**Testimony of Secretary Rick Perry**
**U.S. Department of Energy**
**Before the**
**U.S. House Committee on Appropriations**
**Energy and Water Development Subcommittee**
**June 20, 2017**

Chairman Simpson, Ranking Member Kaptur, and Members of the Subcommittee, it is an honor to appear before you today to discuss the President's FY 2018 Budget Request for the Department of Energy ("the Department" or "DOE").

As you know, I was confirmed by the United States Senate on March 2, 2017. It is a privilege and an honor to serve as the 14th Secretary of Energy and fulfill this important role critical to our nation's energy and scientific pursuits along with assuring our nuclear readiness.

As a former legislative appropriator and Governor, I'm keenly aware of the budget writing process and only wish I had been confirmed by the Senate earlier so I could be a full participant in crafting this proposal.

The President's proposal focuses our priorities and reigns in spending. There is much the Department does well and stays within budget, and unfortunately there are places we need to be better stewards of our financial resources. This budget proposal makes some difficult choices. I look forward to explaining our priorities and working with you to continue the important mission of the Department of Energy.

In short, the President's FY 2018 $28 billion Budget Request for the Department of Energy ("Budget") advances our key missions through significant investments to modernize our nuclear weapons arsenal, protect our energy infrastructure from cyber and other attacks, achieve exascale computing, and address our moral obligations regarding nuclear waste management and the Nation's nuclear legacy.

The Department's world-leading science and technology enterprise also generates the innovations to fulfill our mission. Through our 17 national laboratories, we engage in cutting-edge research that expands the frontiers of scientific knowledge

and generates new technologies to address our greatest challenges. While most of this is in the energy field, the DOE also does work to support the health sector with research and recently launched a program with Veterans Affairs to use our computing ability to assist our nation's veterans.

The Budget focuses the intellectual prowess of our scientists and engineers on the development of technologies that the ingenuity and capital of America's entrepreneurs and businesses can convert into commercial applications and products that improve the lives and security of all Americans.

**Restoring the Nuclear Security Enterprise**

The Budget fulfills the President's vision of rebuilding and restoring our Nation's security through robust investments in the Department's nuclear security mission. The Budget provides $13.9 billion for the National Nuclear Security Administration, $1 billion or 8 percent above the FY 2017 Enacted level.

As a participant on the National Security Council, the Department has a unique role in our Nation's security. I undertake these responsibilities with the utmost gravity.

One of my key duties as Secretary of Energy is to annually certify to the President that the American nuclear weapons stockpile remains safe, secure, and reliable, without the need for underground explosive nuclear testing. The Budget includes $10.2 billion for Weapons Activities to maintain and enhance the safety, security, and effectiveness of the U.S. nuclear weapons stockpile. This $996 million increase over FY 2017 supports modernizing our nuclear weapons enterprise and meets Department of Defense requirements in accordance with the President's Memorandum on Rebuilding the Armed Forces.

The Budget supports our ongoing Life Extension Programs (LEP) and Major Alterations, which includes $4.0 billion for Directed Stockpile work, a $669 million increase. Funding for the W76-1 warhead LEP directly supports the Navy and will keep the LEP on schedule and on budget to complete production in FY 2019. An increase of $172 million, or 28 percent, for the B61-12 LEP will keep us on schedule delivering the First Production Unit (FPU) in FY 2020 to consolidate

four variants of the B61 gravity bomb and improve the safety and security of the oldest weapon system in our nuclear arsenal.

The Budget also supports the Air Force's Long-Range Stand-Off program through an increase of $179 million or 81 percent from FY 2017 Enacted for the W80-4 LEP, to deliver the first production unit in FY 2025 of the cruise missile warhead. We also increase funding by $51 million or 18 percent for the W88 Alteration 370, to provide the scheduled first production unit in FY 2020.

The Budget for Weapons Activities also increases investments to modernize our nuclear infrastructure. For example, we include $663 million, an $88 million increase from FY 2017, for construction of the Uranium Processing Facility needed to replace aging facilities at the Y-12 National Security Complex, as well as $98 million, up $83 million from FY 2017 Enacted, to accelerate the replacement of old and unfit buildings at the Albuquerque Complex.

The Weapons Activities Budget request also includes $161 million, a $66 million increase, for NNSA collaboration with the Office of Science on the development of capable exascale computer systems, which I address below.

Moving on to NNSA's Naval Reactors program, the Department has the ongoing responsibility to provide militarily effective nuclear propulsion plants for Navy vessels and to ensure their safe, reliable and long-lived operation. The Budget provides $1.5 billion to support the safe and reliable operation of the Navy's nuclear-powered fleet and continuation of the *Columbia*-class submarine program, refueling of the Land-Based Prototype reactor, and the Spent Fuel Handling Recapitalization Project.

The Budget also includes $1.8 billion for the Defense Nuclear Nonproliferation (DNN) program to reduce global threats from nuclear weapons. This critical national security program prevents the spread of nuclear and radiological materials, advances technologies that detect nuclear and radiological proliferation worldwide, and eliminates or secures inventories of surplus materials and infrastructure usable for nuclear weapons.

The Budget proposes to terminate the Mixed Oxide Fuel Fabrication Facility project, providing $270 million for use toward an orderly and safe closure of the

project and $9 million to develop the pre-conceptual design for the dilute and dispose approach to plutonium disposition. This is an example of a significant cost and schedule overrun that should have set off alarms earlier in the project and should have been canceled.

We will, in an orderly and responsible manner, begin to wind down the project. My staff, in coordination with other stakeholders, is already reviewing alternative, enduring missions that could potentially utilize existing infrastructure and expertise.

The Budget also provides $277 million for Nuclear Counterterrorism and Incident Response, $5 million above FY 2017 Enacted, to work domestically and around the world to improve our ability to respond to radiological or nuclear incidents, in conjunction with other agencies in a broader U.S. Government effort.

Finally, the Budget for NNSA includes $419 million for the federal workforce at the NNSA. This $31 million increase is essential to ensuring our world-class workforce of dedicated men and women can effectively oversee NNSA's critical national security missions.

**Securing against Cyber Threats**

Among the most critical missions at the Department is to develop science and technology that will assure Americans of a resilient electric grid and energy infrastructure. Protecting these assets means it has to be resilient and hardened to defend against the evolving threat of cyber and other attacks. Consumers need to trust when they flip the switch, their lights will come on. Unfortunately, cyberattacks pose an ever-increasing threat to the Nation's networks, data, facilities, and infrastructure.

As utilities and independent power producers and operators have integrated advanced digital technologies to automate and control physical functions in their energy systems to improve performance, sophisticated cyber threats have increased. Nation-states, criminals, and terrorists conduct sophisticated probes of energy systems that can be used to exploit cyber vulnerabilities that disrupt or destroy energy systems.

To ensure robust cybersecurity programs across the energy sector, the Budget provides funding in multiple programs. In the Office of Nuclear Energy, we add a focus in the $20 million Light Water Reactor Sustainability program to research new technologies to address nuclear power plant cybersecurity, and we provide $17 million for cybersecurity at the Idaho National Laboratory (INL). In the Office of Fossil Energy, we provide $8 million for our sensors and controls research program seeking early-stage breakthroughs to help secure power plants against cyber-attacks.

Finally, the Budget includes $42 million for energy delivery system cybersecurity in Electricity Delivery and Energy Reliability, and a renewed focus to take steps to make a difference within two years in the cybersecurity of our Nation's power grid. Our budget funds early stage activities that improve cybersecurity and resilience of the grid in order to harden and evolve critical grid infrastructure. We focus on early stage R&D at national laboratories to develop the next generation control systems and components, devices and systems with engineered-in cybersecurity features; and we fund a new activity to develop a continuous monitoring capability that will significantly increase our awareness and ability to prevent and respond to these types of events.

We also cannot ignore the risks to the Department's own science, technology, and nuclear security infrastructure. Across the Department's programs and sites, we are taking major steps to safeguard our assets against cyber threats. The Budget includes robust funding to secure our own networks. For example, the Budget increases funding for the Chief Information Officer by $17 million from FY 2017 to modernize infrastructure and improve cybersecurity across the internal DOE IT enterprise. We also increase funding for cybersecurity in the National Nuclear Security Administration to $150 million to step up security for our nuclear security networks. In the Environmental Management program, we consolidated $43 million for cybersecurity into a new budget to ensure the security at our nine major cleanup sites.

Cybersecurity is one of my key goals at the Department, and the Budget will help us take concrete steps to harden our systems and our infrastructure.

## Exascale Computing

Turning to the Department's role in science and technology, the United States has long led the way in computing, dating back to invention of the first computers and continuing with world-leading machines at our national laboratories. Our leadership in developing and building the world's fastest computers has faced increasingly fierce global competition in the last decade. Maintaining the Nation's global primacy in high-performance computing is more critical than ever to ensure our national security, our continuing role as a science and innovation leader, and our economic prosperity.

The Budget includes $508 million to accelerate development of an exascale computing system, including $347 million in the Office of Science (Science) and $161 million in NNSA. This unprecedented investment, which is $249 million—or 96 percent—above the FY 2017 level, reflects the Department's intention to deliver an exascale machine in 2021 and a second machine with a different architecture by 2022. To get there, the Science/NNSA partnership will focus on hardware and software technologies needed to produce an exascale system, and the critical DOE applications needed to use such a platform.

By accelerating our progress towards exascale computing, we will take back American primacy in computing science and technology. This world-leading exascale program will bolster our national security by supporting the nuclear stockpile, while also supporting the next generation of scientific breakthroughs not possible with today's computing systems.

## Addressing the Obligation of Nuclear Waste and Legacy Management

The President's FY 2018 Budget Request for the Department deals with the issue of nuclear waste disposal and supports accelerating clean-up of our Cold War legacy.

### Addressing the Imperative of Nuclear Waste Management

For too many years, the prior Administration has literally kicked the can down the road on nuclear waste.

The Budget Request takes significant steps forward for the country in other critical areas. First, recognizing that we must move ahead in fulfilling the Federal Government's responsibility to dispose of the Nation's nuclear waste, the Budget includes $120 million, including $30 million in defense funds, to resume licensing for the nuclear waste repository at Yucca Mountain and initiate a robust interim storage program.

The Budget devotes $110 million to restart Nuclear Regulatory Commission (NRC) licensing activities for the nuclear waste repository at Yucca Mountain, including funding for management, site operations and maintenance, as well as technical, scientific, legal and other support.

In addition, the Budget includes $10 million to initiate a robust interim storage program that complements the nuclear waste repository by developing a capability for earlier acceptance of spent nuclear fuel to accelerate removal from sites in 39 states across the country. An interim storage capability also adds flexibility to the system that will move materials from sites across the country to its ultimate disposition.

By restarting the long-stalled licensing process for Yucca Mountain and committing to establishing interim storage capability for near-term acceptance of spent nuclear fuel, our Budget will accelerate fulfillment of the Federal Government's obligations to address nuclear waste, enhance national security, and reduce future burdens on American taxpayers. This also will increase public confidence in nuclear safety and security, thus helping nuclear energy to remain a significant contributor to the country's energy needs for generations to come.

**Fulfilling Legacy Cleanup Responsibilities**

The Budget also includes $6.5 billion for Environmental Management (EM), $89 million above the FY 2017 Enacted level, to address its responsibilities for the cleanup and disposition of excess facilities, radioactive waste, spent nuclear fuel, and other materials resulting from five decades of nuclear weapons development and production and Government-sponsored nuclear energy research.

To date, EM has completed cleanup activities at 91 sites in 30 states and Puerto Rico, and is responsible for cleaning up the remaining 16 sites in 11 states—some of the most challenging sites in the cleanup portfolio.

New in the Budget is $225 million to address specific high-risk contaminated excess facilities at the Y-12 National Security Complex and the Lawrence Livermore National Laboratory.

The Budget includes $1.5 billion, $4 million above FY 2017, for the Office of River Protection at the Hanford Site, for continued work at the Hanford Tank Farms and to make progress on the Waste Treatment and Immobilization Plant. This budget will continue progress toward important cleanup required by the Consent Decree and Tri-Party Agreement to include a milestone to complete hot commissioning of the Low Activity Waste Facility by December 31, 2023. The Budget also includes $800 million to continue cleanup activities at Richland, including continued K-Area decontamination and decommissioning remediation and the K-West Basin sludge removal project.

For Savannah River, the Budget provides $1.4 billion, $214 million above FY 2017, to support activities at the site including the Liquid Tank Waste Management Program, continued construction and commissioning to achieve startup of the Salt Waste Processing Facility in 2018, continued construction of the Saltstone Disposal Unit #7, and support for facilities that receive and store nuclear materials.

The Waste Isolation Pilot Plant (WIPP) is essential for the disposition of transuranic defense-generated waste across the DOE complex, and the Budget provides $323 million to safely continue waste emplacement at WIPP. The Budget Request will continue WIPP operations, including waste emplacements, shipments, and maintaining enhancements and improvements, and progress on capital asset projects, including $46 million for the Safety Significant Confinement Ventilation System and $19.6 million for the Exhaust Shaft. These steps will increase airflow in the WIPP underground for simultaneous mining and waste emplacement operations.

The Budget includes $359 million, $30.9 million below FY 2017 enacted level, to continue major clean-up projects at the Idaho site, such as the Integrated Waste

Treatment Unit, and to process, characterize, and package transuranic waste for disposal at offsite facilities. It provides $390 million for Oak Ridge, $108 million below FY 2017, to continue deactivation and demolition of remaining facilities at the East Tennessee Technology Park, continue preparation of Building 2026 to support processing of the remaining U-233 material at the Oak Ridge National Laboratory, and support site preparation activities for the Outfall 200 Mercury Treatment Facility at the Y-12 National Security Complex.

For Portsmouth, the Budget includes $418 million, $36 million above FY 2017, to continue progress on the deactivation and decommissioning project at the Portsmouth Gaseous Diffusion Plant, safe operation of the Depleted Uranium Hexafluoride Conversion Facility, and continue design and construction activities at the On-Site Waste Disposal facility. And at Paducah, the Budget includes $270 million to continue ongoing environmental cleanup and depleted uranium hexafluoride (DUF6) conversion facility operations at the Paducah site. In addition, the FY 2018 Budget Request supports activities to continue the environmental remediation and further stabilize the gaseous diffusion plant.

Together, these investments for Environmental Management will make significant progress in fulfilling our cleanup responsibilities while also starting to address our high-risk excess facilities at NNSA sites.

**Refocusing Priorities on Core Missions**

The Budget refocuses the Department's energy and science programs on early-stage research and development at our national laboratories to advance American primacy in scientific and energy research in an efficient and cost-effective manner. The Budget funds $6.4 billion in early-stage R&D while reducing later-stage research, development, demonstration, and deployment programs by $3.1 billion from the FY 2017 Enacted levels.

As part of transitioning later-stage R&D, demonstration, and deployment responsibilities to the private sector and the States, the Budget terminates five Energy Innovation Hubs and five Clean Energy Manufacturing Institutes, which together constitute an annual taxpayer burden of over $187 million. The Budget eliminates the Supercritical Transformational Electric Power demonstration

program and SuperTruck II, together saving $44 million annually, and terminates deployment activities like Weatherization and the State Energy Program in the Office of Energy Efficiency and Renewable Energy, saving a total of $265 million.

Also in line with Administration priorities, the Budget terminates the Advanced Research Projects Agency—Energy, known as ARPA-E, and the Department's Loan Programs, while maintaining necessary federal staff to oversee existing awards and loans. We also close the Office of Energy Policy and Systems Analysis, to avoid duplicative efforts already accomplished by the program offices. Termination of these three programs will save over $300 million in FY 2018 alone while significantly reducing financial risk to the taxpayer moving forward.

**Focus on Innovation**

The FY 2018 Budget focuses its investments on the basic, early-stage R&D conducted by the scientists and engineers at our 17 national laboratories who are constantly on the path to developing the next great innovations that can transform society, and bring forth a new era of prosperity for the American people. The Budget provides $6.4 billion, $4.5 billion in the Office of Science and $1.9 billion in energy research and development programs, with a renewed focus on cutting-edge innovation and transitioning those breakthroughs to the private marketplace.

The Budget consolidates programs focused on bringing technologies to the market in the Office of Technology Transitions. Through concerted effort and coordination with our labs, this will reduce costs to the taxpayer while at the same time providing a robust technology transfer program to transfer breakthroughs from the national laboratories to the private sector.

*Nuclear Energy*

The Budget provides $703 million for Nuclear Energy, $313 million below the FY 2017 level, to continue innovating new and improved ways to generate nuclear power. The budget refocuses funding on early-stage research and development, such as the Nuclear Energy Enabling Technologies program, that enables innovation driven by the private sector. While the Budget ends the Consortium for Advanced Simulation of Light Water Reactors (CASL), it increases funds for Nuclear Energy Advanced Modeling and Simulation (NEAMS) by $7 million to

integrate VERA, the virtual reactor developed by CASL, and RELAP-7, a safety analysis and simulation tool developed at the INL, into the existing NEAMS program.

From 2012 through 2017, the Department spent $390 million on the Small Modular Reactors (SMR) Licensing Technical Support program. With NuScale Power submitting its application to the Nuclear Regulatory Commission and the completion of planned activities in FY 2017, the Department closes the SMR Licensing Technical Support program having achieved its goal to commercialize SMR technology. Given the ongoing promise of SMR technology, the FY 2018 Budget includes $20 million for early-stage R&D supporting advanced SMR designs.

Finally, the Budget for Nuclear Energy also supports robust safeguards and security funding of $133 million—a $4 million increase—for protection of our nuclear energy infrastructure and robust infrastructure investments at INL facilities.

*Fossil Energy Research and Development*

The Fossil Energy Research and Development program advances transformative science and innovative technologies which enable the reliable, efficient, affordable, and environmentally sound use of fossil fuels. Fossil energy sources currently constitute over 80% of the country's total energy use and are critical for the nation's security, economic prosperity, and growth. The FY 2018 Budget focuses $280 million on cutting-edge fossil energy research and development to further our energy security, advance strong domestic energy production, and support America's coal industry through innovative clean coal technologies.

In FY 2018, we invest $30 million in a new initiative to repower coal-fired plants through research on advanced technologies and systems that improve the reliability and efficiency of existing coal units and incorporate new, advanced technology components and systems. We also will support research on coal combustion to help support potential U.S. coal exports, as well as research on carbon utilization efforts to develop materials and chemicals for new business opportunities, in support of a strong American energy sector and vibrant coal industry.

As part of the Department's effort to operate more efficiently, the Budget proposes the initial stages of footprint consolidation for the National Energy Technology Laboratory. In a phased approach, we propose to consolidate NETL's Albany, Oregon site into the NETL's Eastern sites and initiate a Mission Alignment study in FY 2017 to evaluate alternatives for the consolidation of NETL's eastern sites.

*Energy Efficiency and Renewable Energy*

The Energy Efficiency and Renewable Energy budget funds $636 million to support research at our national laboratories to drive energy innovations in renewable energy, next-generation transportation, and energy efficiency.

The FY 2018 investments support development of battery technologies and advanced combustion engines, and new science and technology for developing biofuels. The Budget funds research into the underpinnings of future generations of solar photovoltaic technology, into the design and manufacturing of low-specific power rotors for tall wind applications, and on wind energy grid integration and infrastructure challenges.

The Budget also funds early-stage R&D for advanced manufacturing processes and materials technologies. These efforts, combined with the research that leverages the unique high-performance computing assets in the national laboratories, we can drive the breakthroughs that will promote economic growth and manufacturing jobs in the United States.

*Electricity Delivery and Energy Reliability*

All power generation, regardless of the fuel, relies on the power grid to deliver electricity to our homes and businesses across the nation. The Budget provides $120 million for Electricity Delivery and Energy Reliability to support research and development at the national laboratories to develop technologies that strengthen, transform, and improve energy infrastructure so that consumers have access to reliable, secure, and clean sources of energy.

In addition to the cybersecurity program described earlier, the Budget funds foundational research to ensure the reliability and resiliency of the U.S. electric grid, to support modernization of the distribution of electric power, and to advance

the state of the science and technology underpinning grid energy storage, transformers, and other grid components.

*World-Leading Science Research*

The Department of Energy is the Nation's largest Federal supporter of basic research in the physical sciences, and the President's FY 2018 Budget provides $4.5 billion for the Office of Science to continue and strengthen American leadership in scientific inquiry. By focusing funding on early-stage research, this Budget will ensure that the Department's National Laboratories continue to be the backbone of American science leadership by supporting cutting-edge basic research, and by building and operating the world's most advanced scientific user facilities—which will be used by over 27,000 researchers in FY 2018.

We provide $722 million for Advanced Scientific Computing Research, an increase of $75 million above FY 2017. This funding will continue supporting our world-class high-performance computers that make possible cutting-edge basic research, while devoting $347 million in the Office of Science to reflect the Department's intention to accelerate our achievement of exascale computing by 2021. This focused effort will drive the innovations necessary for computing at exascale speeds, resulting in computing systems at unprecedented speeds at Argonne National Laboratory in 2021 and Oak Ridge National Laboratory in 2022.

The Budget also provides $1.6 billion for Basic Energy Sciences, supporting core research activities and the Energy Frontier Research Centers. We will continue construction of the Linac Coherence Light Source-II at SLAC National Accelerator Laboratory and operations of the light sources across the DOE science complex, supporting research across the Nation and ensuring our continued world leadership in light sources and the science they make possible.

The Budget also provides $673 million for High Energy Physics, including $54.9 million for construction of the Long Baseline Neutrino Facility and Deep Underground Neutrino Experiment, $5 million above FY 2017. By supporting the highest priority activities and projects identified by the U.S. high energy physics community, this program will continue cutting-edge pursuit to understand how the universe works at its most fundamental level.

The Budget for the Office of Science provides $310 million for Fusion Energy Sciences, including $247 million for domestic research and fusion facilities and $63 million for the ITER project. For Nuclear Physics, the budget provides $503 million to discover, explore, and understand nuclear matter, including $80 million for continued construction of the Facility for Rare Isotope Beams and operations of facilities, including the newly-upgraded Continuous Electron Beam Accelerator Facility. For Biological and Environmental Research the Budget includes $349 million to support foundational genomic sciences, including the Bioenergy Research Centers and to focus on increasing the sensitivity and reducing the uncertainty of earth and environmental systems predictions.

**Strategic Petroleum Reserve**

In addition to our nuclear security responsibilities, the Department of Energy, in conjunction with other federal agencies, is responsible for ensuring the Nation's energy security. The Strategic Petroleum Reserve (SPR), one component of that effort, protects the U.S. economy from disruptions in critical petroleum supplies and meets the U.S. obligations under the International Energy Program. The Budget includes $180 million, $43 million below FY 2017 Enacted, to support the Reserve's operational readiness and drawdown capabilities.

Looking forward, the President's Budget proposes to sell approximately 270 million barrels of SPR crude oil by 2027, roughly half of the remaining SPR inventory after all sales currently authorized by law are completed, resulting in estimated receipts of $1 billion by FY 2019 and $17 billion through 2027. The SPR program will conduct a comprehensive analysis to determine the sites to be decommissioned as the SPR footprint is reduced from four to two sites. The Budget continues the sale of SPR oil for the Energy Security and Infrastructure Modernization Fund authorized by the Bipartisan Budget Act of 2015 to support an effective modernization program for the SPR, but at half the previous funding level because of the anticipated closure of two SPR storage sites.

Finally, as the Northeast Gasoline Supply Reserve (NGSR) is operationally ineffective and not cost-efficient as a regional product reserve, the President's Budget proposes to liquidate the NGSR and sell its one million barrels of refined petroleum product in FY 2018, resulting in an estimated $69 million in receipts.

## Power Marketing Administrations

The Budget includes $82 million for the Power Marketing Administrations, the same as FY 2016 Enacted. The Budget also proposes the sale of the transmission assets of the Western Area Power Administration (WAPA), the Bonneville Power Administration (BPA), and the Southwestern Power Administration (SWPA). The Budget also proposes to repeal the $3.25 billion emergency borrowing authority for WAPA authorized by the American Recovery and Reinvestment Act of 2009.

## Conclusion

In conclusion, I reaffirm my commitment to ensure that the Department of Energy, through its National Laboratories, will continue to support the world's best enterprise of scientists and engineers who create innovations to drive American prosperity, security and competitiveness for the next generation. The President's FY 2018 Budget Request for the Department of Energy positions us to take up that challenge while continuing to ensure our national security.

In my opening I mentioned my time as Governor of the State of Texas. Over my 14-year tenure, I proposed seven budgets. Some had spending increases. Others had deep spending cuts to deal with economic downturns and uncertainties. Every one of them directed the spending of billions of dollars of our taxpayer's dollars.

As we move forward over the coming weeks and months, I look forward to working with you and your colleagues in the United States Senate. I am committed to ensuring DOE is run efficiently, effectively, and we accomplish our mission driven goals.

Thank you, and I look forward to answering your questions.