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Chairman Reed, Ranking Member Inhofe, and esteemed members of the committee, it is an honor for us to appear before you today on behalf of the Department of Energy (DOE) and National Nuclear Security Administration (NNSA). We recognize and appreciate the Committee's consistent support for DOE's enduring national security missions.

As the 16th Secretary of Energy and the 8th Under Secretary for Nuclear Security, we have the privilege and responsibility of leading the Department at a pivotal time. We recognize the importance of moving decisively to strengthen America's nuclear security through its defense modernization, nonproliferation, naval propulsion, and environmental cleanup efforts. As the solutions department we are ready to overcome the challenges and deliver results.

The nation's nuclear weapons stockpile remains the cornerstone of our deterrent and a key tool in reassuring our allies. We must remain committed to the safety, security, reliability, and effectiveness of the nuclear weapons stockpile through sustainment and modernization efforts, infrastructure recapitalization, and the rigorous application of cutting-edge science and technology. We recognize that our deterrent is more effective when nuclear risks are reduced. Therefore, the Department works diligently to prevent the proliferation of nuclear weapons and prevent terrorist and other non-state actors from acquiring nuclear and other radiological material. Additionally, the Department provides the U.S. Navy's submarines and aircraft carriers with militarily effective nuclear propulsion plants and continues to test and provide for their safety, reliability, and longevity. The Department recognizes the Administration's strong support for these programs as outlined in the 2022 Nuclear Posture Review and the President's Fiscal Year (FY) 2023 Budget.

The FY 2023 Budget reflects the Administration's commitment to protecting our national security, cleaning up legacy pollution from historic nuclear activities, and transitioning the U.S. to clean energy.

NNSA Fiscal Year 2023 Budget Overview

Fully informed by the 2022 Nuclear Posture Review (NPR), the FY 2023 Budget reflects a commitment to

- a safe, secure, reliable, and effective nuclear weapons stockpile
- nonproliferation, and counterproliferation and counterterrorism response to reduce global nuclear threats
- the design, production, and provisioning of naval nuclear propulsion capabilities.

NNSA continues to execute its largest stockpile modernization program in decades; develop and recapitalize an adaptive, resilient, and modern infrastructure; and advance cutting-edge science and engineering programs to oversee stockpile assessment and certification activities. In all NNSA programs, we implement exceptional physical and cybersecurity systems to guard critical assets.

The President's FY 2023 Budget for NNSA is $21.4 billion, an increase of $1.0 billion, and the largest request in NNSA history.[1] While the nuclear stockpile is safe, secure, reliable, and effective, NNSA is aware that legacy infrastructure is well beyond its intended life designs and incapable of providing all the capabilities needed to deliver on the modernization efforts, especially with the demanding production schedules. With consistent, sustained, bipartisan support from the Administration and Congress, NNSA will make the necessary investments to maintain a safe, secure, reliable, and effective nuclear weapons stockpile; modernize the nuclear security infrastructure; reinvigorate American leadership in arms control and nonproliferation; and provide safe and effective nuclear propulsion systems for the U.S. Navy.

Also, NNSA must grow its human capital and is recruiting a top-tier, next generation workforce, developing talent, and creating more competitive benefits and compensation programs to help retain people with requisite skills during the 'Great Resignation' occurring nationwide. Together, the people, the facilities, the equipment are the best way to provide a resilient and adaptive Nuclear Security Enterprise for the future.

NNSA understands the urgency to deliver and is thankful for the trust and support of Congress and the American people.

Weapons Activities

The FY 2023 budget request for the Weapons Activities account is $16.5 billion, an increase of $566 million, or 3.7 percent, over FY 2022 enacted levels. This request will be supplemented with prior year balances of $396 million. This budget request supports the Administration's commitment to modernize all three legs of the nuclear triad supported by a flexible, resilient infrastructure and protected by highly capable physical, and cyber security.

The request underscores delivering for our partners at the Department of Defense (DoD) while retaining the highest safety standards and proceeding in a cost-effective manner. It provides for the maintenance and refurbishment of nuclear weapons to maintain confidence in their safety, security, reliability, and military effectiveness without resuming explosive nuclear testing; infrastructure revitalization; investment in scientific, engineering, and manufacturing

[1] Funding does not reflect the mandated transfer of $92.75 million in FY 2022 to the Office of Nuclear Energy for operation of the Advanced Test Reactor.

capabilities; and greater resources for physical and cybersecurity to foster responsiveness and resilience.

Stockpile Management

For Stockpile Management, the FY 2023 budget request is $4.9 billion, an increase of $291 million, or 6.3 percent, over the FY 2022 enacted level. Funding in this portfolio fully supports all five ongoing stockpile life extension and modernization programs; stockpile maintenance, surveillance, and assessment activities; and the safe dismantlement and disposition of excess nuclear weapons and components. The FY 2023 request also includes funding to support the current production capabilities required for the above activities, as well as Nuclear Enterprise Assurance (NEA) - a new effort that helps prevent, detect, and mitigate adversarial subversion risks to the nuclear weapons stockpile.

W88 Alteration (Alt) 370: NNSA is requesting $162 million in FY 2023 for the W88 Alt 370 program. The Program is expected to enter Phase 6.6, *Full Scale Production* in July 2022. Production is currently on schedule to meet requested DoD deployment schedules.

B61-12 Life Extension Program (LEP): NNSA is requesting $672 million in FY 2023 for the B61-12 LEP. The Program is expected to enter Phase 6.6, *Full Scale Production* in June 2022. The First Production Unit (FPU) was completed in November 2021 and production is currently on schedule to meet DoD deployment schedules.

W80-4 LEP: NNSA is requesting $1.1 billion in FY 2023 for the W80-4 LEP. The program is currently in Phase 6.3 *Development Engineering,* and plans to enter Phase 6.4, *Production Engineering* in FY 2023. The FPU date is currently being re-evaluated due to COVID-19 impacts, hiring issues, and component technical challenges. An updated schedule will be developed by mid-2022. NNSA remains confident in meeting schedule requirements to support the U.S. Air Force's (USAF) schedule for the Long- Range Standoff (LRSO) cruise missile Initial Operating Capability.

W87-1 Modification Program: NNSA is requesting $680 million in FY 2023 for the W87-1 Modification Program. The W87-1 will replace the aging W78 warhead and deploy new technologies that improve safety, address obsolete design and materials, and streamline manufacturability. The funding request supports plans for a FPU in FY 2030 to field the warhead on the USAF Ground-Based Strategic Deterrent (Sentinel) missile system in the Mk21A reentry vehicle. NNSA plans to enter Phase 6.3, *Development Engineering*, in FY 2022.

W93/Mk7: NNSA is requesting $240.5 million in FY 2023 for the W93 program. In February 2022, the NWC voted to authorize the W93's entry into Phase 2, *Feasibility Study and Design Options*. The W93 incorporates modern technologies that will allow the U.S. to keep pace with future threats and allow for operational flexibility during the Navy's transition from the OHIO to COLUMBIA-class ballistic missile submarines. All W93 key nuclear components are based on currently deployed and previously tested designs and so will not require nuclear explosive testing to certify.

Production Modernization

The FY 2023 budget request for Production Modernization is $4.64 billion, an increase of $484 million, or 11.6 percent, over the FY 2022 enacted level.[2] Activities covered by this funding include both primary and secondary capability modernization as well as non-nuclear components.

Primary Capability Modernization includes the plutonium pit, high explosive, and energetics programs. NNSA's most intense recapitalization need in this area is the reconstitution of plutonium pit production fabrication operations. NNSA is required to produce no fewer than 80 plutonium pits per year (ppy) during 2030. NNSA is committed to reaching that goal as close to 2030 as possible utilizing a two-site pit production strategy at Los Alamos National Laboratory (LANL) and the Savannah River Site (SRS). The FY 2023 budget request boosts funding for pit production and associated efforts by 26 percent compared to FY 2022. At LANL, FY 2023 funds will be used for equipment installation activities, including adding equipment in Plutonium Facility 4 to support 30 ppy by FY 2026. At SRS, NNSA is currently executing design activities for the Savannah River Plutonium Processing Facility, which is funded according to NNSA's independent cost estimate in the FY 2023 Budget, as it moves towards Critical Decision (CD-2). CD-2 will be achieved once 90 percent of design is complete in early FY 2024. A two-site approach provides sufficient capacity to meet program requirements and resiliency in the event of unanticipated issues at one site.

Secondary Capability Modernization includes uranium, lithium, and tritium processing efforts. Each of these programs support stockpile sustainment and modernization efforts and are currently facing degraded capabilities and insufficient capacity to meet future mission requirements. NNSA is undertaking significant, long-term infrastructure investments to address the situation. For example, the Uranium Processing Facility (UPF) at the Y-12 National Security Complex will reduce mission dependency on Building 9212, which is currently over 75 years old, while increasing safety and efficiency. UPF is one of the largest construction projects in NNSA history and at its peak will support a construction workforce of over 3,000. Ongoing supply chain issues and delays associated with the COVID-19 pandemic will result in a short extension beyond the scheduled completion date of December 2025, however, there are no anticipated impacts to warhead deliverables as the legacy site will remain operational throughout the transition. NNSA is also continuing investments in the Depleted Uranium (DU) Modernization Program initiated at Y-12 in FY 2021. Depleted Uranium is a key component for the manufacturing of radiation cases for weapons systems and current capabilities cannot meet reliability or capacity requirements.

To ensure adequate quantities of lithium, NNSA is in the process of creating a Lithium Processing Facility (LPF). LPF will replace current capabilities housed at Y-12. Current capabilities can provide sufficient supply through 2035 but take place in an aging facility with significant infrastructure challenges. LPF will alleviate those infrastructure issues while providing expanded capacity to meet demand beyond 2035.

[2] The change from FY 2022 enacted is made on a comparable basis using the budget structure proposed for the FY 2023 request.

To provide adequate quantities of tritium, NNSA is in the process of creating a Tritium Finishing Facility (TFF) at Savannah River Site. TFF will replace a 1950s-era facility and will house finishing, packing, and shipping functions for gas reservoirs. Doing so will meet an important mission need and assist the program in meeting current safety standards. Construction of the site preparation subproject is scheduled to begin in FY 2024. NNSA also supports continued research and development for a future Domestic Uranium Enrichment capability to provide enriched uranium for national defense purposes including tritium production.

Non-nuclear components (NNCs) include a wide array of parts that weaponize the nuclear explosive package. NNCs account for over half the cost of weapon modernizations due to the number of components, their complexity, and their need to withstand extreme conditions over the life of the warhead. The FY 2023 request includes funding to: provide equipment for increased manufacturing capacity at the Kansas City National Security Campus; reconstitute thermal spray capability for weapon modernization; recapitalize radiation and major environmental test facilities at Sandia National Laboratories (SNL) used to design and qualify NNCs; and tools and equipment at the Microsystems Engineering, Science and Applications (MESA) Complex at SNL, which serves as the only approved source of trusted, strategically radiation hardened microelectronics.

Stockpile Research, Technology, and Engineering

The FY 2023 budget request for Stockpile Research, Technology, and Engineering (SRT&E) is $2.89 billion, a decrease of $83 million, or 2.8 percent below the FY 2022 enacted level.[3] The decrease results from the use of carryover balances to continue construction of the U1a Complex Enhancement Project at the Nevada National Security Site (NNSS). Funding across the remainder of the SRT&E request is in-line with the FY 2022 enacted level. This portfolio covers activities which support science-based stockpile assessments and warhead modernization program certifications without needing to resume underground nuclear testing. We remain fully confident in our unmatched scientific and technical capabilities and are committed to their continuous improvement. The FY 2023 budget request will provide significant investment in several short and long-term programs which reflect that commitment.

The Enhanced Capabilities for Subcritical Experiments (ECSE) will produce experimental data at NNSS that will enable assessments of the current stockpile and certification of the future stockpile without returning to underground nuclear-explosive testing. ECSE experiments will remain subcritical throughout the experiment to comply with U.S. "Zero Yield" policy. NNSA is requesting $277 million for this program in FY 2023, an increase of $61.6 million, or 28 percent, over the FY 2022 enacted level.

The Stockpile Responsiveness Program (SRP) is responsible for exercising and enhancing capabilities that improve responsiveness to future threats, trends, and developments not already covered by existing life extension programs. Significant resources in this program are devoted to addressing issues in manufacturing, digital engineering, component and system prototyping, and testing. The funding request for SRP in FY 2023 is $68.7 million.

[3] The change from FY 2022 enacted is made on a comparable basis using the budget structure proposed for the FY 2023 request.

The Inertial Confinement Fusion (ICF) Program supports stockpile assessment and certification efforts by providing the conditions necessary to collect data in the extreme conditions of nuclear weapon operation. The ICF Program also conducts experiments related to thermonuclear fusion with the goal of creating high fusion yield in a laboratory setting. The FY 2023 request is $544 million, a decrease of $36 million, or 6 percent, compared to the FY 2022 enacted level. This decrease reflects an FY 2022 congressional appropriation $51 million above the requested amount. NNSA will also participate, where aligned to our stewardship mission, in a new, cross-Departmental initiative in fusion energy with the Office of Science (SC) Office of Fusion Energy Sciences, the Advanced Research Projects Agency Energy, the Office of Nuclear Energy, and the Office of the Under Secretary for Science and Innovation that is aimed at advancing the technology to realize fusion energy on the grid in a decadal timeframe.

NNSA's Exascale Computing Initiative (ECI)–a joint program with the DOE's Office of Science (SC)–will provide NNSA with next-generation simulation capabilities to support weapons design, stockpile stewardship, and stockpile certification. NNSA continues its strong partnership with SC in achieving the goals for exascale computing. The NNSA's FY 2023 budget request for ECI is $160 million, a decrease of $44 million, or 21.5 percent, compared to the FY 2022 enacted level. This decrease reflects NNSA plans to bring the exascale high performance computing system, *El Capitan*, online in FY 2023 at Lawrence Livermore National Laboratory-the third of three exascale computers planned for deployment by DOE (including Frontier at Oak Ridge National Laboratory and Aurora at Argonne National Laboratory). The FY 2023 request will continue funding maturation and transition of the next-generation simulation and computing technologies for production use. Finally, NNSA continues to partner with the SC Office of Advanced Scientific Computing Research to support the DOE Computational Science Graduate Fellowship, which contributes to development of and increasing the availability and diversity of skilled computational scientists, mathematicians, and engineers needed to meet the needs of the Department's missions.

The growing needs of NNSA's mission require a diverse base of a highly skilled, technical workforce. NNSA's Academic Programs are designed to foster, attract, and retain such a workforce. The FY 2023 budget request for these programs is $100.5 million, a decrease of $11.4 million, or 10 percent, compared to the FY 2022 enacted level. This decrease reflects Congress' strong support during the FY 2022 appropriations cycle in which NNSA's Academic Programs were given a significant uplift compared to the requested amount. NNSA remains thankful for congressional recognition and support for this important program. Funding will support the implementation of the Administration's Executive Order on Advanced Racial Equity and Support for Underserved Communities through increased engagement between the Nuclear Security Enterprise and Historically Black Colleges and Universities, Tribal Colleges and Universities, and other Minority Serving Institutions. It will also foster greater engagement with students from diverse backgrounds through internships, apprenticeships, and fellowship opportunities, in coordination with other DOE offices.

Improving Infrastructure and Operations

A resilient, flexible, and scalable infrastructure is the foundation of a modern nuclear security enterprise. Approximately 60 percent of NNSA facilities were beyond their 40-year life expectancy at the end of FY 2021 with multiple facilities dating back to the Manhattan Project. Consistent congressional support and sustained funding have enabled NNSA to make progress on some of its most pressing infrastructure needs and is vital to ongoing efforts to fully recapitalize facilities, office buildings, power grids, roads, and equipment.

The FY 2023 budget request for Infrastructure and Operations is $2.63 billion, an increase of $144 million, or 5.8 percent, over the FY 2022 enacted amount.[4] This increase will enable NNSA to incorporate lessons learned from the Infrastructure Modernization Initiative that will help streamline construction practices to save time and money on low-risk, non-nuclear, construction projects. NNSA remains grateful for congressional support that raised the minor construction authority from $10 million to $20 million in FY 2018. Since FY 2018, NNSA has completed 16 minor projects valued between $10 and $20 million. NNSA intends to build on these accomplishments and the additional authority granted by Congress in the FY 2022 National Defense Authorization Act (NDAA) which raised the cap to $25 million to accelerate the pace of recapitalization.

Across the enterprise, NNSA is using data-driven, risk informed tools and initiatives to accelerate the delivery and reduce the cost of commercial-like construction projects. In FY 2019 NNSA established the Enhanced Minor Construction & Commercial Standards (EMC^2) pilot program to explore and challenge NNSA's execution of low-risk construction projects. There are currently 10 projects in the pilot, including the Lawrence Livermore National Laboratory's Emergency Operations Center (EOC) which was the first pilot project to be completed earlier this year. In the four projects currently underway, estimated cost savings range between approximately 12-31 percent. Another six projects in the pipeline are expected to realize savings between 17-38 percent.

As DOE/NNSA confront climate change, we recognize that more frequent and higher intensity storms, wildfires, and extreme temperatures have the potential to disrupt NNSA's mission and pose a national security risk. NNSA currently utilizes a prioritization methodology for infrastructure recapitalization that takes sustainability and resilience into account along with measures such as safety and mission risk. In FY 2023 NNSA will increase its emphasis on climate resiliency through the Energy Resilient Infrastructure and Climate Adaptation (ERICA) initiative. ERICA utilizes direct- and indirect- funded infrastructure programs and alternative financing to address adaptation and resilience.

Defense Nuclear Security Efforts

The Office of Defense Nuclear Security (DNS) provides protection for NNSA's infrastructure, personnel, and critical assets necessary for the successful execution of important national security missions. The FY 2023 budget request for Defense Nuclear Security is $882.3 million,

[4] The change from FY 2022 enacted is made on a comparable basis using the budget structure proposed for the FY 2023 request.

an increase of $38.2 million, or 4.5 percent, over the FY 2022 enacted level. DNS has experienced increased program requirements recently that require additional resources to maintain sufficient capabilities. This includes additional allocations for plutonium pit production efforts, preparation for UPF operations, and other projects. DNS remains focused on recapitalization and improvement of physical security with several new projects and the deployment of new systems. Efforts are also underway to counter unmanned aircraft systems. The first such counter-platform was deployed at LANL in December 2017. Deployment at other facilities is expected to reach completion near the end of FY 2022.

Cybersecurity and Information Technology

The FY 2023 budget request for information technology and cybersecurity is $445.7 million, $39.1 million, or 9.6 percent, over the FY 2022 enacted amount. This request funds ongoing operations and invests in improvements across NNSA to modernize both classified and unclassified systems, improves information management and data governance, implements critical aspects of a zero-trust architecture in our networks and systems, and allows for the execution of a robust cybersecurity program.

To strengthen oversight of the cyber program, the budget request includes a recategorization of certain Cybersecurity program investments into the Information Technology program. As a result, the request more clearly reflects investments in cybersecurity tools and services provided to the enterprise, maintains core cyber operations at the labs, plants, and sites, and improves management and transparency of these funds.

Defense Nuclear Nonproliferation

For decades, the Office of Defense Nuclear Nonproliferation (DNN) has served as a source of innovative solutions and technical expertise to fulfill one of NNSA's primary missions of reducing nuclear risk. Working with international organizations, partner countries, and the private sector, DNN seeks to eliminate proliferation sensitive materials and prevent the spread of technologies, expertise, and components that would enable the creation of a nuclear or radiological device. The FY 2023 budget request for the DNN account is $2.3 billion, an increase of $274 million, or 13.2 percent, over the FY 2022 enacted level. When the use of prior year balances is considered, the account funding increases by $397 million, or 19.2 percent. The use of prior year balances will allow DNN programs to supplement new budget authority across its programs. This account funds all nonproliferation in the offices of Defense Nuclear Nonproliferation, Emergency Operations, and Counterterrorism and Counterproliferation.

DNN continues to deliver on its objectives and confront current and anticipated proliferation challenges. This includes the growing Russian and Chinese nuclear programs, the invasion of Ukraine, risks related to the Iranian and North Korean nuclear programs, and disruptive new technologies that lower the barrier to proliferation. Globally, DNN has to date eliminated 7,270 kilograms of weapons-usable nuclear material from 48 countries and Taiwan; removed the need to utilize weapon-grade materials at over 108 civilian research reactors and isotope production facilities; converted a cumulative total of 1,201 kilograms of plutonium into an oxide form for disposition; and worked with domestic producers to secure a sufficient global supply of the

critical medical isotope molybdenum-99 (Mo-99), which is used in over 40,000 procedures every day in the United States, without the use of highly enriched uranium, to meet the needs of patients in the U.S.

DNN's Nonproliferation and Arms Control Program also continues to cooperate closely with the International Atomic Energy Agency (IAEA) to provide subject matter expertise, implement safeguards, and develop new policies and technologies for the peaceful use of nuclear energy. This is especially important as nuclear power use grows and new reactor technologies are developed as a means for combating climate change. New nuclear safeguards and monitoring and verification technologies are needed to secure materials and to detect proliferation activities early.

DNN also sustains a robust research program that provides space-based sensors to monitor nuclear activities as well as supports efforts to detect proliferation early in the process. Our DNN R&D program additionally sustains expertise in labs and universities, including people and test beds, and develops ways to get ahead of emerging threats.

Nuclear Terrorism and Incident Response

The FY 2023 request for the Nuclear Counterterrorism and Incident Response (NCTIR) Program is $439 million, an increase of $68 million, or 18.4 percent, over the FY 2022 enacted amount. NCTIR supports two subprograms: Counterterrorism and Counterproliferation (CTCP) and Emergency Operations (EO).

CTCP is tasked with countering nuclear terrorism and proliferation, responding to nuclear incidents and accidents around the world, and building domestic and international partner capacity for emergency preparedness and nuclear incident response. CTCP's unique operational capabilities and highly knowledgeable experts provide a strong defense against the possibility of a terrorist nuclear attack and broader nuclear proliferation, making the office a key element of the U.S. Government's layered defense against nuclear threats. NNSA's "Capability Forward" initiative is an example of this posture. Working with the Federal Bureau of Investigation, NNSA, through CTCP, provides equipment, training, and technical advice to regional counter-weapons of mass destruction teams in 14 major U.S. cities to accelerate life-saving responses to nuclear incidents.

CTCP also manages the Nuclear Emergency Support Team (NEST), a group of highly trained technical specialists able to respond to nuclear incidents and accidents worldwide. NEST's missions include both national security and public health and safety components. NEST capabilities include an extensive nuclear forensics repertoire and advanced sensors to locate and neutralize nuclear threats. Throughout the Ukraine crisis, NEST personnel have been closely involved in U.S. efforts to analyze potential radioactive threats resulting from military activity in Ukraine, including the monitoring safety and security in and around nuclear power plants and other nuclear facilities. NEST personnel are prepared to rapidly provide information following the use of nuclear or radiological weapons if they are employed in the region.

EO provides both the structure and methods to deploy a comprehensive and integrated approach to all-hazards emergency management, improving the readiness and effectiveness of the DOE Emergency Management System. The FY 2023 budget request supports, among other items, 24/7/365 Consolidated Emergency Operations Center communications and coordination to support the DOE/NNSA Emergency Management Enterprise and Departmental Senior Leadership.

Naval Reactors

The Office of Naval Reactors provides the nation's submarines and aircraft carriers with unmatched mobility, flexibility, and endurance thanks to its exceptional handling of the nation's naval nuclear propulsion technologies. The ability to maintain robust fleet capabilities on long-term missions is essential for the security of global trade and our allies. Our ability to maintain a technological edge in this field provides the U.S. Navy with a decisive edge in naval warfare and provides for the security and reliability of the sea-based leg of the nuclear triad.

The FY 2023 budget request for Naval Reactors is $2.08 billion, an increase of $163 million, or 8.5 percent, above the FY 2022 enacted level. Funding supports Naval Reactors' three major projects: the COLUMBIA-class ballistic missile submarine reactor systems development; construction of the Naval Spent Fuel Handling Facility in Idaho; and the refueling and overhaul of the S8G Prototype land-based reactor in New York to support sailor training and technology testing. Naval Reactors is committed to supporting the safe and reliable operation of the nuclear-powered fleet and advancing technological development to bring improvements in performance, manufacturability, and affordability – for current and future warships.

The Department is an active participant in the AUKUS trilateral security partnership. The Australian, UK, and U.S. governments are currently in an 18-month consultation period to establish the best path forward for the delivery of a conventionally-armed, nuclear-powered submarine capability to Australia as quickly as possible. As part of the international working group developing nonproliferation and safeguards aspects of the AUKUS program, NNSA will provide technical advice to the interagency and our AUKUS partners on the full suite of requirements that underpin nuclear stewardship to achieve our objective of upholding the highest nonproliferation standards. This cooperation is fully consistent with each partner's respective obligations under the Nuclear Non-Proliferation Treaty. We remain heavily focused on the Administration's long-standing commitment to promoting nonproliferation where possible.

NNSA Workforce

To manage this broad portfolio, NNSA depends upon recruiting, training, and retaining a highly technical Federal and M&O workforce. The NNSA federal workforce consists of a diverse team of scientists, engineers, project and program managers, foreign affairs specialists, and support staff that perform program and project management and appropriate oversight of the national security missions related to Weapons Activities and Defense Nuclear Nonproliferation. The FY 2023 budget request for *Federal Salaries and Expenses* (FSE) is $496.4 million, an increase of $32 million, or 7 percent, above the FY 2022 enacted level.

New Era of Progress for Environmental Management Mission

As important as the missions of today and tomorrow are, the Cold War left an indelible mark on America. It is the mission of the Office of Environmental Management (EM) is to address the legacy of nuclear weapons development and government-sponsored nuclear energy research that has played a significant role in domestic security and prosperity.

As the largest environmental cleanup program in the world, EM plays a key role in the Department's overarching mission to protect the planet. The Department's FY 2023 budget request of $7.6 billion will help EM continue to make progress in fulfilling the government's responsibility to clean up the environment in communities that supported nuclear weapons programs and government-sponsored nuclear energy research.

Over the last 30 years, EM has significant progress for the environment, completing cleanup at 92 out of a total of 107 sites. Despite a global pandemic, the program has continued to achieve a set of impactful accomplishments at sites across the country.

Deactivation and demolition work at the Oak Ridge National Laboratory and the Y-12 National Security Complex is reducing environmental risks and enabling research and national security missions. At the Hanford site in Washington state, EM is treating radioactive and chemical waste from large underground tanks for the first time ever on a large scale. At the Savannah River Site in Aiken, South Carolina EM is processing record amounts of tank waste and recently broke ground on the Advanced Manufacturing Collaborative facility which will help meet the needs of the Department's cleanup mission and create an environment to develop a diverse and talented next generation workforce. The EM team in Idaho recently completed buried waste remediation, helping to protect the Snake River Aquifer. More than 200 transuranic waste shipments were received last year at the Waste Isolation Pilot Plant in New Mexico. Cleanup activities at the Brookhaven National Laboratory in New York are complete, as well as environmental remediation work at the Tonopah Test Range in Nevada.

The FY 2023 request for EM, which builds on recent progress, reflects the Department's strong commitment to protecting the environment, enabling national security and scientific research missions, and delivering for communities most impacted by the legacy of the past. The request supports a ramp up in EM's ability to tackle tank waste --- one of the Department's largest environmental challenges and financial liabilities. The request will also enable continued progress in infrastructure improvements at the Waste Isolation Pilot Plant and support an increased rate of waste shipments from across the EM program. In addition, EM will continue to advance facility demolition and risk reduction projects across the program.

The FY 2023 request include $6.9 billion for defense environmental cleanup activities, which covers most major EM sites and includes the Uranium Enrichment Decontamination and Decommissioning Fund contribution. The request of $1.6 billion for the Office of River Protection will enable EM to remain on track to initiate vitrification of Hanford tank waste by the end of 2023 through the Direct Feed Low Activity Waste (DFLAW) approach. Also at Hanford, the request of $913 million for the Richland Operations Office will enable continued risk

reduction activities including placing another former production reactor into interim safe storage, advancing the transfer of cesium and strontium capsules to dry storage and treating another 2 billion gallons of contaminated groundwater.

At the Savannah River Site, the request of $1.7 billion supports utilization of capabilities to accelerate the tank waste mission. The request will also maintain a high state of readiness for H Canyon, the only chemical separations facility remaining in operation in the United States. At the Idaho Cleanup Project, the request of $379 million supports operations of the Integrated Waste Treatment Unit which will ultimately treat about 900,000 gallons of liquid waste by turning it into a granular solid. The Department will also meet another key commitment to the state of Idaho by completing the transfer of EM-owned spent nuclear fuel to on-site dry storage.

Along with providing for continued Waste Isolation Pilot Plant operations, the budget request supports key modernization and infrastructure recapitalization priorities. Shipments of legacy transuranic waste to the Waste Isolation Pilot Plant will progress from sites across the DOE complex, including the Los Alamos National Laboratory in New Mexico, where deactivation and decommissioning of NNSA's Ion Beam Facility will be initiated in Fiscal Year 2023. The request also includes $12 million to support continued D&D efforts for excess facilities at the Lawrence Livermore National Laboratory where the removal of the Livermore Pool Type Reactor was recently completed.

EM's FY 2023 budget also facilitates the Department's broader national security and scientific research missions. The request includes $499 million for Oak Ridge, which will enable EM to continue cleanup operations at the Oak Ridge National Laboratory (ORNL) and Y-12 National Security Complex excess facilities. The request also enables EM to advance progress on the disposition of the remaining uranium-233 inventory at ORNL and address transuranic debris and sludges.

In addition to enabling impactful progress at EM sites, the FY 2023 request reflects a planning approach that will boost the Department's ability to complete its clean up mission and deliver for impacted communities.

The Department is leveraging the expertise of the Savannah River National Laboratory to develop innovative solutions in the fields of environmental cleanup, national security and science and energy security that will benefit EM, the NNSA and other DOE missions.

The FY 2023 request invests in building a workforce for the future that promotes diversity, equity, inclusion, and accessibility. That includes high-quality jobs in environmental cleanup where workers from all backgrounds can make a living and make a difference. The budget request includes $56 million for EM's newly expanding Minority Serving Institutions Partnership Program. This program will be primarily focused on Historically Black Colleges and Universities and other Minority Serving Institutions with research specialties needed to advance the EM mission.

EM is prepared to put resources to work to enhance environmental protections and remediate sites so they can be transitioned to future uses in local communities that helped the nation win

the Cold War and maintain peace for decades. The FY 2023 request represents a significant investment in helping the communities grow and thrive in the future. The cleanup mission itself is aligned with broader environmental justice goals that lead to a vibrant future in all communities.

The budget request further boosts support for the Tribal Nations, Alaska Native communities, and communities near EM sites ensuring they are safe, providing opportunities for local input into cleanup priorities and helping build a vibrant future. The request includes Payment in Lieu of Taxes funding for communities near Hanford and Savannah River to support schools, roads and other local priorities. A $40 million investment is included to establish a new Community Capacity Building initiative. In addition, the EM Los Alamos Field Office was selected as one of five DOE pilot programs for the cross-cutting Justice40 Initiative. This whole-of-government effort will continue to grow in FY 2023 to support the goal that 40 percent of the overall benefits from certain federal investments, including the remediation and reduction of legacy pollution, flow to disadvantaged communities.

The Department will continue to work hand-in-hand with workers, unions, Tribal Nations, local communities, and Congress to plan for the future of environmental cleanup.

Enhancing Cybersecurity

Geopolitical tensions in Eastern Europe following Russia's invasion of Ukraine have heightened the importance of energy sector cybersecurity and collaboration with energy industry partners. Sophisticated cyber threats from state-sponsored actors such as Russia require updated approaches to enable near-real time situational awareness of malicious cyber activity, including threats to industrial control systems (ICS) that manage physical processes to help operate our Nation's energy system, as well as to awareness of critical information technology systems.

As this committee knows well, DOE has tremendous expertise both at headquarters and across the 17 National Laboratories to help us tackle cyber threats to the U.S. energy sector. DOE, through the Office of Cybersecurity, Energy Security, and Emergency Response (CESER) with the help of these labs, leads numerous efforts ranging from deploying cybersecurity sensors at utilities to partnering with manufacturers to testing their equipment for malicious code. Today, I would like to share three new initiatives that CESER is working on that will help enhance cybersecurity: 1) the Energy Threat Analysis Center (ETAC) pilot efforts; 2) Energy Cyber Sense; and 3) Integrating Cybersecurity in Clean Energy Systems.

1) Energy Threat Analysis Center (ETAC)
In April 2021, the White House launched an effort to address cybersecurity in ICS. The first sprint, which DOE led in partnership with DHS, focused on the electricity sector. We worked with the industry on deploying cyber sensors in the complex operational technology (OT) environment. The goal of this work is to gain near-real time situational awareness of the cyber threats across industry and government. DOE has long had sensors deployed in information technology (IT) networks of energy sector networks through our Cybersecurity Risk Information Sharing Program (CRISP), but as a part of this important initiative, we are now turning our focus to the OT network. Ultimately, we are headed toward establishing what we are calling our

Energy Threat Analysis Center (ETAC). The ETAC will enable us to jointly collaborate with industry, CISA's JCDC, and the Intelligence Community to jointly analyze threats and determine the relevant mitigation measures for energy systems. We recognize that it will take all of us coming together to address these complex and ever-increasing threats to energy infrastructure.

2) Energy Cyber Sense

There is a clear recognition that not only do we need to work with energy sector owners and operators to address cyber threats, but we also need to work with manufacturers and suppliers. To that end, DOE has been working on numerous efforts to address supply chain security issues in the energy sector. Following the passage of the Infrastructure Investment and Jobs Act (IIJA), we are bringing those efforts together and looking to expand them in FY23 under the "Energy Cyber Sense" banner, which was created pursuant to Section 40122 of IIJA. This program will be focused on addressing cyber threats to critical hardware and software used in the energy sector. To date, we have already gotten commitments from three of the largest ICS manufacturers to work with us—Schweitzer, Schneider, and ABB/Hitachi – and we are working to bring others to join us on tackling supply chain threats. Additionally, we are also committed to leveraging policy tools such as promoting domestic manufacturing to build critical equipment right here in the U.S., where there is less of a risk of adversaries manipulating hardware or software.

3) Integrating Cybersecurity into Clean Energy Systems

While it is important to address the risks to the energy systems of today, it is equally important for us to be thinking about where the U.S. energy sector is headed 5, 10, and 20 years from now. In fact, we have a strategic opportunity like never before: while we are tackling the impacts of climate change by deploying next generation wind, solar, hydrogen, and nuclear systems, we can build in cybersecurity.

I've asked CESER to lead a cross-departmental effort to coordinate cybersecurity across the applied energy and science offices ensure that cybersecurity is a core component of those systems. To that end, DOE just launched a new initiative focused on vehicle-to-grid charging infrastructure and cybersecurity will be component of that effort. Separately, we are engaging closely with clean energy companies on cybersecurity like never before and we'll be developing cyber training specific to their systems. Finally, we are working on a strategy called "Cyber-Informed Engineering" that we will be releasing soon that will call upon energy companies of all sizes and shapes, academia, standards bodies, manufacturers, and others to come build cybersecurity into energy systems from the point of ideation.

I would also like to take this opportunity to acknowledge the hard work NNSAs labs, plants, and sites for providing subject matter expertise in cybersecurity and critical infrastructure. Their leadership has provided both DOE and NNSA with the ability to leverage shared resources and capitalize on critical subject matter expertise in support of the national security mission.

In the current threat environment, the Department cannot afford to neglect its cybersecurity capabilities, which serve as frontline assets that protect the information, systems, and networks necessary to execute its mission.

I can assure you that cybersecurity will remain a top priority for the Department, and these investments will posture DOE to defend against an ever-evolving landscape of cyber threats.

Conclusion

At DOE, new breakthroughs in climate science, engineering, physics, cyber security, and other fields help advance the enduring goal of enhancing American national security. NNSA's weapons activities, nonproliferation and counterterrorism programs that help reduce global threats, and naval reactors programs all support the continued reliability of our nuclear deterrent which remains the cornerstone of our national defense. Through the rigorous application of nuclear safeguards, safety and environmental standards and cutting-edge engineering and technology, we remain steadfast in reducing nuclear risk and navigating an increasingly complex global environment. We are mindful of the resources and trust that has been placed with DOE and are thankful for the continued support of the Committee and the rest of Congress.