk and cost reduction options, and the development and testing of high efficiency Brayton cycle turbo-machinery and the conduct of experiments to explore liquid metal / sCO_2 heat exchanger performance.

- **Small Modular Reactor Licensing Technical Support**
  The Request is consistent with the requirements outlined in the cooperative agreement with NuScale Power, and includes funding for site permitting and related licensing activities to support the continued development of small modular reactor technologies previously selected under this program.

- **Reactor Concepts Research, Development and Demonstration**
  FY 2016 activities will include cost-shared efforts to extend the life of the existing commercial nuclear reactor fleet through research in the areas of materials aging and degradation, safety margin characterization, and safety technologies; and research into advanced reactor technologies, such as fast reactor technologies and high temperature reactor technologies for the production of electricity and high

Key FY 2014 Accomplishments

- ✓ Completed cooperative agreement with NuScale Power and began technical support for design, engineering, and licensing efforts supporting the NuScale SMR design certification application during the pre-award and first budget periods.
- ✓ Built a highly functional cross department Initiative Tech Team for supercritical CO_2 (sCO_2) advanced power conversion activities; issued sCO_2 R&D request for information; and held two industry workshops.
- ✓ Completed three deployments of the Hub developed virtual reactor modeling and simulations tools to industry users and computing environments.
- ✓ Signed the United States-Czech Republic Nuclear R&D Agreement and the DOE-UK DECC Nuclear R&D Memorandum of Understanding.
- ✓ *Issued a Finding of No Significant Impact on the Environmental Assessment for the Resumption of Transient Testing of Nuclear Fuels and Materials at the Idaho National Laboratory.*

temperature process heat to improve the economic competitiveness and safety of nuclear energy as a resource capable of meeting the Nation's energy, environmental and energy security goals.

- **Fuel Cycle Research and Development**
  The FY 2016 Budget Request will expand efforts that support the Administration's waste management strategy including research and development (R&D) on deep borehole disposal and extended storage of high burnup used nuclear fuel, continued implementation of the activities to lay the groundwork for interim storage and transportation of nuclear waste, and activities associated with exploring potential alternative disposal options for some DOE-managed spent nuclear fuel and high-level radioactive waste. The Request also supports continued progress toward the development of one or more light water reactor fuels with enhanced accident tolerance.

- **Nuclear Energy Enabling Technologies**
  The FY 2016 Budget Request includes funding for NE Traineeships to address workforce development needs in the field of radiochemistry. FY 2016 computational activities will include issuing the integration and assessment plan for the BISON and SHARP simulation tools, completing the mid-term reviews of the first collaborative High-Impact Problems, and demonstration of the use of the Virtual Environment for Reactor Analysis to understand performance issues of nuclear fuel cladding.

- **Radiological Facilities Management**
  FY 2016 activities will include the procurement of 40 and delivery of between 33 and 36 plate fuel elements required annually by university research reactors as determined by need and fuel availability.

- **International Nuclear Energy Cooperation**
  FY 2016 activities include developing new bilateral collaboration with Canada, China, France, India, Japan and the U.K. through R&D Agreements, implementing arrangements and Action Plan updates, as well as maintaining existing multilateral cooperation commitments in the International Framework for Nuclear Energy Cooperation and the International Atomic Energy Agency.

- **Idaho Facilities Management and Idaho Sitewide Safeguards and Security**
  Within the Idaho Facilities Management program, the increase over the FY 2015 Enacted level will support a focused effort to refurbish the Idaho National Laboratory (INL) site-wide power distribution infrastructure, including the replacement of the Supervisory Control and Data Acquisition (SCADA) system, the replacement of multiple site substations, and initiation of a new construction line item, the Sample Preparation Laboratory project. Within the Idaho Sitewide Safeguards and Security program, the increase will support efforts to upgrade physical security infrastructure at the INL, including the perimeter intrusion detection and assessment system (PIDAS) and central alarm system at the Materials and Fuels Complex (MFC) and the development of industrial control systems and enhanced monitoring capabilities to strengthen cyber security at the INL.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Office Of Indian Energy Policy and Programs						
Indian Energy Programs (IE)						
Office Of Indian Energy Policy and Programs	0	0	0	3,510	+3,510	N/A
Tribal Energy Program	0	0	0	16,490	+16,490	N/A
Total, Indian Energy Programs (IE)	**0**	**0**	**0**	**20,000**	**+20,000**	**N/A**
Office of Indian Energy Policy and Programs (DA)						
Office Of Indian Energy Policy and Programs	2,506	2,506	16,000	0	-16,000	-100.0%
Total, Office of Indian Energy Policy and Programs	**2,506**	**2,506**	**16,000**	**20,000**	**+4,000**	**+25.0%**

Appropriation Overview

The Office of Indian Energy Policy and Programs (IE) directs, fosters, coordinates, and implements energy planning, education, management, and competitive grant programs to assist Tribes with clean energy development and infrastructure, capacity building, energy costs, and electrification of Indian lands and homes. IE coordinates programmatic activities across DOE related to the development of clean energy resources on Indian lands and works with other Government agencies and Indian Tribes and organizations to promote Indian energy policies and initiatives. IE performs these functions consistent with the federal government's trust responsibility, Tribal self-determination policy, and government-to-government relationship with Indian Tribes.

IE operates several technical assistance and financial assistance programs to support energy development on Tribal lands, including the Strategic Technical Assistance Response Team (START) Program, education and training for project development and project finance, tribal leader forums on energy development issues, transmission analysis and support, and other hands-on technical assistance on tribal projects. In FY 2014, IE conducted Project Development Workshops and Tribal Leader Forums all over the Country, provided hundreds of hours of technical assistance, and provided forty hours of webinar trainings for tribal leaders and tribal staff. The Office of Indian Energy supports the President’s Climate Action Plan efforts, and leads efforts to create interagency collaboration for energy development programs.

Program Highlights

The FY 2016 Budget Request will support 9 FTEs (+2 FTE), other program direction and administrative costs; and amounts to provide increased technical assistance and competitive grant programs to support clean energy development, energy efficiency improvements, electrification projects, remote community renewable energy hybrid systems, microgrid deployment, water-energy project support, and other greenhouse gas emission mitigation technologies for Indian Tribes.

The FY 2016 Request also reflects the Administration’s decision to request tribal energy activities at the Department in a separate appropriation for IE to more accurately include the office as part of the Department’s diverse Energy and Science portfolio.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Advanced Research Projects Agency - Energy						
Advanced Research Projects Agency - Energy Projects	252,000	252,000	252,000	295,750	+43,750	+17.4%
Program Direction	28,000	28,000	28,000	29,250	+1,250	+4.5%
Subtotal, Advanced Research Projects Agency - Energy	**280,000**	**280,000**	**280,000**	**325,000**	**+45,000**	**+16.1%**
Rescission of Prior Year Balances	0	0	-18	0	+18	+100.0%
Total, Advanced Research Projects Agency - Energy	**280,000**	**280,000**	**279,982**	**325,000**	**+45,018**	**+16.1%**

Appropriation Overview

The **Advanced Research Projects Agency-Energy (ARPA-E)** catalyzes and accelerates energy technologies that will enhance the economic and energy security of the United States through the development of transformational technologies that reduce imports of energy from foreign sources, increase energy efficiency, and reduce energy-related emissions, including greenhouse gas emissions. ARPA-E funds high-potential, high-impact energy projects that are too early for private sector or other Department of Energy (DOE) program office investments and could lead to entirely new ways to generate, store, and use energy. ARPA-E was established by the America COMPETES Act of 2007 following a recommendation by the National Academies in the *Rising above the Gathering Storm* report.

ARPA-E focuses on energy technologies that can be meaningfully advanced with a modest investment over a defined period of time. ARPA-E's rigorous program design, close coordination with other DOE offices and federal agencies, competitive project selection process, and hands-on engagement, ensure thoughtful expenditures while empowering America's energy researchers with funding, technical assistance, and market awareness.

As of January 2015, ARPA-E has funded over 400 projects with approximately $1.1 billion through 25 focused programs and open funding solicitations.

Key FY 2014 Accomplishments

In FY 2014 ARPA-E saw continued traction across several key indicators, including multiple teams launching demonstration projects, as well as four ARPA-E funded small companies being acquired by strategic industry partners. In addition, ARPA-E programs and awardees accomplished the following technical achievements:

- ✓ An ARPA-E awardee established a world record for big data analysis for the electric grid, accurately forecasting power consumption at over one million endpoints simultaneously every ten minutes.
- ✓ Several ARPA-E awardees achieved breakthrough demonstrations of conformable tanks or innovative new storage materials that enable natural gas storage at an energy density needed to enable light-duty vehicles fueled by natural gas.
- ✓ ARPA-E FOCUS program was cited by the International Energy Agency (IEA) as leading the way toward the ultimate hybridization of solar thermal and PV technology to fully utilize the solar spectrum, reduce overall electricity costs, and make roughly half of the solar electricity available for dispatch as needed.

Program Highlights

In FY 2016, ARPA-E expects to release funding opportunity announcements (FOA) for 7 – 10 focused technology programs. In FY 2015, ARPA-E released a third open funding opportunity announcement (OPEN 2015); however, in keeping with a multi-year cycle for OPEN solicitations (2009, 2012, and 2015), ARPA-E does not anticipate an open solicitation in FY 2016. In FY 2016, ARPA-E will continue its stand-alone Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program to provide additional support to small businesses beyond the significant number of awards that go to small businesses via ARPA-E's standard FOA process.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Energy Information Administration						
National Energy Information System	116,999	116,999	117,000	131,000	+14,000	+12.0%
Total, Energy Information Administration	**116,999**	**116,999**	**117,000**	**131,000**	**+14,000**	**+12.0%**

Appropriation Overview

The **U.S. Energy Information Administration** (EIA) is the independent statistical and analytical agency within the U.S. Department of Energy. EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment. As the Nation's premier source of energy information, EIA conducts a data collection program covering the full spectrum of energy sources, end uses, and energy flows; generates short- and long-term domestic and international energy projections; and performs timely, informative energy analyses. EIA supports Goal 1 (Science and Energy) of the DOE Strategic Plan.

Program Highlights

The FY 2016 Budget Request maintains EIA's core energy activities funded in the FY 2015 appropriation, while also expanding the data collection and analysis program to serve several emergent stakeholder needs:

- **Address Critical Energy Data Gaps**: Develop survey and other data on the determinants of personal vehicle transportation; monthly movements of crude oil by rail; monthly estimates of electricity generation by distributed renewable energy sources; and the use of energy for treatment and pumping in agricultural and potable water systems.

Key FY 2014 Accomplishments

- ✓ Initiated a monthly Drilling Productivity Report to provide indicators oil and natural gas production trends in key producing regions.
- ✓ Released building characteristics data from the latest Commercial Buildings Energy Consumption Survey.
- ✓ Expanded the State Heating Oil and Propane Program to collect weekly wholesale and retail price data for propane and heating oil from 14 new states.
- ✓ Developed two new surveys to cover energy data gaps: state oil and gas production data, including measurement of crude density; and hourly electricity load data.
- ✓ Launched three new interactive web browsers to improve customer access to EIA data.

- **Expand Domestic Energy Data and Analysis**: Serve markets and policymakers by providing new information such as near-real-time data on regional and national electricity flows; monthly oil production data; project three to five year mid-term energy trends; and collect more granular data on energy use in buildings through a voluntary crowd-sourcing approach.

- **Increase Integration of EIA Energy Data with Canada and Mexico:** Collaborate with counterparts in Canada and Mexico to improve the quality and transparency of North American energy data through reconciliation of data on energy trade flows among the three countries; extension of energy mapping capabilities (building on EIA's existing platform); and development of common terminologies. The counterparts will also share views to enable improved forward-looking projections and outlooks for within-region energy flows.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Title 17 - Innovative Technology Loan Guarantee Program						
Administrative Operations	42,000	42,000	42,000	42,000	0	0
Loan Guarantee, Offsetting Collections	-22,000	-34,143	-25,000	-42,000	-17,000	-68.0%
Total, Title 17 - Innovative Technology Loan Guarantee Program	**20,000**	**7,857**	**17,000**	**0**	**-17,000**	**-100.0%**

Appropriation Overview

The **Innovative Technology Loan Guarantee Program (LGP)**, as authorized under Title XVII of the Energy Policy Act of 2005, encourages early commercial use of new or significantly improved technologies in energy projects. Projects supported by DOE loan guarantees must avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; employ new or significantly improved technologies compared to commercial technologies in service in the United States at the time the guarantee is issued; and offer a reasonable prospect of repayment of the principal and interest on the guaranteed obligation. LGP supports the goals and objectives in the President's Climate Action Plan by supporting the deployment of innovative clean energy technologies. In the Title 17 program, LGP has closed over $20 billion in loan guarantees and issued over $3 billion in conditional commitments, including loan guarantees for a wide-range of renewable energy technologies and the first new commercial nuclear power plant to be licensed and begin construction in the U.S. in three decades.

Portfolio Status

- ✓ Total Amount Disbursed: $14,425M
- ✓ Total Amount Repaid: (Principal and Interest) $1,801M
- ✓ Total Amount of Sale/Write-offs: $11.95M

The FY 2016 Loan Programs Office (LPO) Budget Request will allow LGP to continue active monitoring of the existing portfolio while continuing efforts to deploy $24 billion in loan authority and $169.6 million in section 1703 credit subsidy appropriations for existing innovative energy technologies.

Program Highlights

The FY 2016 Budget Request supports American competitiveness in clean energy while supporting the President's Climate Action Plan. Furthermore:

Key FY 2014 Accomplishments

- ✓ 19 (of 23 active) projects in partial to full operating phase. 3,469 MW cumulative generation capacity added to the grid
- ✓ 8.3 Mt of CO_2 avoided
- ✓ 16,036 GWh of electricity generated

- LGP issued the Advanced Fossil Energy Projects Solicitation, the Renewable Energy and Efficient Energy Projects Solicitation, and the Advanced Nuclear Energy Projects Solicitation.

- Over the course of FY 2016, LGP expects to accept and review applications under the new solicitation and work to obligate the $24 billion in loan guarantee authority made available under these solicitations.

- All administrative expenses are expected to be fully offset by fees collected from applicants and borrowers.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Advanced Technology Vehicles Manufacturing Loan Program						
Administrative Expenses	6,000	6,000	4,000	6,000	+2,000	+50.0%
Total, Advanced Technology Vehicles Manufacturing Loan Program	**6,000**	**6,000**	**4,000**	**6,000**	**+2,000**	**+50.0%**

Appropriation Overview

The **Advanced Technology Vehicles Manufacturing (ATVM) Loan Program** supports the manufacturing of advanced technology vehicles and associated components in the United States. ATVM accelerates the domestic commercial deployment of advanced technology vehicles at a scale sufficient to meaningfully contribute to the achievement of our national clean energy objectives. These include reducing domestic dependence on oil; mitigating greenhouse gas emissions; and enhancing American competitiveness in the 21st century global economy.

Portfolio Status

- ✓ Total Amount Disbursed: $7,281M
- ✓ Total Amount Repaid (Principal and Interest): $2,496M
- ✓ Total Amount of Sale/Write-offs: $186M

The FY 2016 Loan Programs Office (LPO) Budget Request for ATVM will allow LPO to monitor the existing portfolio and conduct underwriting on new projects. The appropriation will cover ATVM's administrative expenses, including salaries for its full time employees, as well as the cost of outside advisors for financial, legal, engineering, credit, and market analysis. LPO/ATVM has been engaged with industry in discussions on potential new applications from qualified vehicle and component manufacturers and originates new loans using existing loan authority.

Program Highlights

- ATVM's current portfolio of projects reduced petroleum usage by over 306 million gallons in FY 2014 and manufactured over 100,000 electric vehicle batteries in FY 2014.
- ATVM's projects have supported over 35,000 jobs domestically.

Key FY 2014 Accomplishments

- ✓ Tesla Motor Company repaid its loan nine years early in May 2013.
- ✓ Nissan Leaf is best-selling EV in history.
- ✓ Ford eco boost engine technology combines direct fuel injection and turbocharging which improves fuel economy without sacrificing engine power. This variant is now available in nearly all Ford vehicles.
- ✓ 9.7 Mt CO_2 avoided

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Tribal Indian Energy Loan Guarantee Program						
Loan Guarantee Credit Subsidy Costs	0	0	0	9,000	+9,000	N/A
Administrative Operations	0	0	0	2,000	+2,000	N/A
Total, Tribal Indian Energy Loan Guarantee Program	**0**	**0**	**0**	**11,000**	**+11,000**	**N/A**

Appropriation Overview

The **Tribal Indian Energy Loan Guarantee Program (TIELGP)**, as authorized under Section 2602(c) of the Energy Policy Act of 2005, will provide or expand the provision of electricity on Indian land. In FY 2016, the Department Requests $9 million in credit subsidy and $2 million for administrative expenses. The loan guarantees will support the development or expansion of clean energy projects which employ commercially proven and available technologies. The aggregate outstanding amount guaranteed by DOE at any time shall not exceed $2 billion.

Although Indian lands have over 9,000,000 MW of renewable energy potential, only 125-130MW has been installed due to lack of capital. While other credit programs exist, the eligibility criteria for these programs preclude most tribes from participating. The TIELGP will provide much-needed capital to support energy security and economic development on Indian lands.

The DOE Loan Programs Office (LPO) will administer the program and coordinate with the Office of Indian Energy Policy and Programs (IE). This will allow the TIELGP to use existing LPO staff and expertise, while minimizing overhead costs and other related expenses typically associated with establishing a new program, as well as the ongoing costs of administering the program.

Program Highlights

The FY 2016 Budget Request supports energy security and economic development on Indian lands. The Request will allow DOE to:

- Establish the program and issue a final rule and publish a solicitation so that TIELGP may begin reviewing applications.
- The appropriated credit subsidy will support 1-2 loan guarantees for small- to medium-sized projects, estimated at 1MW – 10MW installed capacity.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Environmental Management by Site						
Carlsbad/Waste Isolation Pilot Plant (WIPP)	221,170	221,170	324,455	248,178	-76,277	-23.5%
Idaho National Laboratory	391,993	393,593	405,103	366,702	-38,401	-9.5%
Oak Ridge	429,541	429,410	431,142	365,672	-65,470	-15.2%
Paducah	324,524	324,515	269,773	232,129	-37,644	-14.0%
Portsmouth	199,465	199,474	275,828	227,221	-48,607	-17.6%
Richland/Hanford	1,012,620	1,012,620	1,007,230	914,000	-93,230	-9.3%
River Protection	1,210,216	1,210,216	1,212,000	1,414,000	+202,000	+16.7%
Savannah River	1,255,430	1,255,430	1,259,542	1,336,766	+77,224	+6.1%
Lawrence Livermore National Laboratory	1,476	1,476	1,366	1,366	0	0
Los Alamos National Laboratory	224,789	224,789	189,600	188,625	-975	-0.5%
Nevada	61,897	61,897	64,851	62,385	-2,466	-3.8%
Sandia National Laboratories	2,814	2,814	2,801	2,500	-301	-10.7%
Separation Process Research Unit (SPRU)	23,700	23,700	0	0	0	N/A
West Valley Demonstration Project	66,015	66,015	60,457	61,104	+647	+1.1%
Energy Technology Engineering Center	9,404	9,367	8,959	10,459	+1,500	+16.7%
Moab	38,000	36,478	35,663	37,629	+1,966	+5.5%
Other Sites	23,488	23,488	13,297	4,889	-8,408	-63.2%
Headquarters Operations	35,979	35,403	38,979	62,448	+23,469	+60.2%
Program Direction	300,000	300,000	280,784	281,951	+1,167	+0.4%
Uranium Enrichment Decontamination and Decommissioning Fund Contribution	0	0	463,000	471,797	+8,797	+1.9%
Subtotal, Environmental Management by Site	**5,832,521**	**5,831,855**	**6,344,830**	**6,289,821**	**-55,009**	**-0.9%**
Uranium Enrichment Decontamination and Decommissioning Fund Discretionary Payment	0	0	-463,000	-471,797	-8,797	-1.9%
Use of Prior Year Balances (Non-Defense Environmental Cleanup)	-2,206	-2,206	0	0	0	N/A
Rescission of Prior Year Balances	0	0	-20,813	0	+20,813	+100.0%
Total, Environmental Management by Site	**5,830,315**	**5,829,649**	**5,861,017**	**5,818,024**	**-42,993**	**-0.7%**

Appropriation Overview

The Office of **Environmental Management** (EM) supports the Department's Strategic Plan to position the Department of Energy to meet the challenges of the 21st century and the nation's Manhattan Project and Cold War legacy responsibilities.

EM was established in 1989 and is responsible for the cleanup of millions of gallons of liquid radioactive waste, thousands of tons of spent (used) nuclear fuel and special nuclear material, disposition of large volumes of transuranic and mixed/low-level waste, huge quantities of contaminated soil and water, and deactivation and decommissioning of thousands of excess facilities. This environmental cleanup program results from five decades of nuclear weapons development and production and Government-sponsored nuclear energy research. It involves some of the most dangerous materials known to humankind. EM has completed cleanup activities at 91 sites in 30 states and in the Commonwealth of Puerto Rico; EM is responsible for the remaining cleanup at 16 sites in 11 states.

Program Highlights

- **Savannah River**
  At the Savannah River Site, the largest portion of the FY 2016 Budget Request supports the Liquid Tank Waste Management Program. The liquid waste tanks pose the highest public, worker, and environmental risk at the site; therefore, stabilization and preparation for disposal are a high priority. The project scope includes the operation of

Key FY 2014 Accomplishments

- ✓ Closed from service two Cold-War-era liquid radioactive waste tanks at Savannah River site.
- ✓ Dispositioned 3,458 cubic meters of combined Remote-Handled and Contact-Handled Transuranic Waste prior to suspending of WIPP operations in February 2014.

the Defense Waste Processing Facility and management of the tank farms. In addition, the Request supports continued construction of the Salt Waste Processing Facility and Saltstone Disposal Unit #6, and operation of the Actinide Removal Process and Modular Caustic Side Extraction Unit. This unit will be needed until the Salt Waste Processing Facility begins operation. The Request also supports the operations of the Saltstone Facility and the Effluent Treatment Facility. The FY 2016 Request supports the Savannah River Site to operate H Canyon in a safe and secure manner, and provides safe, secure storage for spent (used) nuclear fuel in L-Area. The increase over the FY 2015 Enacted level provides additional support leading to startup of Salt Waste Processing Facility in 2018; supports tank closure and bulk waste removal activities to meet FY 2016 enforceable milestones; provides additional funding for Salt Disposal Unit #6 construction; and maintains L Area in a safe condition.

- **Office of River Protection**
  The Office of River Protection's primary goal is the safe management and treatment of approximately 56 million gallons of radioactive liquid waste currently stored in 177 underground storage tanks at Hanford. Its mission includes operation, maintenance, engineering, and construction activities in the tank farms, as well as managing a multi-year construction project to build a Waste Treatment and Immobilization Plant (WTP) to process and immobilize the tank waste in a solid glass form safe for permanent disposal. The FY 2016 Budget Request maintains safe operations for the tank farms and enables the development of infrastructure necessary for waste treatment operations, while continuing construction on the Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory. It will also allow for continued work on technical issue resolution for the Pretreatment Facility and the High Level Waste Facility. This WTP Request is focused on moving the WTP toward immobilization of low activity waste as soon as practicable while continuing efforts to resolve the technical issues. The FY 2016 Budget Request includes support for the ramp up of construction activities for a Low Activity Waste Pretreatment System and support of the direct feed Low Activity Waste initiative in the tank farms. The increase over the FY 2015 Enacted level is attributed to the ramp up of the Total Estimated Cost design activities for the Low Activity Waste Pretreatment System project, activities required in the tank farms to support the direct feed Low Activity Waste initiative and A/AX single shell tank retrievals.

- **Hanford Site (Richland)**
  The Richland Operations Office manages all cleanup activities at Hanford not managed by the Office of River Protection, while also providing site-wide services shared by the two offices. Cleanup activities include soil and groundwater remediation, facility decontamination and decommissioning (D&D), stabilization and disposition of nuclear materials and spent nuclear fuel, and disposition of waste other than the tank waste managed by the Office of River Protection. The Richland Operations Office planned accomplishments for FY 2016 include the following significant activities: maintain safe operations for Richland Operations; provide Hanford site-wide services; continue Plutonium Finishing Plant decommissioning and demolition to slab-on-grade by September 2016; make significant progress in the River Corridor cleanup; and continue groundwater remedy implementation and environmental monitoring. In addition, the Richland Operations Office will provide critical infrastructure repairs and upgrades to support cleanup operations and the Waste Treatment and Immobilization Plant. The Request will also maintain safe waste management, decontamination and decommissioning, and groundwater remediation capabilities in the Central Plateau. The decrease from the FY 2015 Enacted level is attributed to completed scope and postponed activities due to technical challenges with 324 Facility deactivation, decommissioning, decontamination and demolition; remediation of 618-10/11 and waste site remediation in the 100 K Area.

- **Oak Ridge**
  At Oak Ridge, the FY 2016 Request will maintain EM facilities in a safe, compliant, and secure manner; operate EM waste management facilities such as the on-site disposal facility, sanitary landfills, and liquid, gaseous and waste operations at Oak Ridge National Laboratory; continue development of Comprehensive Environmental Response, Compensation and Liability Act documentation for the new On-Site Disposal Facility; continue demolition of Buildings K-27 and K-31 at East Tennessee Technology Park; and continue design for the Mercury Treatment Facility at the Y-12 National Security Complex. The processing of legacy transuranic waste debris will continue at the Transuranic Waste Processing Center and technology maturation and design continues for the Sludge Processing Facility Buildout project. Additionally, the Request supports direct disposition of Consolidated Edison Uranium Solidification Project material from Building 3019 assuming resolution of stakeholder concerns. The decrease from the FY 2015 Enacted level to is attributed to reduced activities related to the Sludge Processing Facility Build Out line item construction project; and the completion of the K-25 Building demolition project.

- **Idaho**
  The Idaho Cleanup Project is responsible for the treatment, storage and disposition of a variety of radioactive and hazardous waste streams, including removal and disposition of targeted buried waste sitting above the Snake River Plain Aquifer. The project is also responsible for removing or deactivating unneeded facilities, and removing DOE's inventory of spent (used) nuclear fuel and high-level waste from Idaho. Idaho's FY 2016 Request will support key requirements to continue progress in meeting the Idaho Settlement Agreement commitments. These include supporting operations of the Advanced Mixed Waste Treatment Facility to process transuranic and mixed low level wastes. The Request will continue progress in retrieving targeted waste at the Subsurface Disposal Area under the Accelerated Retrieval Project. It will also continue activities for retrieval and treatment of sodium bearing waste from the four remaining tanks and continue progress towards closure of the tank farm and management of spent nuclear fuel, including retrieval of fuel from wet storage to dry storage. The decrease from the FY 2015 Enacted level is attributed to the anticipated completion of sodium bearing waste operations in FY 2016; and planned completion of facility upgrades at Ft. St. Vrain.

- **Carlsbad**
  The Carlsbad Field Office is responsible for managing the National Transuranic Waste Program and the Waste Isolation Pilot Plant (WIPP), the Nation's only mined geologic repository for the permanent disposal of defense-generated transuranic waste. WIPP suspended operations on February 5, 2014, following a fire involving an underground vehicle and an unrelated radioactive release that occurred February 14, 2014. The FY 2016 Request supports WIPP Recovery, regulatory and environmental compliance actions, the construction of the two capital line-item projects to maintain progress toward legacy transuranic waste related milestones at generator sites, and transportation capabilities and associated activities. Planned FY 2016 activities include: continued safety basis documentation development; Accident Investigation Board Corrective Action Plan implementation; Safety Management Program improvement; facility and equipment maintenance replacements and upgrades; progress on the line-items (permanent ventilation system and new exhaust shaft); re-initiation of mining capability; facility restart planning and reviews; and resumption of disposal operations of on-site waste using existing disposal panels. The decrease from the FY 2015 Enacted level is attributed to reduced requirements for recovery activities to support interim operations in FY 2016.

- **Paducah**
  The Paducah site is responsible for a multifaceted portfolio of processing and cleanup activities. The site operates one of two depleted uranium hexafluoride (DUF6) conversion facilities in the EM portfolio, with the Paducah facility expected to continue operations for approximately thirty years. Additionally, Paducah manages high-priority groundwater remediation; deactivation and decommissioning of excess facilities; and disposition of mixed and low-level waste, all with close involvement of local community stakeholders. In addition to ongoing environmental cleanup and DUF6 operations, Paducah's FY 2016 Budget Request will support activities to further stabilize the Paducah Gaseous Diffusion Plant that is being returned to the Department of Energy from the United States Enrichment Corporation in 2015. The Request will also support stabilization of shutdown facilities, including facility modifications, surveillance and maintenance, and actions to remove hazardous materials, and the continued environmental remediation activities in compliance with the Federal Facility Agreement. The decrease from the FY 2015 Enacted level is attributed to placing the Gaseous Diffusion Plant in a steady state maintenance mode.

- **Portsmouth**
  The FY 2016 Budget Request will support the deactivation and decommissioning project at the Portsmouth Gaseous Diffusion Plant in Piketon, Ohio. The majority of the Request will be used for deactivation and decommissioning of gaseous diffusion plant ancillary facilities and systems, disposal of waste, small equipment removal, utility optimizations, and hazardous material abatement. The FY 2016 Request also includes funding for design and construction of a potential on-site landfill for the disposal of waste expected to be generated from the demolition of the Portsmouth Gaseous Diffusion Plant and associated facilities. In addition, the Request will continue the safe operation of the DUF6 Conversion facility that converts depleted uranium hexafluoride into a more stable depleted uranium oxide form suitable for reuse or disposition. The decrease from the FY 2015 Enacted level is attributed to implementation of planned deactivation and decommissioning actvities.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Office of Legacy Management						
Legacy Management	163,271	163,271	158,639	154,080	-4,559	-2.9%
Program Direction	13,712	13,712	13,341	13,100	-241	-1.8%
Subtotal, Office of Legacy Management	**176,983**	**176,983**	**171,980**	**167,180**	**-4,800**	**-2.8%**
Rescission of Prior Year Balances	0	0	-126	0	+126	+100.0%
Total, Office of Legacy Management	**176,983**	**176,983**	**171,854**	**167,180**	**-4,674**	**-2.7%**

Appropriation Overview

The Office of **Legacy Management (LM)** ensures the long-term protection of human health and the environment after site cleanup is completed. LM's responsibilities include DOE closure sites, former uranium mills, sites in the Formerly Utilized Sites Remedial Action Program, and selected sites conveyed to DOE under other authority. LM also funds the pensions and post-retirement benefits for former contractor personnel after site closure.

The LM program supports the Strategic Plan goal of Management and Performance: Position the Department of Energy (DOE) to meet the challenges of the 21st century and the Nation's Manhattan Project and Cold War legacy responsibilities by employing effective management and refining operational and support capabilities to pursue departmental missions. LM is also a leader in cutting resource waste, supporting energy efficiency and reducing energy use in Federal buildings, including certification by the U.S. Green Building Council for the LM records storage facility and Fernald Preserve Visitors Center.

Program Highlights

The majority of LM's activities is long term and focuses on maintaining the Department's legal, regulatory, community, and contractual commitments. Management of closure site activities by LM enables other DOE programs to focus on risk reduction and site closure. By the end of FY 2016, LM expects to have responsibility for long-term management of 100 sites.

Key FY 2014 Accomplishments

- ✓ Issued a Report to Congress on defense-related uranium.
- ✓ Completed an Environmental Impact Statement and issued a Record of Decision on the Department's uranium leasing program.
- ✓ Transferred land from the Rocky Flats site to the U.S. Fish and Wildlife Service and disposed of federal property in Monticello, UT.

LM's functions span both physical and human resources. In the physical environment, LM conducts long-term surveillance and maintenance of environmental remedies (e.g., groundwater monitoring and disposal cell maintenance) to protect human health and the environment. For each of the sites LM maintains both the physical and electronic records and responds to over 1,600 requests for information each year. LM is also responsible for maintaining the records and information systems for the Yucca Mountain site, including the Licensing Support Network. LM is responsible for the pension plan contributions and post-retirement benefits (e.g., medical and life insurance) for former contractor workers from eight sites. In addition, LM manages the sites' natural resources, promotes reuse, is responsible for the Department's uranium leasing program and, where possible, transfers sites to external parties.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Office of Hearings and Appeals						
Office of Hearings and Appeals	5,022	5,022	5,500	5,500	0	0
Subtotal, Office of Hearings and Appeals	**5,022**	**5,022**	**5,500**	**5,500**	**0**	**0**
Rescission of Prior Year Balances	0	0	-4	0	+4	+100.0%
Total, Office of Hearings and Appeals	**5,022**	**5,022**	**5,496**	**5,500**	**+4**	**+0.1%**

Appropriation Overview

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

Within the Other Defense Activities Appropriation, OHA operates with three staffs: the Personnel Security and Appeals Division, the Employee Protection and Exceptions Division, and the Office of Conflict Prevention and Resolution. OHA offers fair, timely, impartial, and customer-friendly processes for adjudicating matters pursuant to regulatory authority or special delegation from the Secretary. Such cases include: (i) eligibility for a security clearance, (ii) whistleblower protection for employees of DOE contractors and for employees of firms receiving funds under the American Recovery and Reinvestment Act, (iii) Freedom of Information and Privacy Act Appeals, (iv) regulatory relief to prevent special hardship, (v) and other matters that the Secretary may delegate. With respect to alternative dispute resolution, OHA offers mediation services for a variety of matters.

Program Highlights

The FY 2016 Budget Request funds Salary and Benefit expenses along with Working Capital Fund and IT expenses. The Request also funds a pilot program to employ a contractor employee to provide docket services. The Request will ensure that OHA can continue to provide effective and timely adjudication services in support of DOE's security clearance program and fund OHA's Alternative Dispute Resolution functions.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Departmental Administration						
Administrative Operations						
Office of the Secretary	5,008	5,008	5,008	5,300	+292	+5.8%
Chief Financial Officer	47,825	47,825	47,000	50,182	+3,182	+6.8%
Management	57,599	57,599	62,946	76,227	+13,281	+21.1%
Chief Human Capital Officer	24,488	24,488	24,500	25,400	+900	+3.7%
Chief Information Officer (CIO)	82,062	82,062	74,164	83,800	+9,636	+13.0%
Congressional and Intergovernmental Affairs (CI)	4,700	4,700	6,300	6,300	0	0
Office of Indian Energy Policy and Programs	2,506	2,506	16,000	0	-16,000	-100.0%
Office of Small and Disadvantaged Business Utilization	0	0	2,253	3,000	+747	+33.2%
Economic Impact and Diversity	8,956	8,956	9,000	10,000	+1,000	+11.1%
General Counsel (GC)	33,053	33,053	33,000	33,000	0	0
Energy Policy and Systems Analysis	19,269	19,269	31,181	35,000	+3,819	+12.2%
International Affairs	15,873	15,873	13,000	23,600	+10,600	+81.5%
Public Affairs	3,597	3,597	3,431	3,431	0	0
Strategic Partnership Projects (formerly Cost of Work for Others)	48,537	48,537	42,000	40,000	-2,000	-4.8%
Use of Prior Year Balances (CIO)	0	0	-2,205	0	+2,205	+100.0%
Use of Prior Year Balances (CI)	0	0	-1,600	0	+1,600	+100.0%
Use of Prior Year Balances (GC)	0	0	-2,000	-2,000	0	0
Subtotal, Administrative Operations	**353,473**	**353,473**	**363,978**	**393,240**	**+29,262**	**+8.0%**
Funding from Other Defense Activities	-118,836	-118,836	-118,749	-122,558	-3,809	-3.2%
Total, Administrative Operations	**234,637**	**234,637**	**245,229**	**270,682**	**+25,453**	**+10.4%**
Miscellaneous Revenues	-108,188	-108,188	-119,171	-117,171	+2,000	+1.7%
Rescission of Prior Year Balances	0	0	-928	0	+928	+100.0%
Total, Departmental Administration (Net)	**126,449**	**126,449**	**125,130**	**153,511**	**+28,381**	**+22.7%**

Appropriation Overview

Departmental Administration (DA) funds 12 management and mission support organizations that have enterprise-wide responsibility for administration, accounting, budgeting, contracting, project management, Congressional and intergovernmental liaison, domestic and international energy policy, information management, life-cycle asset management, legal services, workforce diversity and minority economic impact, ombudsman services, small business advocacy, performance improvement, sustainability, and public affairs. The DA appropriation also budgets for Strategic Partnership Projects (formerly Cost of Work for Others), receives Miscellaneous Revenues from other sources, and an offset from Other Defense Activities.

In order to ensure statutory requirements and Secretarial priorities and have resources to support mission critical areas of the Department, the FY 2016 Budget Requests that the Office of Indian Energy Policy and Programs be established as a stand-alone account under Energy Programs.

Program Highlights

Overall, in FY 2016, the DA Budget Request reflects increases to strengthen enterprise-wide management and mission support functions and to invest in crosscutting initiatives with potential for innovative and collaborative endeavors in the energy sector, as outlined below:

- **Office of Management (MA):** $13,281,000 increase includes additional support for the Sustainability and Performance Office ($3,712,000, including the transfer of 4 FTEs from the Office of Energy Efficiency and Renewable Energy); Environmental Management transfer of 10 FTEs and support needs for the new Project Assessment Office ($3,000,000); Office of Planning and Management Oversight staff support for the Under Secretary for Science and Energy ($2,000,000); Cross Agency Priorities ($422,000); and Ombudsman staff support ($200,000).

- **Office of International Affairs (IA):** $10,600,000 increase to support leveraging international partnerships on energy security, clean energy cooperation, and climate change activities.

- **Chief Information Officer (CIO):** $9,636,000 additional support for a new Digital Services Team ($4,000,000); Corporate IT Program Support, which includes Policy and Governance and IT Modernization ($8,194,000); offset by decreases in Cybersecurity (-$358,000) and Program Direction (-$2,200,000).

- **Office of Energy Policy and Systems Analysis (EPSA):** $3,819,000 additional support for creating comprehensive data sets and systems models to develop a more rigorous analytical basis for evaluation of energy-related policy drivers, including support for follow-on phases of the Quadrennial Energy Review (QER) activities.

- **Chief Financial Officer (CFO):** $3,182,000 increase includes support for Digital Accountability and Transparency Act of 2014 (DATA Act) requirements.

- **Office of Economic Impact and Diversity (ED):** $1,000,000 increase to support Minorities in Energy Initiative activities and Equal Employment Opportunity functions at the Department.

Key FY 2014 Accomplishments

- ✓ Started to implement a new HR Service Delivery model, transforming DOE from a costly, highly decentralized environment to a more centralized, hybrid operation by October 2016.
- ✓ Responded to major security events (Shellshock, BASH, Heartbleed) and collaborated with the Joint Cybersecurity Coordination Center (JC3) to prevent serious damage to DOE information and information systems.
- ✓ Organized and executed the Administration's first US-Africa Energy Ministerial in Ethiopia; a key deliverable from the President's Power Africa initiative.
- ✓ Coordinated with international partners to provide technical support to Ukrainian energy security and energy reforms; and spearheaded a new energy security initiative with our G7 partners.
- ✓ Expanded North American energy cooperation with Canada and Mexico, focusing on energy infrastructure, data, and investment opportunities.
- ✓ Initiated the Quadrennial Energy Review process focused on energy Transmission, Storage & Distribution infrastructure; hosted 14 public hearings on various topics of interest related to QER, soliciting input from stakeholders across the country.
- ✓ Released a seminal report, "The Water-Energy Nexus: Challenges and Opportunities," which frames an integrated space around the water-energy nexus for DOE and its partners.
- ✓ Organized stakeholder roundtable meetings to develop new ideas for reducing methane emissions in support of the President's Climate Action Plan.

- **Office of Small and Disadvantaged Business Utilization (OSDBU):** $747,000 increase to support 3 additional FTEs to ensure that Small Business goals are being met or exceeded at the Department each year.

Additionally, revised estimates in FY 2016 for Strategic Partnership Projects (formerly Cost of Work for Others) have resulted in the program's estimate being reduced by approximately $2,000,000 from FY 2015.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Environment, Health, Safety and Security Mission Support						
Environment, Health, Safety and Security Mission Support	0	0	118,763	120,693	+1,930	+1.6%
Program Direction	0	0	62,235	63,105	+870	+1.4%
Subtotal, Environment, Health, Safety and Security Mission Support	**0**	**0**	**180,998**	**183,798**	**+2,800**	**+1.5%**
Rescission of Prior Year Balances	0	0	-132	0	+132	+100.0%
Total, Environment, Health, Safety and Security Mission Support	**0**	**0**	**180,866**	**183,798**	**+2,932**	**+1.6%**

Appropriation Overview

Environment, Health, Safety and Security (EHSS) supports DOE's commitment to maintain a safe and secure work environment for all Federal and contractor employees; ensures operations do not adversely affect the health and safety of surrounding communities; and protects the national security and other entrusted assets. EHSS is central to achieving DOE's mission in a safe, secure, environmentally responsible manner by providing consistent policy, technical assistance, and corporate leadership for environment, health, safety and security program areas.

Program Highlights

- **Environment, Health and Safety:** EHSS provides technical and analytical expertise used to protect and enhance the safety of all DOE workers, the public, and the environment in support of Departmental missions and goals. EHSS maintains policies and guidance that promote safe, environmentally sustaining work practices in the areas of occupational, facility, nuclear, and radiation safety; environment; and quality assurance. EHSS provides technical assistance to DOE program and site offices and laboratories through activities such as nuclear facility safety bases reviews and corporate-wide services such as accrediting commercial laboratories used by DOE sites for regulatory compliance and employee radiological monitoring programs. EHSS supports Departmental and national preparedness and response efforts associated with radiation emergencies and accidents. Health activities support domestic and international research on exposures of workers and the public to nuclear, radiological, and other hazardous materials. It provides health and environmental services to the people of the Marshall Islands; and medical screenings for former DOE and DOE-related vendor employees, and supports the Department of Labor in implementation of the Energy Employee Occupational Illness Compensation Program Act.

Key FY 2014 Accomplishments

- ✓ Established the new Office of Environment, Health, Safety and Security while maintaining continuity in all mission areas.
- ✓ Led efforts to institutionalize the Chief Security Officer governance construct established by the Secretary in February 2014.
- ✓ Processed electronically 100% of DOE Personnel Security Administrative Review requests, reducing the average time to approve/disapprove a request to less than 7 working days compared to the FY 2008 baseline of 30 working days.
- ✓ Expanded the scope of the Department's Nuclear Safety Research and Development program to better ensure protection of its workers and the public from hazards associated with operations from its nuclear facilities
- ✓ Provided outreach and assistance for the implementation of DOE worker safety and health regulations through meetings with Federal and contractor workers and management at sites across the DOE complex.

- **Security:** EHSS provides technical security and analytical expertise to develop and assist in the implementation of safeguards and security programs that protect national security assets entrusted to DOE; and to implement the U.S. Government nuclear weapons-related technology classification and declassification program. EHSS maintains policies and guidance related to physical protection, personnel and information security and nuclear materials accountability, in order to be responsive to national security needs and evolving threats. EHSS provides technical assistance to DOE programs, site offices and laboratories to implement cost effective security measures tailored to the mission. It maintains corporate security-related information management systems to determine the potential for an undue risk to individual sites, DOE, and national security. EHSS provides for the protection of DOE Headquarters facilities and access authorizations for DOE Headquarters personnel.

- **Program Direction:** Program Direction provides Federal staffing, travel, support services and other resources required for execution of EHSS program activities and provides technical support for liaison activities with the Defense Nuclear Facilities Safety Board.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Enterprise Assessments						
Enterprise Assessments	0	0	24,068	24,068	0	0
Program Direction	0	0	49,466	49,466	0	0
Subtotal, Enterprise Assessments	**0**	**0**	**73,534**	**73,534**	**0**	**0**
Rescission of Prior Year Balances	0	0	-54	0	+54	+100.0%
Total, Enterprise Assessments	**0**	**0**	**73,480**	**73,534**	**+54**	**+0.1%**

Appropriation Overview

The Office of **Enterprise Assessments** (EA) is the DOE organization responsible for performance of assessments in the areas of nuclear and industrial safety, cyber and physical security, and other critical functions as directed by the Secretary; and for implementing an expanded investigative capability to conduct Congressionally mandated enforcement functions in the areas of worker safety and health, nuclear safety, and classified information security. EA is also responsible for incorporating the lessons learned from inspections, reviews and assessments into safety and security training courses through its management of the National Training Center (NTC). EA provides an open and effective means of communicating and creating collaborative relationships within and outside the Department through its stakeholder outreach activities. EA serves as an important check-and-balance that assists the Department in meeting its safety and security responsibilities and advises the Secretary and Deputy Secretary on all matters related to independent assessments, enforcement, safety and security training, and outreach activities across the Department.

Because EA reports directly to the Office of the Secretary, it is organizationally independent of the DOE offices that develop and implement policy and programs and can therefore objectively observe and report on these policies and programs as they relate to Departmental operations. EA activities complement, but do not replace the responsibility of DOE line management - reporting through the Under Secretaries - to oversee contractor's compliance with environment, health, safety and security requirements and achieve effective safety and security performance.

Program Highlights

- **Enterprise Assessments:** The EA program provides for the evaluation of DOE performance in nuclear safety; the implementation of the health and safety, nuclear safety, and classified information security enforcement programs; development and administration of safety and security training that reflects the most current Departmental policy and lessons learned on safety and security issues; and establishment and maintenance of collaborative relationships with organizations both internal and external to DOE in order to foster improvements in health, safety, environmental and security performance at DOE sites.

Key FY 2014 Accomplishments

- ✓ Completed comprehensive independent safeguards and security assessments at all DOE Category I Special Nuclear Material sites.
- ✓ Expanded comprehensive cybersecurity assessments and unannounced "red teams" to improve DOE systems against external and internal attacks.
- ✓ Conducted assessments of high hazard nuclear projects and operations to ensure compliance with DOE nuclear safety requirements.
- ✓ Established and implemented DOE's health and safety training reciprocity policy that increases operational efficiency and effectiveness while maintaining worker health and safety.

- **Program Direction:** Program Direction provides for Federal staffing, travel, and mission support services to provide overall direction and execution of the EA mission to conduct expert evaluations of management performance in safety, security and other areas; implement health and safety, nuclear safety, and classified information security enforcement programs; develop and administer safety and security training that reflects the most current Departmental policy on safety and security issues; and establish and maintain collaborative relationships with organizations internal and external to DOE.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Office of the Inspector General						
Office of the Inspector General	42,120	42,120	40,500	46,424	+5,924	+14.6%
Total, Office of the Inspector General	**42,120**	**42,120**	**40,500**	**46,424**	**+5,924**	**+14.6%**

Appropriation Overview

The **Office of the Inspector General** (OIG) reviews the integrity, economy and efficiency of DOE programs and operations, including the National Nuclear Security Administration and the Federal Energy Regulatory Commission. The OIG has the authority to inquire into all DOE programs and activities as well as related activities. Audits, inspections, investigations and other reviews are used to detect and prevent fraud, waste, abuse, and violations of law.

The Federal Information Security Modernization Act of 2014 directs the OIG to conduct an annual evaluation of DOE's information security systems. The OIG is also charged with reviewing the Department's efforts to track and improve performance, in conformance with the Government Performance and Results Modernization Act of 2010. The OIG routinely conducts reviews of the most significant management challenges facing the Department and continues to provide oversight activities of Recovery Act funds. In addition, the OIG addresses alleged violations of law that impact Department programs, operations, facilities and personnel.

Program Highlights

The FY 2016 Budget Request includes an increase of $5.924 million over the FY 2015 Enacted level to support operations at current levels, which allows for the review of critical elements of Department-wide programs and activities. The OIG focuses its efforts to enhance the efficiency and effectiveness of Department's programs and operations in the following key areas:

- **Support Costs.** OIG assists in identifying potential costs savings in areas such as the estimated $3.5 billion[1] spent each year on National Laboratory support costs.

- **Key Programs and Projects.** OIG evaluates the efficacy of the Department's management of key programs and projects such as those under the Office of Environmental Management, for which the FY 2016 Request proposes $5.8 billion.

- **NNSA Modernization Efforts.** NNSA is undertaking a massive modernization effort that involves major projects (e.g., weapons complex transformation) that benefit from OIG reviews to proactively identify efficient and effective operations.

Key FY 2014 Accomplishments

- ✓ An average positive return of $15.05 for each tax dollar invested in OIG activities.
- ✓ The 2014 Consolidated Appropriations Act reduced the appropriated amounts for non-defense programs by $7 million to reflect savings from reducing foreign travel for contractors. This was consistent with the OIG recommendation of extending travel reduction requirements to contractors.
- ✓ Relying on the work of the OIG, the Idaho Operations Office issued a determination letter to the cleanup contractor to disallow certain cost reallocations that reduced the fee claimed by the contractor by more than $20 million.

- **Loan Guarantee Programs.** Implementation phase of the Loan Guarantee programs will most likely require that the OIG hire experts to assist with reviews. Most agreements extend well into the future and will require reviews to confirm compliance with loan terms and conditions to protect taxpayer interests. In addition, new loans issued by the Program will further extend the necessity for such experts/in-depth reviews.

- **Cost Accounting Standards (CAS).** OIG provides reviews of Department contractors' incurred costs and compliance with CAS.

- **Contract Review.** OIG assesses the Department's administration of its contracts portfolio, which is one of the largest on the civilian side of the Federal government.

[1] Estimated costs reflect data gathered from the *Department of Energy's Functional Cost Report for FY 2009* and referenced in the *Management Challenges at the Department of Energy – Fiscal Year 2012*.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Power Marketing Administrations						
Southeastern Power Administration						
Southeastern Power Administration	101,034	101,034	96,930	90,500	-6,430	-6.6%
Less Alternative Financing/Offsetting Collections	-101,034	-101,034	-96,930	-90,500	+6,430	+6.6%
Total, Southeastern Power Administration	**0**	**0**	**0**	**0**	**0**	**N/A**
Southwestern Power Administration						
Southwestern Power Administration	101,764	101,764	122,666	136,223	+13,557	+11.1%
Less Alternative Financing/Offsetting Collections	-89,872	-89,872	-111,266	-124,823	-13,557	-12.2%
Total, Southwestern Power Administration	**11,892**	**11,892**	**11,400**	**11,400**	**0**	**0**
Western Area Power Administration						
Western Area Power Administration (CROM)						
Western Area Power Administration (CROM)	830,098	830,098	837,731	941,600	+103,869	+12.4%
Less Alternative Financing/Offsetting Collections (CROM)	-734,168	-734,168	-745,991	-848,228	-102,237	-13.7%
Total, Western Area Power Administration (CROM)	**95,930**	**95,930**	**91,740**	**93,372**	**+1,632**	**+1.8%**
Falcon and Amistad O&M Fund						
Operation and Maintenance	6,196	6,196	5,529	4,950	-579	-10.5%
Less Alternative Financing/Offsetting Collections	-5,776	-5,776	-5,301	-4,722	+579	+10.9%
Total, Falcon and Amistad O&M Fund	**420**	**420**	**228**	**228**	**0**	**0**
Colorado River Basins Power Marketing Fund						
Spending Authority from Offsetting Collections	180,844	180,844	228,209	215,647	-12,562	-5.5%
Offsetting Collections	-203,844	-203,844	-251,209	-238,647	+12,562	+5.0%
Total, Colorado River Basins Power Marketing Fund	**-23,000**	**-23,000**	**-23,000**	**-23,000**	**0**	**0**
Total, Western Area Power Administration	**73,350**	**73,350**	**68,968**	**70,600**	**+1,632**	**+2.4%**
Total, Power Marketing Administrations	**85,242**	**85,242**	**80,368**	**82,000**	**+1,632**	**+2.0%**

Appropriations Overview

The four **Power Marketing Administrations (PMAs)** sell electricity primarily generated by federally owned hydropower projects. Preference in the sale of power is given to public entities and electric cooperatives. Revenues from the sale of Federal power and transmission services are used to repay all related power costs.

Program Highlights

- **Southeastern Power Administration**
  Southeastern markets and delivers all available Federal hydroelectric power from 22 U.S. Army Corps of Engineers (Corps) multipurpose projects to preference customers in an eleven-state area in the southeastern United States. Southeastern does not own or operate any transmission facilities, and contracts with regional utilities that own electric transmission systems to deliver the Federal hydropower to Southeastern's customers. Southeastern's use of receipts and alternative financing offsets its appropriations resulting in a net-zero balance for the program.

- **Southwestern Power Administration**
  Southwestern markets and delivers Federal hydroelectric power from 24 Corps multipurpose projects to preference customers in a six-state area and participates with other water resource users in an effort to balance diverse interests with power needs. To deliver power to its customers, Southwestern maintains 1,380 miles of high-voltage transmission lines, 25 substations/switchyards, and 51 microwave and VHF radio sites.

  The FY 2016 Budget Request includes a proposal for a special receipt/disbursement account, hereafter known as the Purchase Power Drought Fund. This fund would allow Southwestern to pre-collect funds through power rates for use in times of below average water and drought conditions. The account would supplement Southwestern's current

authorities and would minimize the necessity to invoke the Continuing Fund for Purchase Power and Wheeling expenses and mitigate the rate volatility associated with such activation.

- **Western Area Power Administration**
  Western markets and transmits Federal power to a 1.3-million-square-mile service area in 15 central and western states from 56 Federally-owned hydroelectric power plants operated by the Bureau of Reclamation (the Bureau), the Army Corps of Engineers (the Corps), and the International Boundary and Water Commission. It also markets a portion of the power from the Navajo Generating Station coal-fired plant near Page, Arizona. Western's construction program, conducted in close coordination with preference customers, continues to emphasize replacement, upgrade, and modernization of the electric system infrastructure to bring continued reliability, improved connectivity, and increase flexibility and capability to the power grid. Through extensive partnering efforts, Western has obtained significant stakeholder and customer participation in financing much of the construction program. Western is strengthening its Asset and Risk Management to further ensure capital investments are sufficient and wisely deployed for our Nation and for our customers.

  In addition, Western continues to pursue construction projects, which include a renewable energy resource via its Transmission Infrastructure Program (TIP). TIP was established in 2009 from borrowing authority authorized by Congress (separate from the CROM construction program) and was created to support the next generation of electric transmission development, which can enhance electricity reliability, support the integration of clean energy, and strengthen our Nation's critical infrastructure. TIP has four active projects: Centennial West Clean Line; Electrical District No. 5-Palo Verde Hub; Southline, and TransWest Express.

- **Bonneville Power Administration**
  Bonneville provides electric power, transmission, and energy services to a 300,000-square-mile service area in eight states in the Pacific Northwest. Bonneville wholesales the power produced at 31 Federal projects operated by the Corps and the Bureau and from certain non-Federal generating facilities. From these revenues, Bonneville funds the expense portion of its budget and the power operations and maintenance costs of the Bureau and the Corps in the Federal Columbia River Power System (FCRPS). The capital portion of the budget is funded mostly through borrowing from the U.S. Treasury at market rates for similar projects and with some non-Federal financing.

  Bonneville is self-financed and receives no direct annual appropriations from Congress. In FY 2016, estimated total requirements of all Bonneville programs of $4,329 million include estimated budget obligations of $4,122 and estimated capital transfers of $207 million. Estimated obligations include operating expenses of $3,041 million, capital investments of $1,052 million, and $30 million in projects funded in advance. These investments provide electric utility and general plant requirements associated with the FCRPS's transmission services, capital equipment, hydroelectric projects, conservation, and capital investments to mitigate impacts on the environment, fish, and wildlife.

(Discretionary dollars in thousands)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs. FY 2015 $	FY 2016 vs. FY 2015 %
Federal Energy Regulatory Commission (FERC)						
Just and Reasonable Rates, Terms and Conditions	145,564	145,564	142,574	148,921	+6,347	+4.5%
Safe, Reliable, Secure and Efficient Infrastructure	104,407	104,407	106,004	112,507	+6,503	+6.1%
Mission Support through Organizational Excellence	54,629	54,629	55,811	58,372	+2,561	+4.6%
FERC Revenues	-304,600	-304,600	-304,389	-319,800	-15,411	-5.1%
Subtotal, Federal Energy Regulatory Commission	**0**	**0**	**0**	**0**	**0**	**N/A**
FERC Excess Fees and Recoveries	-26,236	-19,686	-28,485	-23,587	+4,898	+17.2%
Total, Federal Energy Regulatory Commission	**-26,236**	**-19,686**	**-28,485**	**-23,587**	**+4,898**	**+17.2%**

Appropriation Overview

The **Federal Energy Regulatory Commission** (FERC or the Commission) is an independent agency within the department that regulates the transmission and wholesale sale of electricity in interstate commerce; the transmission and sale of natural gas for resale in interstate commerce; and the transportation of oil by pipeline in interstate commerce. FERC also reviews proposals to build liquefied natural gas (LNG) terminals as well as interstate natural gas pipelines, and licenses and inspects non-Federal hydropower projects. The Commission protects the reliability of the Nation's bulk-power system and oversees environmental matters related to natural gas pipeline and non-Federal hydro projects. The Commission enforces its regulatory requirements through civil penalties and other means.

FERC's mission is to assist consumers in obtaining reliable, efficient, and sustainable energy services at a reasonable cost through appropriate regulatory and market means. FERC seeks to ensure that rates, terms and conditions of service are just, reasonable and not unduly discriminatory or preferential, relying on competitive markets where appropriate. Through its oversight and enforcement authorities, FERC seeks to increase compliance with its rules and regulations and deter market manipulation. FERC's responsibilities also include promoting the development of strong and secure energy infrastructure that operates safely, reliably, and efficiently in the public interest.

Program Highlights

- **Ensure Just and Reasonable Rates, Terms, and Conditions**
  To ensure just and reasonable rates, terms and conditions of service, the Commission will rely on competition and appropriate regulatory policies. Competition will benefit energy consumers by encouraging new entry among supply-side and demand-side resources, spurring innovation and deployment of new technologies, improving operating performance, and exerting downward pressure on costs. The Commission will continue to pursue market reforms to allow all types of resources to compete on a level playing field in jurisdictional markets. The Commission will also continue to support an open and transparent electric transmission planning process. Such coordination between transmission providers will support the development of an efficient transmission system and enhance competition in wholesale electric markets. In addition, the Commission approves cost-based, and where appropriate, market-based rates for the interstate transportation of natural gas and oil on jurisdictional pipelines, and for the interstate transmission, and wholesale sales of electric energy. FERC also prevents the accumulation and exercise of market power by reviewing merger and other transactions in the electric industry to ensure that these proposals will not harm the public interest. The Commission accepts tariff provisions, as appropriate, to allow natural gas and oil pipelines, and public utilities to modify their services to meet their customers' needs.

Oversight and enforcement are essential complements to the Commission's approach to ensure that rates, terms, and conditions of service are just and reasonable and not unduly discriminatory or preferential. The Commission takes proactive steps to detect problems in energy markets and to reduce the probability that violations will occur. FERC uses a balanced approach to oversight and enforcement efforts: conducting surveillance and analysis of market trends and data; promoting internal compliance programs; employing robust audit and investigation programs; and, when appropriate, exercising the Commission's civil penalty authority to deter violations. When violations of sufficient seriousness are discovered, the Commission attempts to resolve the investigation through settlement with appropriate sanctions and future compliance improvements before initiating further enforcement proceedings.

- **Promote Safe, Reliable, Secure, and Efficient Infrastructure**
  The Commission has an important role in the development of safe, reliable, secure, and efficient energy infrastructure. The Commission's infrastructure siting authority rests in licensing non-Federal hydropower projects, certificating interstate natural gas pipelines and storage projects, authorizing LNG facilities, and, in certain circumstances, permitting electric transmission lines. Post-authorization, the Commission relies heavily on physical inspections of hydropower and LNG facilities to ensure safety.

  The Commission also has an important role in protecting the reliability of the Nation's electric transmission grid. FERC will oversee the development and enforcement of mandatory electric reliability standards and critical infrastructure protection standards. In addition, the Commission will provide leadership, expertise, and assistance in identifying, communicating and seeking comprehensive solutions to potential risks to Commission-jurisdictional facilities from cyber attacks, and certain physical threats.

- **Mission Support Through Organizational Excellence**
  The Commission strives to achieve organizational excellence by using resources effectively, adequately equipping employees for success, and executing responsive and transparent processes that strengthen public trust. Trust and understanding increase acceptance of FERC decisions and reduces the potential for contentiousness toward FERC rules and regulations. The Commission advances this objective by promoting transparency and open communication with respect to conduct of the Commission's business, thereby increasing awareness and understanding of the Commission's activities.

  The Commission is making new investments in its human capital, information technology resources, and physical infrastructure. The Commission allocates the majority of its budget to directly cover employee compensation costs and, therefore, places extremely high value on its employees, and is focused on ensuring their success. Also, the Commission continues to focus its human capital efforts on the competencies and positions most affected by the potential loss of approximately 30 percent of its staff to retirement by FY 2018. At the same time, the headquarters building is currently undergoing a complex multi-year renovation effort to realize mandated space savings with a target of completion during FY 2020. In FY 2015, the Commission is expecting to fund $19.7 million of the project using prior year unobligated budget authority. The FY 2016 Request includes increases of approximately $2.5 million over the FY 2015 Enacted level to continue the modernization effort and an additional $6.9 million to cover rent increases as a result of an increased rental rate in the lease renewal.

FY 2016 Crosscut Summary ($K)

	FY 2015 Enacted	FY 2016 Request	FY 2016 vs FY 2015
Energy-Water Nexus	15,575	38,350	+22,775
Exascale Computing	149,000	272,624	+123,624
Grid Modernization	196,144	356,027	+159,883
Subsurface Technology and Engineering	168,000	244,018	+76,018
Supercritical CO2	30,300	43,600	+13,300
Cybersecurity	311,513	306,337	-5,176
Dual Purpose Activities Double Counted Above	-45,999	-52,000	-6,001
Total, FY 2016 Crosscut Summary	**827,033**	**1,208,956**	**+381,923**

Energy-Water Nexus: Supports the Nation's transition to more resilient energy-water systems.

Water and energy systems are interdependent. Water is used in all phases of electricity generation and energy production, accounting for over 40% of total water withdrawals and over 5% of total water consumption. Conversely, energy is required to extract, convey, and deliver water of appropriate quality for diverse human uses, and then again to treat wastewaters before return to the environment; this accounts for 3% of total electricity consumption. Current trends are increasing the urgency to address the energy-water nexus in an integrated way. Precipitation and temperature patterns, U.S. population growth and regional migration trends, and the introduction of new technologies could shift water and energy demands.

The Energy-Water Nexus crosscutting initiative, which draws on ideas presented in DOE's report, *The Water-Energy Nexus: Challenges and Opportunities* (June 2014), is an integrated set of cross-program initiatives that 1) builds and deploys DOE modeling and analysis to improve understanding and inform decision-making for a broad range of users; 2) strategically targets crosscutting technology RDD&D opportunities within the system of water and energy flows; and 3) is informed and supported by focused policy analysis and outreach and stakeholder engagement. Taken as an integrated whole, these investments position DOE to contribute strongly to the Nation's transition to more resilient energy-water systems.

Energy-Water Nexus
FY 2016 Funding by Pillar ($K)

	Data, Modeling, and Analysis	Technology Research Development, Demonstration, and Deployment	Policy Analysis	Outreach and Stakeholder Engagement	Total
Departmental Administration					
Energy Policy and Systems Analysis: Program Direction	2,900	---	1,500	100	**4,500**
International Affairs: Program Direction	200	---	---	100	**300**
Total, Departmental Administration	**3,100**	**---**	**1,500**	**200**	**4,800**
Energy Efficiency & Renewable Energy					
Advanced Manufacturing: Advanced Manufacturing R&D Projects	---	2,300	---	---	**2,300**
Advanced Manufacturing: Industrial Technical Assistance	---	2,000	---	---	**2,000**
Geothermal Technologies: Low Temperature and Coproduced Resources	---	3,500	---	---	**3,500**
Geothermal Technologies: Systems Analyses	250	---	---	---	**250**

	Data, Modeling, and Analysis	Technology Research Development, Demonstration, and Deployment	Policy Analysis	Outreach and Stakeholder Engagement	Total
Water Power: Hydropower Technologies	1,000	---	---	---	**1,000**
Total, Energy Efficiency & Renewable Energy	**1,250**	**7,800**	**---**	**---**	**9,050**
Fossil Energy Research & Development					
Crosscutting Research: Plant Optimization Technologies	---	6,000	---	---	**6,000**
Natural Gas Technologies: Environmentally Prudent Development	1,000	5,000	---	---	**6,000**
Total, Fossil Energy Research & Development	**1,000**	**11,000**	**---**	**---**	**12,000**
Office of Indian Energy Policy and Programs					
Tribal Energy Program: Technical Assistance	200	---	---	---	**200**
Tribal Energy Program: Tribal Energy Grant Program	---	500	---	---	**500**
Total, Office of Indian Energy Policy and Programs	**200**	**500**	**---**	**---**	**700**
Science					
Biological and Environmental Research: Climate and Environmental Sciences	11,800	---	---	---	**11,800**
Total, Energy-Water Nexus	**17,350**	**19,300**	**1,500**	**200**	**38,350**

Exascale Computing: Enables U.S. leadership in the next generation of high performance computing

Since the beginning of the digital era, the U.S. Federal government has made pivotal investments in high performance computing (HPC) at critical times when market progress was stagnating. HPC technology is at another turning point where fundamental innovations in hardware and software architectures are necessary to drive future advances in computing performance. Partnerships between the government and industry have led to the development of highly innovative, beneficial technologies with application to both government and commercial sectors. Committed U.S. leadership in HPC is a critical contributor to our competitiveness in science, national defense, and energy innovation as well as the commercial computing market. Equally important, a robust domestic industry contributes to our nation's security by helping avoid unacceptable cyber-security and computer supply chain risks.

A significant investment by the Federal government involving strong leadership from DOE, in close coordination with government, national laboratories, industry, and academia is required to address this national challenge. The Exascale Computing crosscutting initiative focuses on three pillars: foundational research, development and deployment activities; application development to take full advantage of the emerging exascale hardware and software technologies; and platform deployment to prepare for and acquire two or more exascale computers. Funding for the first two pillars is included in the FY 2016 Budget Request with platform deployment investment planned for future fiscal years.

Exascale Computing
FY 2016 Funding by Pillar ($K)

	Application Development	Research & Development	Total
Science			
Advanced Scientific Computing Research: High Performance Computing	---	134,383	**134,383**

	Application Development	Research & Development	Total
and Network Facilities			
Advanced Scientific Computing Research: Mathematical, Computational, and Computer Sciences Research	---	43,511	**43,511**
Basic Energy Sciences	12,000	---	**12,000**
Biological and Environmental Research	18,730	---	**18,730**
Total, Science	**30,730**	**177,894**	**208,624**
Weapons Activities			
Advanced Simulation and Computing: Advanced Technology Development and Mitigation	20,000	44,000	**64,000**
Total, Exascale Computing	**50,730**	**221,894**	**272,624**

Grid Modernization: Provides tools to set the Nation on a cost-effective path to the grid of the future

The reliability and functioning of the Nation's electricity grid is often taken for granted. Whereas rolling blackouts are the norm in many developing countries, U.S. customers have historically benefitted from highly reliable and affordable power transported through long-lived transmission and distribution infrastructure and built on a foundation of safe and secure centralized power generation. Our extensive and resilient power grid has fueled the Nation's growth engine and long been an exemplar for other countries. Access to electricity is such a fundamental enabler for the economy that the National Academy of Engineering named Electrification the greatest engineering achievement of the 20th century.

The Grid Modernization crosscutting initiative supports strategic investments by DOE in foundational technology development, enhanced security capabilities, and greater institutional support and stakeholder engagement, which will provide tools necessary for the evolution to the grid of the future. Investment is critical now as industry is considering approaches to address aging infrastructure.

Grid Modernization
FY 2016 Funding by Pillar ($K)

		Technology Innovation					
	Institutional Support and Alignment	Design and Planning Tools	Systems Control and Power Flow	Grid Sensing and Measurement	Devices and Integrated System Testing	Grid Security and Resilience	Total
Departmental Administration							
Energy Policy and Systems Analysis: Program Direction	1,000	---	---	---	---	---	**1,000**
Electricity Delivery and Energy Reliability							
Clean Energy Transmission and Reliability: Advanced Model Grid Research	---	5,000	7,000	3,000	---	---	**15,000**
Clean Energy Transmission and	---	3,000	---	---	---	4,000	**7,000**

	Institutional Support and Alignment	Technology Innovation				Grid Security and Resilience	Total
		Design and Planning Tools	Systems Control and Power Flow	Grid Sensing and Measurement	Devices and Integrated System Testing		
Reliability: Energy Systems Risk and Predictive Capability							
Clean Energy Transmission and Reliability: Transmission Reliability	---	3,000	6,000	9,000	---	---	**18,000**
Cybersecurity for Energy Delivery Systems	---		---	---	---	52,000	**52,000**
Energy Storage	---	4,000	7,000	---	10,000		**21,000**
Infrastructure Security and Energy Restoration	---	---	---	---	---	14,000	**14,000**
National Electricity Delivery	7,500	---	---	---	---	---	**7,500**
Smart Grid	---	---	5,600	---	24,400	---	**30,000**
State Energy Reliability and Assurance: Grants for Electricity TS&D Reliability	27,500	---	---	---	---	---	**27,500**
Transformer Resilience and Advanced Components	---	---	---	---	5,000	5,000	**10,000**
Total, Electricity Delivery and Energy Reliability	**35,000**	**15,000**	**25,600**	**12,000**	**39,400**	**75,000**	**202,000**
Energy Efficiency & Renewable Energy							
Building Technologies: Emerging Technologies	1,000	---	---	4,000	13,000	---	**18,000**
Facilities and Infrastructure: Facilities Management	---	---	---	---	36,000	---	**36,000**
Hydrogen and Fuel Cell Technologies: Hydrogen Fuel R&D	---	---	---	---	3,000	---	**3,000**
Hydrogen and Fuel Cell Technologies: Technology Validation	---	---	---	---	5,500	---	**5,500**
Solar Energy: Systems Integration	---	5,000	20,000	10,000	25,000	---	**60,000**
Vehicle Technologies: Vehicle Systems	500	1,000	---	4,500	12,000	---	**18,000**
Wind Energy: Mitigate Market Barriers	1,127	4,200	3,700	---	3,000	---	**12,027**
Total, Energy Efficiency & Renewable Energy	**2,627**	**10,200**	**23,700**	**18,500**	**97,500**	**---**	**152,527**

	Institutional Support and Alignment	Technology Innovation				Grid Security and Resilience	Total
		Design and Planning Tools	Systems Control and Power Flow	Grid Sensing and Measurement	Devices and Integrated System Testing		
Office of Indian Energy Policy and Programs							
Tribal Energy Program: Tribal Energy Grant Program	500	---	---	---	---	---	**500**
Total, Grid Modernization	**39,127**	**25,200**	**49,300**	**30,500**	**136,900**	**75,000**	**356,027**

Subsurface Technology and Engineering: Advances a new era of capabilities across a range of energy applications
Subsurface energy resources provide more than 80 percent of total U.S. energy needs today. Next generation advances in subsurface technologies will enable greater access to renewable geothermal energy and safer and more environmentally sustainable development of domestic natural gas supplies, as well as provide hundreds of years of safe storage capacity for carbon dioxide (CO_2) and opportunities for environmentally responsible management and disposal of energy waste streams. Thus, discovering and effectively harnessing subsurface resources while mitigating impacts of their development and use are critical pieces of the Nation's energy strategy.

The Subsurface Technology and Engineering crosscutting initiative is focused on a fundamental objective – Adaptive Control of Subsurface Fractures and Fluid Flow – common to all subsurface applications. The ability to have real-time control or mastery of the subsurface can have a transformative effect on numerous industries and sectors, impacting the strategies deployed for subsurface energy production and storage. To optimize its subsurface investments, the Department is proposing co-funded RD&D programs in four areas: wellbore integrity, subsurface stress and induced seismicity, permeability manipulation, and new subsurface and environmental signals.

Subsurface Technology and Engineering
FY 2016 Funding by Pillar ($K)

	Wellbore Integrity	Subsurface Stress and Induced Seismicity	Permeability Manipulation	New Subsurface Signals	Ongoing Subsurface-Related R&D	Total
Defense Environmental Cleanup						
Headquarters Operations: Technology Development	---	---	---	---	2,000	**2,000**
Idaho National Laboratory	---	---	---	---	3,000	**3,000**
Richland/Hanford: Hanford Site	---	---	---	---	3,000	**3,000**
Total, Defense Environmental Cleanup	**---**	**---**	**---**	**---**	**8,000**	**8,000**
Energy Efficiency & Renewable Energy						
Geothermal Technologies: Enhanced Geothermal Systems	---	5,000	---	---	34,000	**39,000**
Geothermal Technologies: Hydrothermal	---	5,000	8,000	8,000	11,000	**32,000**
Total, Energy Efficiency & Renewable Energy	**---**	**10,000**	**8,000**	**8,000**	**45,000**	**71,000**

	Wellbore Integrity	Subsurface Stress and Induced Seismicity	Permeability Manipulation	New Subsurface Signals	Ongoing Subsurface-Related R&D	Total
Fossil Energy Research & Development						
Carbon Storage: Advanced Storage R&D	5,000	7,384	---	5,000	---	**17,384**
Carbon Storage: Storage Infrastructure	---	---	---	---	60,084	**60,084**
Carbon Storage: Sub-Disciplinary Storage R&D	5,600	15,316	3,884	3,500	---	**28,300**
Crosscutting Research: Coal Utilization Science	1,188	1,188	1,187	1,187	---	**4,750**
Natural Gas Technologies: Environmentally Prudent Development	---	---	---	---	10,000	**10,000**
Total, Fossil Energy Research & Development	**11,788**	**23,888**	**5,071**	**9,687**	**70,084**	**120,518**
Nuclear Energy						
Fuel Cycle R&D: Used Nuclear Fuel Disposition	26,000	---	---	---	13,500	**39,500**
Science						
Basic Energy Sciences: Chemical Sciences, Geosciences, and Biosciences	---	---	---	---	5,000	**5,000**
Total, Subsurface Technology and Engineering	**37,788**	**33,888**	**13,071**	**17,687**	**141,584**	**244,018**

Supercritical CO_2 Technology: Synchronizes R&D activities around a collective technology demonstration opportunity
Steam based power cycles are used for approximately 80 percent of the world's electricity generation. Power cycles based on supercritical carbon dioxide (sCO_2) as the working fluid, instead of steam, have the potential for significantly higher thermal efficiencies (upwards of 50 percent improvement) with lower capital cost than state of the art steam-based power cycles. There is broad industry interest in partnering with DOE to demonstrate the sCO_2 power cycle due to the unique features of sCO2; the potential for lower capital cost and the compounding performance benefits from a more efficient cycle; as well as the resulting efficiency gains in balance of plant requirements, fuel use, emissions, and water use.

The sCO_2 crosscutting initiative is structured around a common objective to establish a 10 MWe scale Supercritical Transformational Electric Power (STEP) pilot scale facility for evaluating power cycle and component performance over a range of operating conditions. Demonstrating favorable performance at this scale is the next step required to address technical issues, reduce risk, and mature this promising technology.

Supercritical Carbon Dioxide
Funding by Appropriation and Program ($K)

	FY 2015 Enacted	FY 2016 Request	FY 2016 vs FY 2015
Energy Efficiency & Renewable Energy			
Geothermal Technologies: Enhanced Geothermal Systems	---	500	+500
Solar Energy: Concentrating Solar Power	10,000	---	−10,000
Total, Energy Efficiency & Renewable Energy	**10,000**	**500**	**–9,500**

	FY 2015 Enacted	FY 2016 Request	FY 2016 vs FY 2015
Fossil Energy Research & Development			
Crosscutting Research: Plant Optimization Technologies	2,000	15,500	+13,500
Supercritical Carbon Dioxide Technology	10,000	19,300	+9,300
Total, Fossil Energy Research & Development	**12,000**	**34,800**	**+22,800**
Nuclear Energy			
Reactor Concepts RD&D: Advanced Reactor Technologies	3,300	3,300	---
Supercritical Transformational Electric Power Generation	5,000	5,000	---
Total, Nuclear Energy	**8,300**	**8,300**	**---**
Total, Supercritical CO2	**30,300**	**43,600**	**+13,300**

Cybersecurity: Protecting the DOE enterprise and improving cybersecurity in the energy sector

The Department of Energy (DOE) is engaged in cyber-related activities to protect the DOE enterprise, including government-owned, contractor-operated sites, from a range of cyber threats that can adversely impact mission capabilities; and activities to improve cybersecurity in the electric power subsector and the oil and natural gas subsector. Strengthening cybersecurity to protect the DOE enterprise requires bolstering the Department's cybersecurity functional capabilities to protect, detect, respond, and recover from the increasing incidence of cyber-attacks. Towards this end, the Department has established a cybersecurity crosscut process to strengthen the coordination of budget activities related to cybersecurity so that cybersecurity is managed based on strategic priorities. DOE has also established an internal Cyber Council to serve as the principal forum for coordinating cyber-related activities across the Department and for consideration of cyber-related issues requiring decisions by DOE senior leadership.

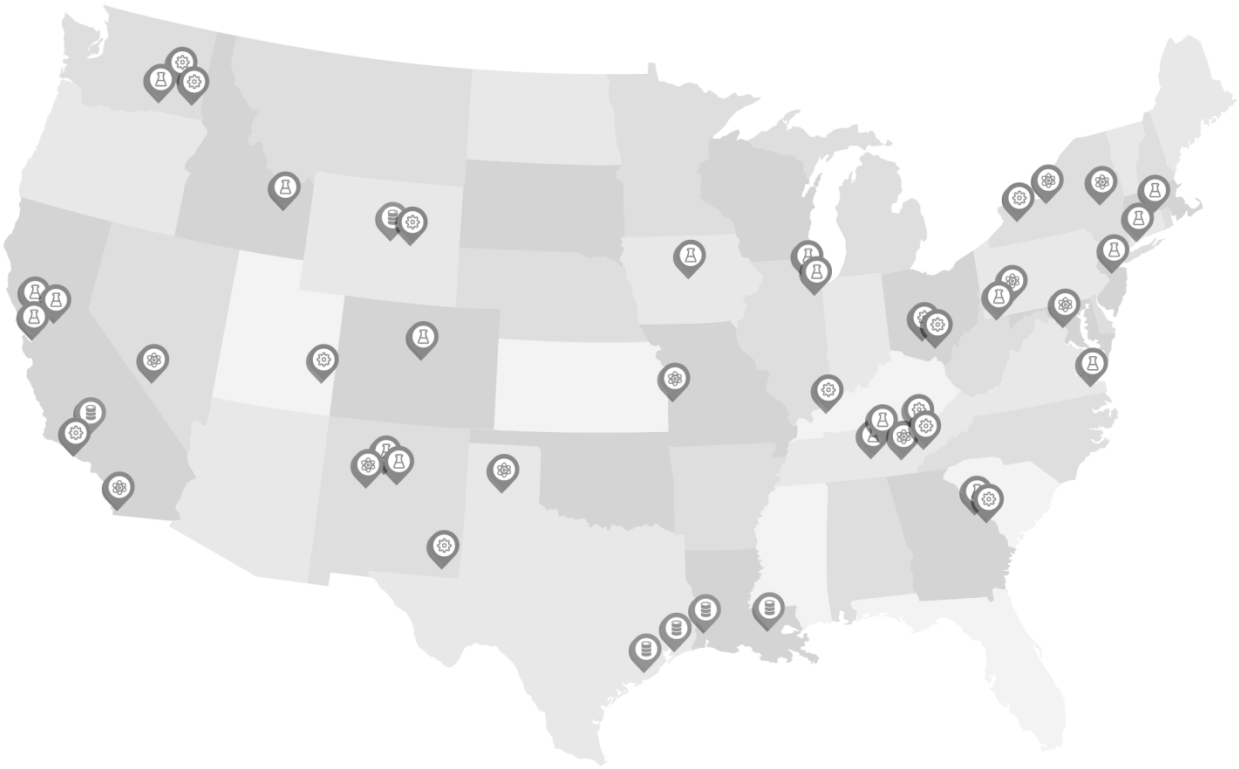
Under the Presidential Policy Directive on Critical Infrastructure Security and Resilience (PPD-21), DOE is the Sector Specific Agency for the energy sector and has a number of responsibilities, including the following: 1) collaborating with infrastructure owners and operators to strengthen the security and resilience of critical infrastructure; 2) serving as the day-to-day Federal interface for the prioritization and coordination of sector-specific activities; 3) carrying out incident management responsibilities consistent with statutory authority and other appropriate policies; and 4) providing technical assistance to the energy sector to identify vulnerabilities and help mitigate incidents, as appropriate.

Cybersecurity
FY 2016 Funding by Pillar ($K)

	Protecting the DOE Enterprise	Energy Sector Cybersecurity	Total
Bonneville Power Administration			
Bonneville Power Administration	42,236	---	**42,236**
Defense Environmental Cleanup			
Carlsbad/Waste Isolation Pilot Plant (WIPP): Safeguards and Security	440	---	**440**
Oak Ridge: Safeguards and Security	920	---	**920**
Paducah: Safeguards and Security	1,000	---	**1,000**
Richland/Hanford: Safeguards and Security	4,278	---	**4,278**
Savannah River: Safeguards and Security	1,955	---	**1,955**
West Valley Demonstration Project: Safeguards and Security	457	---	**457**
Total, Defense Environmental Cleanup	**9,050**	**---**	**9,050**
Departmental Administration			
Chief Information Officer: Program, Policy, and Reporting	8,402	---	**8,402**
Chief Information Officer: Strategic Planning and Initiatives	12,604	---	**12,604**
Total, Departmental Administration	**21,006**	**---**	**21,006**

	Protecting the DOE Enterprise	Energy Sector Cybersecurity	Total
Electricity Delivery and Energy Reliability			
Cybersecurity for Energy Delivery Systems: Accelerate Information Sharing	---	4,000	**4,000**
Cybersecurity for Energy Delivery Systems: Capability Maturity Models	---	4,000	**4,000**
Cybersecurity for Energy Delivery Systems: Cybersecurity Solutions	---	30,000	**30,000**
Cybersecurity for Energy Delivery Systems: Forensics Analysis Platforms	---	10,000	**10,000**
Cybersecurity for Energy Delivery Systems: Incident Response Capabilities	---	4,000	**4,000**
Total, Electricity Delivery and Energy Reliability	**---**	**52,000**	**52,000**
Energy Efficiency & Renewable Energy			
Corporate Support Programs: Facilities and Infrastructure	2,190	---	**2,190**
Energy Information Administration			
Energy Information Administration: National Energy Information System	851	---	**851**
Fossil Energy Research & Development			
Program Direction	1,750	---	**1,750**
Nuclear Energy			
Idaho Sitewide Safeguards and Security: Cyber Security	14,466	---	**14,466**
Other Defense Activities			
Enterprise Assessments: Other Related Expenses	106	---	**106**
Enterprise Assessments: Support Services	3,846	---	**3,846**
Environmental, Health, Safety & Security: Security	5,409	---	**5,409**
Legacy Management: Archives and Information Management	922	---	**922**
Total, Other Defense Activities	**10,283**	**---**	**10,283**
Power Marketing Administrations			
Offsetting Collections	−47,476	---	**−47,476**
Science			
Safeguards and Security: Cyber Security	27,070	---	**27,070**
Southeastern Power Administration			
Southeastern Power Administration	681	---	**681**
Southwestern Power Administration			
Southwestern Power Administration	1,879	---	**1,879**
Strategic Petroleum Reserve			
Facilities Development and Operations	2,102	---	**2,102**
Weapons Activities			
Information Technology and Cyber Security: Enterprise Secure Computing	18,400	---	**18,400**
Information Technology and Cyber Security: Infrastructure	108,188	---	**108,188**

	Protecting the DOE Enterprise	Energy Sector Cybersecurity	Total
Program			
Information Technology and Cyber Security: Technology Application Development	6,000	---	**6,000**
Total, Weapons Activities	**132,588**	**---**	**132,588**
Western Area Power Administration			
Western Area Power Administration	2,680	---	**2,680**
Working Capital Fund			
CyberOne: ICAM	4,046	---	**4,046**
CyberOne: JC3	28,935	---	**28,935**
Total, Working Capital Fund	**32,981**	**---**	**32,981**
Total, Cybersecurity	**254,337**	**52,000**	**306,337**



National Laboratories and Technology Centers

NNSA Sites

Cleanup Sites

Petroleum Reserves

Site	State	FY 2014 Current	FY 2015 Enacted	FY 2016 Request
National Laboratories and Technology Centers				
Ames Laboratory	IA	51,337	48,199	48,375
Argonne National Laboratory	IL	602,567	556,394	574,852
Brookhaven National Laboratory	NY	532,734	461,965	481,213
Fermi National Accelerator Laboratory	IL	426,346	372,223	387,872
Idaho National Laboratory	ID	1,060,014	1,100,849	1,102,546
Lawrence Berkeley National Laboratory	CA	644,036	607,179	636,049
Lawrence Livermore National Laboratory	CA	1,163,490	1,174,472	1,170,239
Los Alamos National Laboratory	NM	2,033,066	1,871,920	1,947,198
National Energy Technology Lab	WV, PA	693,381	742,360	768,084
National Renewable Energy Laboratory	CO	292,334	273,509	291,214
New Brunswick Laboratory	IL	7,185	10,559	6,899
Oak Ridge Institute for Science & Education	TN	37,841	24,775	66,879

Site	State	FY 2014 Current	FY 2015 Enacted	FY 2016 Request
Oak Ridge National Laboratory	TN	1,135,422	1,015,891	1,153,102
Pacific Northwest National Laboratory	WA	582,774	494,266	377,514
Princeton Plasma Physics Laboratory	NJ	89,114	101,972	74,969
Sandia National Laboratories	NM	1,777,458	1,780,241	1,766,912
Savannah River National Laboratory	SC	14,215	13,461	13,945
SLAC National Accelerator Laboratory	CA	406,431	467,234	544,591
Thomas Jefferson National Accelerator Facility	VA	165,918	127,295	122,828
NNSA Sites				
Bettis Atomic Power Laboratory	PA	412,500	471,700	485,765
General Atomics Site	CA	17,489	23,030	23,500
Kansas City Plant	MO	533,885	576,813	624,294
Knolls Atomic Power Laboratory	NY	449,500	508,300	604,266
Naval Research Laboratory	DC	19,044	25,196	50,040
NNSA Albuquerque Complex	NM	570,997	705,570	624,735
Pantex Plant	TX	598,626	10	10
University of Rochester	NY	63,185	66,500	60,500
Y-12 National Security Complex	TN	1,007,144	——	——
NNSA Production Office (NPO)	TN, TX	——	1,674,384	2,013,096
Cleanup Sites				
East Tennessee Technology Park (K25)	TN	214,541	208,092	188,319
Energy Technology Engineering Center	CA	9,467	9,061	10,567
Hanford Site	WA	992,919	987,529	899,299
Miamisburg Site	OH	1,285	8,408	——
Moab Site	UT	36,478	35,663	37,629
Oak Ridge Reservation	TN	83,220	131,930	60,500
Office of River Protection	WA	1,238,096	1,217,347	1,368,022
Paducah Gaseous Diffusion Plant	KY	339,944	283,622	247,204
Portsmouth Gaseous Diffusion Plant	OH	206,274	281,928	233,321
Savannah River Site	SC	1,377,843	1,376,027	1,539,930
Waste Isolation Pilot Plant	NM	216,249	320,061	243,379
West Valley Demonstration Project	NY	66,015	60,457	61,104
Petroleum Reserves				
Naval Petroleum Reserves	CA, WY	21,387	18,880	16,430
Strategic Petroleum Reserves	LA, TX	178,515	188,612	245,406