

Testimony of Secretary Jennifer M. Granholm

U.S. Department of Energy

Before the

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Chairman Manchin, Ranking Member Barrasso, and Members of the Committee, it is an honor to appear before you today to discuss the President's FY 2022 Budget request for the Department of Energy ("the Department" or "DOE").

It is a privilege to serve as the 16th Secretary of Energy and have the responsibility of leading the Department in delivering technological advancements, scientific discoveries, and advancing the energy, economic, and national security of the United States.

I am proud to say we have accomplished a lot in my first few months at DOE.

In addition, of course, to continuing to advance our core science and security missions, we have jump-started efforts to create jobs and build the clean energy economy of the future, an economy that works better for American families and an economy that works for all kinds of communities with jobs for all kinds of workers. We declared to the world that America is back at the table for climate action and followed it up with new funding opportunities for technologies ranging from carbon capture to geothermal energy to extracting critical minerals from coal waste. And we set ambitious new goals to cut solar costs by more than half and add 30 gigawatts of offshore wind capacity by 2030. We will deliver these goals while addressing long-standing and persistent racial and environmental injustice and taking action to benefit disadvantaged communities

We announced over \$1 billion in new funding opportunities, grants, and awards for projects with the potential to punch through obstacles in our way to a net-zero carbon future by 2050. These new funding opportunities, grants, and awards for projects include developing cutting-edge solar technology, improving vehicle efficiency, modernizing water infrastructure, and researching everything from microelectronics that can launch the next digital revolution, to powerful particle accelerators that can help us answer some of our biggest questions about the universe. This funding also included \$109.5 million in funding for carbon capture, critical mineral recovery, and geothermal energy projects that directly support job creation in coal communities impacted by changes in the energy economy.

We announced multiple funding opportunities that provided demonstration and deployment support to the sustainable transportation sector, totaling \$224M. This includes funding for bioenergy pre-pilot technologies to pilot scale and/or demonstration scale projects that support sustainable aviation and marine fuels, CO₂ conversion, waste and underutilized carbon

feedstocks. This funding will demonstrate efficiency improvement and emission reduction opportunities in medium- and heavy-duty trucks and their associated freight systems.

We launched the Energy Earthshots Initiative, an all-hands-on-deck call for innovation, collaboration and acceleration of our clean energy economy by tackling the toughest remaining barriers to quickly deploy emerging clean energy technologies at scale. The first Earthshot focuses on hydrogen, sets an ambitious yet achievable cost target to accelerate innovations and spur demand of clean hydrogen. We also announced new immediate policy actions to scale up a domestic manufacturing supply chain for advanced battery materials and technologies to accelerate our efforts to decarbonize the economy.

We kicked off a 100-day plan to address cybersecurity risks to the U.S. electric system. And we witnessed Perseverance roving around the surface of Mars, powered by tech produced in our National Labs.

Internally, we held our very first Jobs & Justice town hall, spelling out what it means to center job creation and equity in all of our work.

We have kept our country safe by supporting a safe, secure, and effective nuclear stockpile, and a continued modernization program. And all the while, our labs continued working toward groundbreaking discoveries, including in the fight against COVID-19.

But these investments are really just a down payment on what we need to do as a nation. To really build an economy that positions American families and American communities to thrive, we need the resources the American Jobs Plan and the FY 2022 Budget request will provide to take us further.

The American Jobs Plan

In March, President Biden released the American Jobs Plan. This represents the biggest investment in America since World War II and is a once-in-a-generation investment in our nation's economy. Especially in our energy infrastructure and our ability to win the global energy market. This plan will put millions of people to work and lay the foundation for economic growth for decades to come.

Globally, there is a \$23 trillion market for clean energy products and for products that will reduce carbon pollution. This is a massive opportunity for this country. Other countries are seeing that opportunity as well, and our economic competitors are working to corner the market on those opportunities. The question is: Where are those products going to be built, and who will build them?

Through the American Jobs Plan, our country is going to corner the market and lead on manufacturing these products, providing good-paying jobs to the American people. It's going to take a lot of work, but the pay-off will be worth it. It will provide millions of people in the United States opportunities to build clean energy technologies, energy products and energy

infrastructure that not only will make our country stronger, but will allow them to support their families and strengthen their local economies. And we all know that, in the 21st Century, making sure that we have the right infrastructure is critical.

Infrastructure is roads and bridges, it is the electrical grid that keeps the lights on, it is ports, airports, and trains, it is pipes that pump water into our homes, and it is the broadband that both brings the world and learning to our children and brings opportunity to our businesses. Infrastructure is so broad that it creates jobs in all pockets of America.

I want to work with you to make these investments so that together we deploy the energy infrastructure that our economy needs now, while at the same time advancing cutting-edge clean energy technologies, creating millions of good-paying union clean energy jobs, and building an equitable clean energy future.

FY 2022 President's Budget Request

President Biden's proposed FY 2022 Budget request for the Department of Energy invests \$46.2 billion to advance key priorities including creating jobs through clean energy projects, bringing America to the forefront of clean energy innovation, tackling the climate crisis with the urgency that science demands, investing in communities that have been left behind, and ensuring the safety and security of the nuclear stockpile.

Creating Jobs through Clean Energy Projects and Energy Efficiency Retrofits

The budget request supports the President's vision of achieving carbon pollution-free electricity by 2035 while creating good-paying jobs by investing \$1.9 billion in a Building Clean Energy Projects and Workforce Initiative at DOE. This investment will support programmatic infrastructure for a new energy efficiency and clean electricity standard, a new Build Back Better Challenge Grant competition to support novel State-, local-, and tribal-level approaches to clean energy deployment that provides benefits to marginalized and overburdened communities and streamlined transmission investment. These investments will develop and deploy technologies that will deliver a clean energy revolution resulting in cheap, abundant clean power delivered on a modern energy grid that is resilient and reliable.

Spurring Innovation in Clean Energy Technologies

Within DOE, the budget request invests more than \$8 billion for applied energy programs with a focus on clean energy and climate innovation. From investing in advanced nuclear, electric vehicles, and an Energy Earthshots Initiative, to funding innovative approaches to air conditioning and refrigeration, the FY 2022 request puts the Nation on a path to quadruple clean energy research in four years, emphasizing U.S. pre-eminence in innovating the technologies needed to tackle the climate crisis.

Applied energy investments include:

- \$4.732B for the Office of Energy Efficiency and Renewable Energy to jump-start progress toward the goal of a carbon pollution-free electricity sector by 2035 and net zero emissions, economy-wide, by no later than 2050.

- \$1.851B for the Office of Nuclear Energy, a 23% increase over FY 2021 funding levels, to extend the impact of research, development, demonstration & deployment funding by leveraging mechanisms such as competitive awards, technical assistance, and programs targeted to small businesses. This enables the commercialization of climate change and clean energy innovations.
- \$890M for the Fossil Energy and Carbon Management Research and Development program to conduct research, development, and demonstration projects for technologies that help to ensure clean and affordable energy for all Americans; facilitate the transition toward a carbon-pollution-free economy, including by addressing the emissions and other environmental impacts of fossil fuel; rebuild a U.S critical minerals supply chain; and retain and create good paying jobs.
- \$327M for the Office of Electricity to lead the Department's efforts to strengthen, transform, and improve energy infrastructure so consumers have equitable access to resilient, secure, and clean sources of electricity.

The Budget also includes \$201M for the Office of Cybersecurity, Energy Security, and Emergency Response (CESER), which leads the Department's efforts to secure U.S. energy infrastructure against all hazards, reduce the risks of and impacts from cyber events and other disruptive events, and assist with restoration activities.

These investments will leverage the tremendous innovation capacity of our 17 National Laboratories, America's universities, and entrepreneurs to transform our power, transportation, buildings, and industrial sectors to clean, emissions-free power sources and help achieve a net-zero emissions economy by 2050. The budget request advances us toward these goals by building on the basic science breakthroughs at our National Laboratories; and employing the resources that turn those science breakthroughs in energy and deployable technologies like those supported by the Advanced Research Projects Agency-Energy (ARPA-E).

Meanwhile, the Department's energy programs, which run the gamut from renewables to efficiency, carbon capture to hydrogen, and grid technology to storage are going to make it their mission to bring clean energy solutions to life. Building on ARPA-E's success, the budget request also includes funding to establish the Advanced Research Projects Agency for Climate (ARPA-C), to develop transformative solutions for the climate crisis through R&D support for high-impact innovative technologies to address adaptation and resilience challenges, as well as non-energy emissions mitigation. ARPA-C will work with other Agencies to lay the foundation for future climate change solutions across the Federal Government.

Revitalizing the Office of Fossil Energy and Carbon Management while Supporting Coal and Power Plant Communities

The budget request supports increased funding for a revitalized Office of Fossil Energy and Carbon Management that will advance carbon reduction and mitigation in sectors and applications that are difficult to decarbonize, including the industrial sector, with technologies and methods such as carbon capture and storage, hydrogen, and direct air capture – all while ensuring the reduction in pollution and cumulative impacts to overburdened communities.

The budget request also helps DOE build the energy economy back better in a way that lifts up communities who have not yet seen a future for themselves in the energy transition and those who have just been left behind for far too long. This includes funding DOE's role in supporting the newly established Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization. By supporting the POWER+ Initiative, DOE will help communities impacted by the energy transition and ensure their success. DOE programs can support fossil fuel workers translating their skills to new positions in various areas, from extracting critical minerals from coal mine sites and upgrading pipelines to reduce methane leakage to building carbon capture and hydrogen systems on existing industrial and power plant facilities; from building zero-emissions buses and upgrading the power grid to drilling for geothermal energy. Their predecessors built the U.S. economy of the 20th Century; they will power the economy of the 21st Century.

The Department will also support communities of color living with the toxic legacy of air pollution, those who are still paying too much for their energy, and who are often the first and worst impacted by the climate emergency. With targeted investments, DOE will help communities impacted by the energy sector and advance environmental justice and equity.

Expanding Foundational Research, Emphasizing Climate and Clean Energy Science

The budget request invests \$7.4 billion, an increase of more than \$400 million over 2021 levels, in the Office of Science to better understand our changing climate, identify and develop novel materials and concepts for clean energy technologies of the future, advance artificial intelligence and quantum science, as well as the world's most advanced computing to enhance prediction and decision-making across numerous environmental and scientific challenges, and of course to support the national research community with cutting-edge scientific facilities. This investment in foundational research will support America's first-rate scientists, engineers, and entrepreneurs, who develop and deploy technologies that improve our lives and jumpstart new industries.

Investing in Historically Black Colleges and Universities and Minority Serving Institutions

The FY 2022 Budget request creates and enhances research funding opportunities and invests in infrastructure such as laboratory facilities upgrades for Historically Black Colleges and Universities (HBCUs) and other Minority-Serving Institutions (MSIs). It also increases resources for workforce development programs to augment pathways to good-paying Science, Technology, Engineering, and Math (STEM) careers for students attending these schools. New grant awards, including a research center focused on climate, will expand research capacity, and create new opportunities at HBCUs and other MSIs. The FY 2022 Budget request will build on the Department's existing relationships with HBCUs and MSIs, establish new partnerships with these institutions, and include them in our efforts to target disadvantaged communities for new clean energy investments, jobs, and businesses, while doubling down on our commitments to racial justice.

Cybersecurity Activities

The FY 2022 Budget Request proposes to invest \$642 million in cybersecurity activities, an increase of \$189 million over the FY 2021 Enacted level. This will enable the Department to make significant contributions toward modernizing cybersecurity defenses by protecting federal networks and strengthening the United States' ability to respond to incidents when they occur.

The Department will be guided by the key areas, as identified in Executive Order 14028, which include; remove barriers to threat information sharing between government and the private sector; modernize and implement stronger cybersecurity standards; improve software supply chain security; improve investigative and remediation capabilities; and improve cybersecurity threat hunting and response through improved logging and data analytics.

Sustaining Investment in Environmental Cleanup

The Office of Environmental Management (EM) supports DOE to meet the challenges of the Nation's Manhattan Project and Cold War legacy responsibilities. The FY 2022 Budget Request includes \$7.6B for EM to continue making progress in addressing millions of gallons of liquid radioactive waste, thousands of tons of spent (used) nuclear fuel and nuclear materials, large volumes of transuranic and mixed/low-level waste, huge quantities of contaminated soil and water, and thousands of excess facilities.

Building on past successes, the FY 2022 request supports EM as it enters a new era of cleanup. The request includes approximately \$2.5B for cleanup at the Hanford site in Washington state, and supports continued progress to initiate tank waste treatment by the end of 2023 through the Direct Feed Low Activity Waste approach. The request will also enable progress in key risk reduction activities at Hanford, including work to transfer radioactive capsules to dry storage and work to remediate contaminated soil under the 324 Building.

The request includes \$1.75B for cleanup activities at the Savannah River Site in South Carolina, which supports efforts to ramp up tank waste treatment, as well as the safe storage, stabilization and disposition of EM-owned nuclear materials and other risk reduction activities.

At the Waste Isolation Pilot Plant in New Mexico, integral to both the Department's legacy cleanup mission and ongoing national security work, the request would provide \$437M for facility operations and continued infrastructure activities. The request would provide \$334M for legacy cleanup activities at the Los Alamos National Laboratory.

At the Oak Ridge site in Tennessee, the request would provide \$561M to support slab and soil remediation activities at the East Tennessee Technology Park, along with work to address high-risk excess facilities at the Y-12 National Security Complex and Oak Ridge National Laboratory and continued efforts to disposition the remaining uranium-233 stored at the site, among other activities. The request also includes \$381M for cleanup activities at the Idaho site that will complete buried waste exhumation and treatment of contact-handled sludge waste, ending a decades-long effort to treat legacy waste at the site.

Strengthening the Nation's Nuclear Security

The Department of Energy's (DOE) National Nuclear Security Administration (NNSA) is responsible for maintaining a safe, secure, and effective nuclear weapons stockpile; reducing global nuclear threats; and providing the U.S. Navy's submarines and aircraft carriers with militarily effective nuclear propulsion. The President's FY 2022 Budget Request of \$19.7 billion, maintains the historic level of investments in NNSA and includes an increase of \$10.8

million over the FY 2021 enacted level.¹ This reflects this administration's commitment to maintain and modernize the nuclear stockpile through our life extension and alteration programs; make substantial progress on maintaining, repairing, and recapitalizing NNSA's deteriorating infrastructure; provide policy and technical leadership to address all aspects of the nuclear threat reduction mission; and deliver nuclear propulsion that meets the U.S. Navy's operational requirements.

Weapons Activities

The FY 2022 budget request for the *Weapons Activities* account is \$15.5 billion, an increase of \$139.3 million, or 0.9 percent, over FY 2021. This request supports stockpile management to maintain our existing weapons; design and production work on five programs of record; production modernization; and stockpile research, technology, and engineering (SRT&E). NNSA's major stockpile modernization programs stand at different levels of maturity, each one responding to a different Department of Defense (DoD) requirement. Some programs, such as the W93/Mk7 are in the initial phases of feasibility and design, while others are in production phases, such as the B61-12 gravity bomb. Together, these programs bolster the United States' long-term commitments to allies and partners while ensuring safety and reliability. NNSA continues to focus on the production capabilities of nuclear weapons components critical to weapon performance and is requesting funds to support the urgent need to recapitalize plutonium pit production fabrication at Los Alamos and Savannah River. SRT&E covers many critical programs for the nuclear security enterprise that allow the nuclear deterrent to be certified without the need for nuclear explosive testing. Capabilities include the Enhanced Capabilities for Subcritical Experiments (ECSE), the Exascale Computing Initiative (ECI), and the Inertial Confinement Fusion (ICF) program. Each of these are needed to support weapons design, warhead assessment and certification, and continued development of the underpinning science needed to support the nuclear stockpile long-term.

Defense Nuclear Nonproliferation

NNSA's Office of Defense Nuclear Nonproliferation (DNN) is critical to implementing the President's call to "lock down fissile and radiological materials around the world." The FY 2022 budget request for the DNN account is \$2.3 billion, an increase of \$4.0 million, or 0.2 percent, over the FY 2021 enacted level.² DNN works worldwide with our partners to prevent state and non-state actors from developing nuclear weapons or acquiring weapons-usable nuclear or radiological materials, equipment, technology, and expertise.

Complementing the work of DNN is the Nuclear Counterterrorism and Incident Response (NCTIR) Program, which includes the *Emergency Operations* and *Counterterrorism and Counterproliferation* subprograms. NCTIR provides capabilities to counter and respond to nuclear incidents and accidents worldwide. The FY 2022 request for NCTIR is \$370.8 million, a decrease of \$6.7 million, or 1.8 percent below, the FY 2021 enacted level.

¹ The FY 2021 Enacted level does not include the mandated transfer of \$91 million from Naval Reactors to Nuclear Energy for the operation of the Advanced Test Reactor.

² The FY 2022 amount does not include the proposed cancellation of \$330 million of prior year balances from the Mixed Oxide Fuel Fabrication Facility project.

Naval Reactors

The Office of Naval Reactors remains at the forefront of technological developments in naval nuclear propulsion, with an unparalleled record of over 169 million miles safely steamed on nuclear power and over 7,300 reactor-years of operation. The FY 2022 budget for *Naval Reactors* is \$1.9 billion, an increase of \$182.7 million, or 10.8 percent, over the FY 2021 enacted level.³ The budget request supports Naval Reactors' three major projects – COLUMBIA-Class reactor plant development, the refueling overhaul of a research and training reactor in New York, and the construction of the Naval Spent Fuel Handling Facility in Idaho.

NNSA Workforce

To manage this broad portfolio, NNSA depends upon recruiting, training, and retaining a highly technical Federal and M&O workforce. The FY 2022 budget request for *Federal Salaries and Expenses* (FSE) is \$464.0 million, an increase of \$20.8 million, or 4.7 percent, over the FY 2021 enacted level.

Conclusion

In conclusion, I am humbled to reaffirm my commitment to lead the Department of Energy. I look forward to our continued partnership to achieve these ambitious yet necessary goals.

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

³ The FY 2021 Enacted level does not include the mandated transfer of \$91 million from Naval Reactors to Nuclear Energy for the operation of the Advanced Test Reactor.