

Testimony of Deputy Secretary David M. Turk
And
Jill Hruby, Under Secretary for Nuclear Security and Administrator (NNSA)

U.S. Department of Energy

Before the

Senate Energy and Water Development Appropriations Subcommittee

May 3, 2023

Chair Murray, Ranking Member Kennedy, and Members of the Committee, it is an honor to appear before you today to discuss the President's Fiscal Year (FY) 2024 Budget request for the Department of Energy ("the Department" or "DOE").

Serving the American people as the Deputy Secretary of Energy, I am entrusted with the awesome responsibility to lead a highly talented DOE workforce. I am continuously amazed by their steadfast dedication to our mission and the innovative solutions they bring to some of our nation's most pressing problems. As a result of their tireless efforts, the Department has made significant strides in ensuring America's security and prosperity by addressing our energy, environmental, and nuclear security challenges through transformative science and technology solutions.

Together, we have advanced the energy, economic, and national security of the United States. We are cementing America's place as a trailblazer in the clean energy economy of the future and a leader in the fight against the climate crisis. The scientists and engineers at our National Laboratories, the crown jewels of the nation's research and innovation ecosystem, are paving the way for major scientific breakthroughs that will have an immeasurable impact on the world we live in. Through funding opportunities and in collaboration with States, Tribal nations, institutions of higher education, and local governments around the country, we are helping to

create thousands of good-paying jobs in fields that are critical to the success of the American economy.

The National Nuclear Security Administration (NNSA) does extraordinary work to maintain a safe, secure, reliable, and effective nuclear deterrent, reduce global nuclear threats, and provide our naval fleet with militarily effective nuclear propulsion. It has undertaken a needed modernization of our nuclear arsenal and the infrastructure used for production and science. These new capabilities will position us to execute our challenging missions well into the future. Working closely with allies and partners, the International Atomic Energy Agency (IAEA), and the interagency, NNSA has provided significant support to reduce nuclear risks to Ukraine and the surrounding region since the beginning of Russia's further invasion of Ukraine over one year ago.

The Department is committed to advancing this Administration's energy, climate, and nuclear security and nonproliferation goals. I want to thank Congress for the ongoing, bipartisan support for the Department of Energy. The Secretary and I look forward to working closely with the Committee as you consider the FY 2024 Budget for DOE.

Budget Topline

DOE's FY 2024 Budget Request is \$51.99 billion, an increase of \$6 billion (13.6%) over the FY 2023 enacted level. The Budget addresses some of the critical opportunities we face, making historic investments in cutting-edge research at National Laboratories, strengthening the Nation's nuclear security enterprise, creating jobs, reducing health and environmental hazards for at-risk communities, and strengthening the cybersecurity and resilience of the energy sector, including advancing critical climate goals. This is urgent work DOE is uniquely prepared to continue.

Making Historic Investments in Cutting-Edge Research at National Laboratories and Universities

Within the historic investment of \$23.8 billion for NNSA, funding builds on cutting edge science for NNSA's laboratories to contribute beyond the enduring nuclear missions. For example, the FY 2024 Budget Request includes funding to recapitalize radiation and major environmental test facilities at Sandia National Laboratories used to design and qualify Non-Nuclear Capabilities; and prioritizes the High Explosives Science and Engineering facility at Pantex, including capital equipment purchases, construction, and transition to operate.

The FY 2024 Budget Request will also continue funding maturation of next-generation simulation and computing technologies. Additionally, El Capitan, the first exascale computer for national security, is expected to come online at Lawrence Livermore National Laboratory this year. At over two exaflops it will, for a time, be the world's most powerful supercomputer.

The Budget also provides \$8.8 billion for the Office of Science, advancing toward the authorized level in the CHIPS and Science Act to support cutting-edge research at the DOE National Laboratories and the Department's university partners, and to build and operate world-class scientific user facilities.

The Office of Science is uniquely positioned within the federal R&D structure to capitalize on these investments *today* to enhance our nation's innovation capabilities and expand to harness its full research potential from this baseline. This level of funding would support critical advancements in emerging technologies like Quantum Information Science, Artificial Intelligence, and the potential of nuclear fusion. These are all promising game changing technologies for which the National Labs already have strong programs and user facilities.

Within funding for Science, the Budget provides: over \$1 billion to achieve fusion on the decadal timescale; provides new computing insight through quantum information science and artificial intelligence that addresses scientific and environmental challenges; expands innovation in the microelectronics ecosystem; leverages data, analytics, and computational infrastructure to strengthen and support U.S. biodefense and pandemic preparedness strategies and plans; furthers the Nation's understanding of climate change; and positions the United States to meet the demand for isotopes.

Finally, the Budget proposes \$35 million in the Office of Energy Efficiency and Renewable Energy to initiate planning, outreach, and proposal solicitation for a new national laboratory at a Historically Black College and University, Tribal College and University, or Minority Serving Institution. This 18th national lab is expected to focus on a just and equitable transition for all communities and advancing diversity in the STEM workforce; the lab's expected work will be relevant to EERE's mission given its long history of supporting place-based analytical work, research and development, and community engagement and investment in disadvantaged and marginalized communities.

Creating Jobs Building Clean Energy Infrastructure

The Budget invests nearly \$1.2 billion to support clean energy workforce and infrastructure projects across the Nation, including \$425 million to weatherize and retrofit low-income homes, \$83 million to electrify tribal homes and transition tribal colleges and universities to renewable energy, and \$107 million for the Grid Deployment Office to support utilities and State and local governments in building a grid that is more reliable and resilient and that integrates accelerating levels of renewable energy. The newly established Office of State and Community Energy Programs will launch a new Energy Burden Reduction Pilot with \$50 million to retrofit low-income homes with efficient electrical appliances and systems. These investments, which complement and build upon the extraordinary funding in the Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA), will create good-paying jobs while driving progress toward the Administration's climate goals, including carbon pollution-free electricity by 2035.

Advancing Energy Innovation

To support U.S. preeminence in developing innovative technologies that accelerate the transition to a clean energy economy, the Budget invests \$9.4 billion, an increase of more than 19.7 percent over the 2023 enacted level of \$7.8 billion, in DOE clean energy research, development, and demonstration. These investments would improve clean power technologies, strengthen clean

energy-enabling transmission and distribution systems, decarbonize transportation, advance carbon management technologies, and improve energy efficiency in industry and buildings. This funding would also leverage the tremendous innovation capacity of the National Laboratories, universities, and entrepreneurs to transform America's power, transportation, buildings, and industrial sectors.

Accelerating Industrial Decarbonization

Across the more than \$1.2 billion in discretionary DOE industrial decarbonization activities, the Budget reflects the importance of strategically supporting U.S. industrial decarbonization through innovation, targeted investment, and technical assistance. The Budget supports an across-DOE Industrial Technologies joint strategy team to drive adoption of industrial decarbonization solutions including through the Office of Manufacturing and Energy Supply Chains. It also supports expanded research and development efforts in the Office of Energy Efficiency and Renewable Energy's Industrial Efficiency and Decarbonization Office. Within the \$1.2 billion mentioned above, the Budget includes \$160 million for the Office of Clean Energy Demonstrations to support at least two large-scale industrial decarbonization projects.

Strengthening Domestic and International Clean Energy Supply Chains

The Budget includes a \$75 million investment to launch a Global Clean Energy Manufacturing effort within the Office of Manufacturing and Energy Supply Chains that would build resilient supply chains for energy sector components critical to national and energy security through engagement with allies, enabling an effective global response to the climate crisis while creating economic opportunities for the United States to support the global clean technology market.

In addition, the Administration supports the use of the Defense Production Act at DOE to support rebuilding domestic uranium production and enrichment capacity to establish a secure supply for the Nation's current and future nuclear fleet and also to reduce reliance on foreign supplies of uranium, as well as other clean energy technologies to ensure robust supply chains for electrical transformers and other critical grid components. The Budget also includes \$75

million in the Office of Manufacturing and Energy Supply Chains for DOE to carry out the President's recent determinations under the Defense Production Act.

Reduces Health and Environmental Hazards for At-Risk Communities

The Budget includes \$8.3 billion for the Environmental Management program and reflects this Administration's strong commitment to clean up and protect communities that supported defense production programs and government-sponsored nuclear energy research. As the largest environmental cleanup program in the world, Environmental Management plays a key role in cleaning the environment, contributing to national security priorities, investing in the future and aiding community efforts to build strong economies, growing jobs, and preparing for a clean energy future. This investment will enable the Department of Energy to treat radioactive tank waste, take down contaminated buildings, and ship and dispose legacy waste and clean soil and groundwater across Environmental Management sites.

The Budget includes broad support for underserved communities, including \$70 million for Community Capacity Building Initiatives in the Office of Environmental Management and NNSA, to address areas of persistent poverty around the Department's sites.

The Budget also includes \$196 million for the Office of Legacy Management to protect human health and the environment by providing long-term management solutions at over 100 World War II and Cold War era sites where the federal government operated, researched, produced, and tested nuclear weapons and/or conducted scientific and engineering research.

Strengthening the Cybersecurity and Resilience of the Energy Sector

The Budget provides \$245 million for the Office of Cybersecurity, Energy Security, and Emergency Response to enhance the security of energy technologies and the energy supply chain. The Budget supports increased assistance to States, local governments, Tribes, and Territories for emergency planning and preparation, including for events caused by the impacts of climate change. An additional \$301 million is provided for the Strategic Petroleum Reserve,

including \$49.8 million in additional funding for the Major Maintenance Program for required upgrades to the West Hackberry Physical Security Program.

Strengthening the Nation's Nuclear Security Enterprise

The Budget makes a historic investment of \$23.8 billion for the Nation's nuclear security enterprise to implement the integrated deterrent described in the President's Nuclear Security Strategy, the National Defense Strategy, and the accompanying Nuclear Posture Review (NPR) through support for a safe, secure, reliable, and effective nuclear stockpile combined with nuclear nonproliferation, arms control, and counterterrorism. In addition, the Budget continues robust, executable funding for the recapitalization of NNSA's physical infrastructure, including essential scientific and production facilities to ensure the deterrent remains viable without underground explosive nuclear testing.

NNSA has a broad and complex array of priorities that reflect its expanded mission and the necessity to adapt in today's changing international environment. Our nuclear deterrent remains the cornerstone of our national defense and an assurance for our allies around the globe. NNSA is currently undertaking five warhead modernization programs and a major infrastructure revitalization effort. Once complete, NNSA's modernized infrastructure will enable us to maintain a safe, secure, and reliable stockpile in the face of a wide array of challenges.

Simultaneously, NNSA is continuing progress on its nuclear security, nonproliferation, and counterterrorism efforts. These critical programs ensure that we are aligned with our allies and partners to prevent an arms race, advance global stability, thwart state and non-state actors from acquiring nuclear weapons capabilities, and enhance U.S. and global security.

Stockpile Management

The Budget proposes \$5.2 billion in FY 2024 for Stockpile Management to maintain a safe, secure, reliable, and effective nuclear deterrent through five areas that directly support the Nation's nuclear weapons stockpile: stockpile major modernization, stockpile sustainment, weapons dismantlement and disposition, production operations, and nuclear enterprise

assurance. The Budget incorporates \$3.1 billion for five major modernization programs that extend the lifetime of the Nation's nuclear stockpile, enhancing security and safety features, and meet modern deterrence needs.

Production Modernization

The Budget includes \$5.6 billion for Production Modernization to support modernizing the facilities, infrastructure, and equipment that produce materials and components to meet stockpile requirements and maintain the Nation's nuclear deterrent. The program encompasses five components critical to weapon performance and sustainment of the Nation's nuclear weapons stockpile: primary capability modernization, secondary capability modernization, tritium and domestic uranium enrichment, non-nuclear component modernization, and capability-based investments. The Budget includes \$2.8 billion to reestablish the Nation's capability to produce 80 plutonium pits per year as close to 2030 as possible and continue ongoing plutonium operations at Los Alamos National Laboratory.

Stockpile Research, Technology and Engineering

The Budget incorporates \$3.2 billion for Stockpile Research, Technology, and Engineering to provide the scientific foundation for stockpile decisions and actions; develop the expert personnel required to support the current and future stockpile; and provide the capabilities, tools, and components needed to support all missions. The funding includes \$1 billion in assessment sciences, which funds experiments focused on design and production requirements, continues the implementation of the Enhanced Capabilities for Subcritical Experiments (ECSE) subprogram, and \$782 million for Advanced Simulation and Computing, which is preparing for NNSA's first exascale high-performance computing capability.

Infrastructure and Operations

The Budget proposes \$2.8 billion for Infrastructure and Operations to maintain, operate, and modernize NNSA infrastructure in a safe and secure manner that supports program execution while maximizing return on investment and reducing enterprise risk. Of this amount, \$650 million is included for infrastructure recapitalization to improve the condition and extend the design life of structures, capabilities, and systems to meet program demands; reduce future

operating costs by replacing older facilities with new, more efficient facilities; and reduce safety, security, environment, and program risk. The budget includes funding for the initial phase of the Kansas City Non-nuclear Expansion Transformation (KC NExT), a multi-year effort to increase manufacturing capacity to support the nuclear modernization program. The budget also includes \$718 million in Maintenance and Repair for predictive, preventive, and corrective maintenance activities to maintain facilities, property, assets, systems, roads, and vital safety systems.

Restoring American Leadership in Arms Control and Nonproliferation

The Budget includes \$2.5 billion for NNSA to reduce nuclear risks and counter the global challenge of nuclear proliferation. As called for in the National Security Strategy, the Budget funds nonproliferation and nuclear risk reduction-related activities across NNSA's Defense Nuclear Nonproliferation, Emergency Operations, and Counterterrorism and Counterproliferation programs, including programs to strengthen the Nation's capability to prevent, counter and respond to nuclear incidents at home and abroad. For the first time in our history, we face two near-peer nuclear powers in Russia and the People's Republic of China (PRC) as well as the expanding nuclear programs of North Korea and Iran. Moreover, Russia's war in Ukraine, nuclear saber rattling, and recent suspension of the New START Treaty are challenging the fundamental framework and principles of the nuclear security and nonproliferation regimes at a time when peaceful uses of nuclear energy are needed more than ever to address critical climate priorities. NNSA is investing in strategic stability, nonproliferation, nuclear and emergency preparedness measures—which are even more important during times such as these when tensions are high, miscalculation is possible, and strategic competition is escalating. This Budget also supports the research and development of next-generation detection, monitoring and verification tools needed to implement high priority efforts, including elements of the Australia-United Kingdom-United States (AUKUS) partnership, and prevent strategic surprise, supports activities with Ukrainian and regional partners associated with radiological and nuclear security, expands efforts in safeguards and security for new advanced nuclear power reactors, and builds on the bioassurance efforts started in FY 2023.

Powering the Nuclear Navy

The Budget includes \$1.96 billion for DOE's Naval Nuclear Propulsion Program to ensure safe and reliable operation of reactor plants in nuclear-powered submarines and aircraft carriers. The Budget prioritizes investments in research and development to maintain American dominance while continuing to support improvements to the Naval Nuclear Laboratory infrastructure. This includes long lead-time technology development for the future nuclear fleet, with support for the U.S. Navy's timeline for the next-generation attack submarine.

Supporting Other Defense Activities

The Budget provides \$1.1 billion to support defense activities conducted by the Department including Legacy Management (LM), Environment, Health, Safety and Security, Enterprise Assessments, Specialized Security Activities, Hearings and Appeals, and Defense Related Administrative Support (DRAS). DRAS offsets administrative expenses for work supporting defense-oriented activities in Departmental Administration.

Administration and Oversight

Energy Information Agency

The Budget includes \$156.6 million for the Energy Information Agency (EIA) to enable EIA to continue delivering the critical energy information products on which its stakeholders rely, including weekly petroleum and natural gas inventory reports, comprehensive monthly forecasts of energy markets, and long-term outlooks for U.S. and global energy production and consumption.

Office of Technology Transitions

The Budget includes \$56.6 million to focus on commercialization of promising technologies. This includes funding the Energy Program for Innovation Clusters (EPIC) to encourage growth of regional energy innovation ecosystems, training National Laboratory scientists and engineers on customer outreach and partnership through the private sector through Energy I-Corps, supporting an Energy Tech University prize, supporting market and commercialization analytics, and coordinating tech transfer. Funding is also included within the

Budget for the Foundation for Energy Security and Innovation to accelerate the commercialization of new and existing energy technologies by raising and investing funds through engagements with the private sector and philanthropic communities.

Departmental Administration

The Budget includes \$433.5 million for Departmental Administration to fund management and mission support organizations that have enterprise-wide responsibility for international engagement and promotion of global market opportunities, administration, accounting, budgeting, contract and project management, human resources, congressional and intergovernmental liaison, energy policy, information management, life-cycle asset management, legal services, workforce diversity and equal employment opportunity, ombudsman services, small business advocacy, sustainability, and public affairs. In FY 2024 the Budget funds new statistical and trend analysis capabilities within the Office of Policy, with support from the Energy Information Agency.

Office of the Inspector General

The Budget includes \$165.2 million in discretionary authority. Also, the Office of the Inspector General would receive funding within the Administration's proposed \$150 million in mandatory funding.

Conclusion

I want to again thank the Committee for its ongoing and bipartisan support for the DOE mission.

Thank you for the opportunity to be here today. I am happy to answer your questions.