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Chairman Simpson, Ranking Member Kaptur and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the President's fiscal year 2016 budget request for the Office of Nuclear Energy (NE) at the Department of Energy.

At the end of 2013, policymakers came together on a bipartisan basis to partially reverse sequestration and to pay for higher discretionary funding levels with long-term reforms. We have seen the positive consequences of that bipartisan agreement for our ability to invest in areas ranging from research and manufacturing to strengthening our military. We have also seen the positive consequences for the economy, with an end to mindless austerity and manufactured crises contributing to the fastest job growth since the late 1990s. The President's Budget builds on this progress by reversing sequestration, paid for with a balanced mix of commonsense spending cuts and tax loophole closers, while also proposing additional deficit reduction that would put debt on a downward path as a share of the economy.

Meanwhile, the President has made clear that he will not accept a budget that reverses our progress by locking in sequestration going forward. Locking in sequestration would bring real defense and non-defense funding to the lowest levels in a decade. As the Joint Chiefs and others have outlined, that would damage our national security, ultimately resulting in a military that is too small and equipment that is too old to fully implement the defense strategy. It would also damage our economy, preventing us from making pro-growth investments in areas ranging from basic research to early childhood education. As the President has stated, he will not accept a budget that severs the vital link between our national and economic security, both of which are important to the Nation's safety, international standing, and long-term prosperity.

Nuclear energy continues to be an important part of President Obama's "all-of-the-above" energy strategy for a sustainable, secure, and clean energy future. Nuclear energy must continue to play a pivotal role to achieve the Administration's goal of reducing carbon emissions by 26-28 percent by 2025. As Secretary Moniz stated during the International Atomic Energy Agency's General Conference last September, "Strong global action is needed to reduce greenhouse gas emissions and address their impacts on climate and development. Smart climate policies can drive cleaner growth, resulting in a range of economic and social benefits… If most nuclear power plants are retired at 60 years, we will see many retirements starting in 2030. We will need to know within a decade how new nuclear energy sources can play a major part in the clean energy solution."

There are five new nuclear reactors currently under construction in the United States, the first in more than 30 years. The first of these expected to enter service will be the second unit at TVA's Watts Bar site, which is scheduled to begin loading fuel this summer and begin commercial operation later this year. The other four reactors, in Georgia and South Carolina, are of the next-generation advanced reactor AP1000 design, possessing enhanced passive safety features and improved operational performance. Last February, the Department of Energy's Loan Programs Office announced that two of the owners of Plant Vogtle received a $6.5 billion loan

guarantee to support construction of the Vogtle facility. Together, these newly constructed units will provide enough reliable, zero-carbon, baseload electricity to power three million homes in the Southeastern United States.

In spite of the optimism surrounding the construction of these new plants, challenges remain with the 99 reactors in our existing fleet. Aging and market forces have placed additional economic pressures on some of these units. Our Light Water Reactor Sustainability program ensures the continued safe and economic operation of the current fleet. This program focuses on extending the operating lifetimes of current plants beyond 60 years and generating near-term benefits by making further improvements in their productivity.

A high priority of the Department has been to accelerate the timelines for the commercialization and deployment of small modular reactor technologies through the SMR Licensing Technical Support program. SMRs have the potential to achieve lower upfront capital cost, modular power additions, and simpler, predictable and faster construction than other designs. The Department believes strongly that SMRs can promote American competitiveness, create manufacturing jobs here at home, and reduce CO_2 emissions through clean, safe, and reliable nuclear power. Furthermore, SMRs could re-invigorate design and construction infrastructure for the nuclear sector and lay the foundation for the advanced reactor concepts of the future.

Additionally, we look to the future and strive to develop advanced computing capabilities that serve as virtual versions of existing, operating nuclear reactors. In January, the Department renewed funding for the Consortium for the Advanced Simulation of Light Water Reactors (CASL), an Energy Innovation Hub established in 2010. Over the next five years, CASL researchers will focus on extending the modeling and simulation tools built during its first phase to include additional nuclear reactor designs, including small modular reactors. In coordination with CASL, the Nuclear Energy Advanced Modeling and Simulation (NEAMS) program will address high impact problems in accident tolerant fuels and steam generator vibrations.

Over the last two decades, nuclear energy has provided nearly 20 percent of the Nation's electrical generation and remains the largest contributor of non-greenhouse gas-emitting electricity in the United States. In order to continue to use this this carbon-free energy supply, we must overcome the challenge of managing our nation's nuclear waste and used nuclear fuel. With the Administration's 2013 *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* as our foundation, NE is undertaking activities within its existing authority to lay the ground work for implementation of transportation, storage, and disposal of nuclear waste through a phased, adaptive, and consent-based approach.

The President's fiscal year 2016 budget requests $907.6 million for the Office of Nuclear Energy.

OFFICE OF NUCLEAR ENERGY PROGRAMS

NE Funding for DOE Crosscutting Initiatives - $62.266 million

The FY 2016 Budget Request expands the crosscutting initiatives introduced in the FY 2015 Budget Request. The Department's crosscuts effectively and efficiently address the United States' energy, environmental, and national security challenges. Each crosscut, designed to advance key technology areas that have multiple energy resource applications, reflects a comprehensive and integrated plan of work to optimize programmatic objectives by efficiently allocating resources.

Supercritical CO_2 - $8 million

The supercritical carbon dioxide (sCO_2) based power generation effort is a technology-focused crosscutting initiative that will facilitate industry's transition to realize power cycles based on sCO_2 as the working fluid. A unique aspect of this conversion technology is that it can be used by nuclear, solar, and fossil energy plants to improve energy generation efficiency. As a result, this continues to be a collaborative DOE project among the Offices of Fossil Energy (FE), Energy Efficiency and Renewable Energy (EERE), and Nuclear Energy to further develop the technology by establishing a cost shared pre-commercial pilot demonstration, while continuing to leverage the technical expertise and capabilities of the national laboratories.

Building on industry outreach and focused research and development (R&D) efforts in FY 2015, the major thrusts of the crosscut in FY 2016 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 10-MW pilot test bed. Demonstrating and developing this power cycle has the potential to revolutionize electric power generation for fossil, concentrating solar, geothermal, nuclear and waste heat recovery applications in a way that is cleaner and more efficient, and which reduces cost.

Subsurface Engineering - $39.5 million

DOE's Subsurface Technology and Engineering R&D crosscut, SubTER, aims to address identified challenges in the subsurface through highly focused and coordinated research in Wellbore Integrity, Stress State and Induced Seismicity, Permeability Manipulation, and New Subsurface Signals to ensure enhanced energy security, material impact on climate change via CO_2 sequestration, and significantly mitigated environmental impacts from energy related activities and operations. NE is contributing to this crosscut with its field test to support R&D on the concept of waste disposal in deep boreholes and its R&D on characterization and performance of generic mined geologic repository media.

Cybersecurity - $14.466 million

The DOE is engaged in three categories of cyber-related activities: protecting the DOE enterprise from a range of cyber threats that can adversely impact mission capabilities; bolstering the U.S. Government's capabilities to address cyber threats; and, improving cybersecurity in the electric power subsector and the oil and natural gas subsector. The Cybersecurity crosscut supports central coordination of the strategic and operational aspects of cybersecurity and facilitates cooperative efforts such as the Joint Cybersecurity Coordination Center (JC3) for incident response and the implementation of Department-wide Identity Credential and Access Management (ICAM).

SMR Licensing Technical Support – $62.5 million

The development of safe, clean, affordable nuclear power options is a key element of the Department of Energy's Office of Nuclear Energy (DOE-NE) Nuclear Energy Research and Development Roadmap. As a part of this strategy, accelerating the timelines for the commercialization and deployment of small modular reactor (SMR) technologies through the SMR Licensing Technical Support (LTS) program has been a high priority of the Department. The program supports first-of-a-kind costs associated with design certification and licensing activities for SMR designs through cost-shared arrangements with industry partners (industry contributions are a minimum of 50% of the cost). If industry chooses to widely deploy these technologies in the U.S., SMRs could help meet the Nation's economic, energy security, and climate change goals. The goal of the program is to provide financial risk reduction

to the industry first-movers to accelerate the design development, certification, and licensing of the safest, most economical SMR technologies. The Department's cooperative agreements awarded under this program support the domestic development of these innovative nuclear technologies, thereby strengthening American manufacturing capabilities and the associated nuclear supply chain, improving the domestic job outlook, and creating important export opportunities for the U.S.

The Department also believes that exercising of SMR-specific site permitting and licensing methodologies and processes is an important aspect in the development of commercialization potential of SMR technologies. The Department's FY 2016 Budget Request allows for ongoing recipients and an electricity provider partnered with NuScale to receive funding for site permitting and related licensing activities within existing program funding amounts. In FY 2016, the SMR LTS program management will also consider additional analytical efforts that may be able to provide value to the overall program goals within the current program budget.

Supercritical Transformational Electric Power Research and Development - $5.0 million

The Supercritical Transformational Electric Power Research and Development (STEP R&D) initiative is a collaborative Department of Energy (DOE) project to develop and scale up advanced Supercritical Carbon Dioxide (sCO_2) Brayton cycle energy conversion technology to facilitate commercial development.

The FY 2015 Omnibus directed the Department to engage with the appropriate stakeholders to gather information with the goal of developing an effective solicitation for a public-private cost-shared sCO_2 demonstration program. In FY 2016, NE activities will support the solicitation, evaluation and competitive award(s) for the STEP pilot scale demonstration facility, which will be funded and directed primarily by FE because the near-term deployment and potential market applications for commercial sCO_2 power cycles are primarily in the fossil energy area. Both FY 2015 and FY 2016 activities in this budget element will be coordinated and fully integrated through the Department's sCO_2 Crosscut, involving the Offices of Fossil Energy (FE), Energy Efficiency and Renewable Energy (EERE), and Nuclear Energy.

Reactor Concepts Research, Development and Demonstration - $108.1 million

The Reactor Concepts Research, Development and Demonstration (RD&D) program develops new and advanced reactor designs and technologies to further the state of reactor technology, to improve its competitiveness, and to help advance nuclear power as a resource capable of meeting the Nation's energy, environmental, and national security needs. Program activities are designed to address technical, cost, safety and security issues associated with advanced reactor technologies, such as fast reactors using liquid metal coolants and high temperature reactors using helium or liquid salt coolants. Additionally, Reactor Concepts RD&D will conduct R&D on advanced technologies that improve the reliability, sustain the safety, and extend the life of the current light water reactor (LWR) fleet.

Light Water Reactor Sustainability - $33.275 million

The Light Water Reactor Sustainability (LWRS) subprogram is focusing research on material aging issues where research results will help support subsequent license renewal applications expected from industry around 2018. Activities in the Reactor Safety Technologies area are addressing opportunities to enhance the safety profile of the domestic reactor fleet by examining lessons learned from the Fukushima Daiichi accident. These include evaluation

of instrumentation needs to better monitor and manage accident conditions, improved modeling of accident progression, and preparation and planning efforts in support of eventual examination of the damaged reactors.

Advanced Reactor Technologies - $74.865 million

The Advanced Reactor Technologies (ART) subprogram will continue R&D on advanced reactor technologies and will support work on generic topics that can apply to various advanced reactor concepts. This program focuses on efforts in the following areas: advanced reactor coolants, safety and technology for advanced reactors, advanced energy conversion, advanced instrumentation and controls, collaboration with the Nuclear Regulatory Commission (NRC) on the development of an advanced reactor licensing framework, liquid metal reactor component testing, TRISO fuel and graphite material qualification, advanced materials development and codification, completion of the exploratory planning study for an advanced text/demonstration reactor, continued international collaborations, and cost-shared industry-R&D collaborations. Research results from this program are expected to help reduce design and construction costs, contribute data to the technical bases for the operation of safety systems, improve proliferation resistance, and provide critical insights to help solve key feasibility and performance challenges.

Fuel Cycle Research and Development - $217.76 million

The Fuel Cycle Research and Development (FCR&D) program conducts generic R&D and generic non-R&D activities related to used nuclear fuel (UNF), nuclear waste management and disposal issues. The program also conducts R&D on advanced sustainable fuel cycle technologies that have the potential to improve resource utilization and energy generation, reduce waste generation, enhance safety, and limit proliferation risk. In addition, the program is laying the ground work for implementation of the Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* (*Strategy*). The program employs a long-term, science-based approach to foster innovative, transformational technology solutions to achieve this mission. Advancements in fuel cycle technologies and solutions support the enhanced availability, affordability, safety, and security of nuclear-generated electricity in the U.S.

An effective, long-term nuclear waste management program requires the restructuring of the current funding arrangement. The Administration recommends the new funding arrangement include the following elements: ongoing discretionary appropriations; access to annual fee collections provided in legislation, either through their reclassification from mandatory to discretionary, or as a direct mandatory appropriation; and eventual access to the balance or "corpus" of the Nuclear Waste Fund. The FY 2016 Budget Request includes a proposal to implement such reform. Discretionary appropriations are included for the duration of this effort. These funds would support expenses that are regular and recurring, such as program management costs, which include administrative expenses, salaries and benefits, studies, and regulatory interactions. In FY 2016, these funds will be for ongoing studies and outreach efforts associated with transportation and storage through the UNFD's integrated waste management system subprogram. Mandatory appropriations in addition to the discretionary funding are proposed to be provided annually starting in FY 2019 to fund the balance of the annual program costs.

Material Recovery and Waste Form Development - $35.3 million

The Material Recovery and Waste Form Development (MRWFD) subprogram's primary mission is to develop advanced material recovery as well as advanced waste form development technologies that could improve current fuel cycle performance and enable a sustainable fuel cycle with minimal processing, waste generation, and

potential for material diversion. MRWFD continues to apply the expertise and technical capabilities gained over the years to a broader range of applications. In addition to separations, MRWFD provides solutions for environmental remediation, national security missions, as well as civilian nuclear applications.

The Joint Fuel Cycle Studies (JFCS) effort/project is a key activity within MRWFD. In collaboration with the Republic of Korea, the JFCS is assessing the technical and economic feasibility and nonproliferation acceptability of electrochemical recycling and other options for managing UNF. JFCS is a ten-year effort that is divided into three phases. In FY 2016, the JFCS will be in its second phase, which is the determination of reliable integrated process operation with used LWR fuel.

Advanced Fuels - $48.7 million

The development of improved and advanced nuclear fuels is a major objective for existing light water reactors (LWR) and future sustainable fuel-cycle options. Advanced Fuels is pursuing two major paths: 1) the development of next generation LWR fuels with enhanced performance and accident tolerance, and 2) the development of transmutation fuels with enhanced proliferation resistance and resource utilization over the long term. The Advanced Fuels subprogram sustains core development and experimental capabilities that support the nuclear reactor technologies described in the Reactor Concepts Research, Development, and Demonstration program. In FY 2016, the program continues to support accident tolerant fuel (ATF) and clad concepts R&D. This includes fuel fabrication and testing involving irradiations in DOE's Advanced Test Reactor (ATR) and foreign reactors (Halden), steam environments, furnaces, and mechanical property testing. These feasibility and assessment activities also include establishing modeling capabilities for these new concepts, using existing models as the bases for development; as well as studies of impacts on economics, the fuel cycle, operations, safety, and the environment. These evaluations will inform decisions about future activities in this subprogram. The Department also plans to establish the capability for pressurized loop testing in the ATR and transient testing in the Transient Reactor Test Facility (TREAT), both at the Idaho National Laboratory (INL).

A major activity in 2016 will be the "downselection/prioritization" of the industrial accident tolerant fuel concepts that will be pursued in the next phase of the program; leading up to the irradiation of a lead fuel rod or fuel assembly in a commercial power reactor. The Department will also continue the long-term development of transmutation fuel that includes irradiations, enhanced material testing capability enhancement, associated model development, and coordination with the NE nuclear model and instrument development programs.

Systems Analysis and Integration - $11.2 million

The Systems Analysis and Integration subprogram provides the critical capability needed to analyze complex fuel cycle system options, assess overall performance under various scenarios, and improve understanding of the interdependencies between various subsystems and associated technologies. The objective is to develop and implement analysis processes and tools, and perform integrated fuel cycle evaluations that help inform the decision makers on the overall FCR&D priorities and program direction. In addition, information gleaned from these processes will provide valuable insights into how to best integrate activities through R&D efforts with common fuel cycle goals.

Materials Protection, Accounting and Control Technology - $8.6 million

The Materials Protection, Accounting and Control Technology (MPACT) subprogram develops the technologies and analysis tools to support the next generation of nuclear materials management and safeguards for future U.S. nuclear fuel cycles. It also includes assessing vulnerabilities and security of the consolidated storage of used nuclear fuel, and managing and minimizing proliferation and terrorism risk. Addressing the energy security needs of the country will require innovative approaches to materials control and accounting to ensure that nuclear material is not misused, diverted, or stolen.

NE works closely with the National Nuclear Security Administration (NNSA), the Department of State, and the Nuclear Regulatory Commission (NRC) on issues related to nuclear nonproliferation. NNSA has broad responsibilities in international nonproliferation and security matters for the present and into the future. MPACT is focused on R&D as it relates to potential future fuel cycle facilities in the U.S.

Used Nuclear Fuel Disposition - $108.36 million

The Used Nuclear Fuel Disposition subprogram is organized into three distinct elements: R&D to identify alternatives and conduct scientific research and technology development to enable storage, transportation, and disposal of used nuclear fuel and wastes generated by existing and future nuclear fuel cycles; activities that lay the groundwork for an integrated waste management system with specific emphasis on development of a consolidated storage facility and associated transportation; and activities associated with exploring potential alternative disposal options for some DOE-managed high-level radioactive waste and spent nuclear fuel. The FY 2016 Budget supports the following activities: a field test to support R&D on the concept of waste disposal in deep boreholes in crystalline basement rock and R&D on characterization and performance of generic mined geologic repository media and concepts for disposal of high-level radioactive waste and used nuclear fuel.

Fuel Resources - $5.6 million

The Fuel Resources subprogram supports activities that will assure economic nuclear fuel resources remain available. The program will evaluate nuclear fuel resources and develop economic means of extracting uranium from seawater. A key objective is to develop advanced adsorbent materials that can simultaneously enhance uranium sorption capacity, selectivity, kinetics, and materials durability; thereby, reducing the development costs and uncertainties.

Nuclear Energy Enabling Technologies - $86.387 million

The Nuclear Energy Enabling Technologies (NEET) program sponsors R&D and strategic infrastructure investments to develop innovative and crosscutting nuclear energy technologies. This program also makes a strong investment in modeling and simulation efforts to bring 30 years of improved computational and material science to reactor and fuel system simulation. The results will provide researchers, designers, and operators with advanced tools to better understand the behavior of nuclear energy systems; thereby improving safety, economics, and efficiency. Additionally, the program provides access to unique nuclear energy research capabilities through its nuclear science user facilities. NE Traineeships is a new subprogram under NEET that will address workforce needs in the field of radiochemistry. The capabilities developed through NEET will advance the state of nuclear technology, improving its competitiveness, and promoting continued contribution to meeting our Nation’s energy and environmental challenges.

As in previous years, NE dedicates up to twenty percent of R&D dollars to the Nuclear Energy University Program (NEUP) to develop the next generation of leaders in America's nuclear workforce. NEUP supports work scopes addressing the full range of NE R&D activities with specific emphasis on technical areas best suited for university-based R&D including important aspects of fuel cycle and reactor development, as well as mission supporting transformative research.

Crosscutting Technology Development - $15.343 million

The Crosscutting Technology Development (CTD) subprogram competitively awards high-priority R&D to universities, national laboratories, and industry, leading to the development of innovative solutions to unique and crosscutting nuclear energy challenges. Additionally, NEET CTD strategically invests in competitive, nuclear energy-related infrastructure enhancement at national laboratories; ensuring researchers have access to state-of-the-art R&D capabilities. The subprogram leads the coordination with NE's other R&D programs to ensure that developed technologies and capabilities are part of an integrated system offering the potential of revolutionary improvement in safety, performance, reliability, economics, and proliferation risk reduction.

Nuclear Energy Advanced Modeling and Simulation - $23.612 million

NEAMS provides a complex set of computational simulation tools, in support of NE programs, such as the Advanced Reactor Technologies and Fuel Cycle R&D programs. NEAMS engages scientists and engineers in developing state-of-the-art, multi-scale models of material properties and advanced computational simulation tools for simulations of nuclear energy systems. NEAMS is developing a computational ToolKit which is comprised of both reactor and fuel systems analysis capabilities that can be exercised either coupled or independently, depending on the needs of the end user. Computational tools developed under the NEAMS program define the state-of-the-art in nuclear simulation and are currently being used by over 60 organizations, both domestically and abroad.

Energy Innovation Hub for Modeling and Simulation - $24.3 million

The Energy Innovation Hub for Modeling and Simulation (Hub) is developing a virtual reactor model of an actual Westinghouse-designed, pressurized water reactor (PWR), owned and operated by the Tennessee Valley Authority-owned (TVA), to simulate reactor behavior. Once completed, engineers will use this virtual model to improve the safety and economics of reactor operations by simulating proposed solutions to manage reactor power production increases and reactor life and license extensions. The combination of data gained from the virtual model and the physical reactor will be used to resolve technology issues that have challenged nuclear energy development. The Oak Ridge National Laboratory (ORNL) is leading a consortium (CASL – Consortium for Advanced Simulation of Light Water Reactors) of national labs, universities, and industry partners to manage Hub execution.
During FY 2015, the Hub was renewed for a second five-year phase.

In FY2016, the Hub will add new capabilities to the virtual reactor that will allow its coupled thermal-hydraulics, neutronics, fuels performance, and chemistry tools to address performance and safety issues for Pressurized Water (PWR) and Boiling Water (BWR) reactors, as well as SMRs. In addition, the Hub will expand its partnership to include other reactor technology vendors and electric utilities. Plans include conducting cost-shared deployment tests that would install virtual reactor tools on industry computers. Information obtained from these tests will

provide an improved understanding of industry-defined issues that currently limit the energy output of their reactors.

Nuclear Science User Facilities (NSUF) – $21.132 million

The request renames the National Scientific User Facility subprogram to the Nuclear Science User Facilities (NSUF) to better align with the focus of the subprogram and to recognize that it is comprised of multiple facilities spread across multiple national laboratories, universities and industry. The NSUF represents a "prototype laboratory for the future," promoting the use of unique nuclear research facilities and encouraging active university, industry, and laboratory collaboration in relevant nuclear scientific research. The NSUF, through competitive solicitations, provides a mechanism for research organizations to collaborate, conduct experiments and post-experiment analysis, and utilize high performance computing at facilities not normally accessible to these organizations. The Idaho National Laboratory Advanced Test Reactor (ATR) and post-irradiation examination (PIE) facilities at the Center for Advanced Energy Studies and Materials and Fuels Complex are available as user facilities. Additionally, research reactors at Oak Ridge National Laboratory, Massachusetts Institute of Technology, North Carolina State University, the Advanced Photon Source beam line capabilities at the Illinois Institute of Technology, irradiation experiment design and fabrication capabilities at Pacific Northwest National Laboratory, hot cells and fabrication capabilities at Westinghouse, and examination facilities at the Universities of Wisconsin, Michigan, California-Berkeley, Purdue, and Nevada-Las Vegas are partnered with the NSUF, bringing additional user facilities to the research community. Since its designation as a user facility in 2007, the NSUF has awarded 109 experiments to 22 universities and 4 laboratories.

Nuclear Energy Traineeships - $2 million

The Office of Nuclear Energy has mission-specific/mission-critical workforce needs in the area of radiochemistry. Given that the current radiochemistry workforce is approaching the age for retirement, the U.S. is faced with a growing demand for the education and training of scientists in radiochemistry. The DOE national laboratories are also losing capability due to retirement of a substantial number of their "core" groups of radiochemists and nuclear chemists. The nation will need radiochemistry expertise for decades to come in order to support its energy and security interests, and most importantly, to maintain global leadership in the next generation of safe nuclear energy technology from both a national security and an environmental perspective.

Radiological Facilities Management - $6.8 million

Radiological Facilities Management (RFM) provides support for radiological facilities not on Department of Energy (DOE) property. In FY 2016, the Department is requesting funding only for the Research Reactor Infrastructure (RRI) subprogram. RRI supports the continued operation of U.S. research reactors by providing research reactor fuel services and maintenance of fuel fabrication equipment.

In FY 2016, in support of its mission and objectives, the RRI subprogram will provide project management, technical support, quality engineering and inspection, and nuclear material support to 25 reactors located at 24 U.S. universities. Major program deliverables will be to procure new plate fuel elements and ship them to universities, and also to ship used plate and TRIGA reactor fuel elements from universities to DOE used fuel receipt facilities. In addition, work will continue on initiatives that evaluate alternatives to the current TRIGA reactor fuel sole supply source.

Idaho Facilities Management - $211.826 million

The mission of the Idaho Facilities Management (IFM) program is to manage the planning, acquisition, operation, maintenance, and disposition of the Office of Nuclear Energy owned facilities and capabilities at the Idaho National Laboratory (INL). The IFM program maintains Department of Energy (DOE) mission-supporting facilities and capabilities at the INL in a safe, compliant status to support the Department's nuclear energy research, testing of naval reactor fuels and reactor core components, and a diverse range of national security technology programs that support the National Nuclear Security Administration (NNSA) and other federal agencies such as the Department of Homeland Security in the areas of critical infrastructure protection, nuclear nonproliferation, and incident response.

The IFM program enables long-term nuclear R&D activities by providing the expertise, facilities, equipment, and nuclear materials necessary to conduct a wide array of experimental activities in a safe and compliant manner. The Advanced Test Reactor (ATR) provides unique irradiation capability to further nuclear fuel and reactor component research in support of advanced nuclear reactor design activities. The Materials and Fuels Complex (MFC) contains a comprehensive range of fuel and experiment fabrication, and pre- and post-irradiation examination capabilities used to assess material and fuel characteristics, and performance in varying reactor environments. A number of facilities at the Idaho Nuclear Technology and Engineering Center (INTEC) are utilized to support material consolidation and storage at the Material Security Consolidation Facility (CPP-651), fuel cycle research and development, and National and Homeland Security (N&HS) activities. The Research and Education Campus is home to a diverse range of research capabilities and facilities; supporting research in nuclear energy as well as N&HS, energy, and the environment.

In FY 2016, the Department is proceeding with pre-critical decision (CD)-2 design activities for the Sample Preparation Laboratory (SPL) at the INL to satisfy core requirements of the mission need under the Advanced Post Irradiation Examination (APIE) Capabilities Project. The scaled down alternative of the APIE Capabilities Project will provide a new functionally focused laboratory with a smaller footprint at a reduced cost, which, when coupled with existing facilities and recapitalization efforts, will fulfill near-term APIE capabilities needed to improve understanding of nuclear fuels and material performance. Additionally, the Department will invest in major power distribution infrastructure refurbishments at the INL, including, but not limited to, the replacement of the Supervisory Control and Data Acquisition (SCADA) system, replacement of power-lines and transformers, and the replacement of multiple site substations that are near or have exceeded their lifecycle. Finally, reestablishing a transient testing capability at the Transient Reactor Test (TREAT) Facility at the INL will enable the NE R&D programs to understand fuel performance phenomenology at the milli-second to second time scales, as well as provide a capability to screen advanced fuel concepts, including accident tolerant fuels, which allows for early identification of the limits of fuel performance.

Idaho Sitewide Safeguards and Security - $126.161 million

The Idaho Sitewide Safeguards and Security (S&S) program supports the Idaho National Laboratory (INL) complex nuclear facility infrastructure and enables the Office of Nuclear Energy to conduct R&D in support of multiple program missions. The S&S program funds physical and cyber security activities for the INL, providing protection of the Department's nuclear materials, classified and unclassified matter, government property, personnel and other vital assets from theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts that may cause adverse impacts on our national security; program continuity; or the health and safety of employees, the public, or the environment.

In FY2016, the S&S program will continue to sustain program functionality at the level necessary to assure high confidence in the protection of INL assets and a high degree of customer service by maintaining effective staffing levels, proactive preventative and corrective maintenance programs, and a robust cyber security program. The FY 2016 request will focus on implementing infrastructure investments, capital improvements, emerging technology investments and enhanced cyber security program capabilities to adequately secure site assets.

In FY2016, funding supports increased S&S program scope in the following areas: Completing critical physical security infrastructure investments required to maintain an S&S program consistent with Departmental requirements and ensure adequate protection levels; such as upgrading the perimeter intrusion detection and assessment system and central alarm system at the Materials and Fuels Complex (MFC). Additionally, implementing enhanced external penetration capabilities and data protection resources to monitor and mitigate risks for INL Cloud services. Finally, the additional funding establishes an INL Industrial Control Systems cyber security program to ensure protection of critical infrastructure systems vital to operations at the INL.

International Nuclear Energy Cooperation - $3.0 million

International Nuclear Energy Cooperation's (INEC) mission is to serve as the Department's overall lead for all international activities related to civilian nuclear energy, including analysis, development, and implementation of international civilian nuclear energy policy and coordination and integration of the Office of Nuclear Energy's international nuclear technical activities. These activities support international bilateral and multilateral engagement and civil nuclear energy R&D activities with countries having an established or planned civilian nuclear power sector.

INEC provides the Department the ability to meet growing demands for engagement with international partners on civil nuclear policy, RD&D, and related activities. INEC engages both bilaterally and multilaterally to support broader U.S. policy and commercial goals related to the safe and secure deployment of nuclear energy globally and allow more effective integration of NE international R&D and policy interests, including increasing proliferation resistance of new and existing technologies.

Program Direction - $80 million

Program Direction provides the federal staffing resources and associated costs required to support the overall direction and execution of the Office of Nuclear Energy programs. NE has staff located in multiple locations: Washington, D.C., the Idaho Operations Office, the Oak Ridge Operations Office, and the Nevada Site Office. The Idaho Operations Office funding supports what is a fully functional service center for NE, as well as other Department of Energy offices. Activities within the site office support function include execution of headquarters directed procurements, supplemental support for any unforeseen actions, as well as maintenance to federal buildings.

In addition to appropriated funds, NE also manages approximately $140.0 million dollars annually from other activities including: Strategic Partnerships Program and reimbursable funding from the National Aeronautics and Space Administration (NASA) and the Department of Defense (DoD). The Program Direction request reflects NE's continued effort to optimize support for its federal workforce, while continuing to improve efficiency and cost-effectiveness; and ensure the expert federal management and oversight of NE mission activities.