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Introduction

Thank you, Chairman Manchin, Ranking Member Barrasso, and distinguished Members of the Committee. It is an honor for us to appear before you today and represent the Department of Energy (DOE) at this hearing related to the various energy bills under consideration. Our written testimony addresses the Department's view on all the bills under consideration at this hearing. However, this morning we will speak to the legislation under our respective purviews, nuclear energy and the Strategic Petroleum Reserve (SPR), under consideration today by the Committee.

Nuclear Energy

To meet our ambitious carbon reduction goals and rebuild U.S. leadership globally, the Biden-Harris Administration is prioritizing activities that keep the existing fleet of nuclear power plants in operation, deploy advanced reactor technologies, secure and sustain the nuclear fuel supply, strengthen nuclear safety, security, and safeguards, and expand international nuclear energy cooperation. Nuclear energy will play a major role in the transition to a carbon-free energy economy by fundamentally underpinning our nation's target for carbon-free electricity as well as non-electric energy markets. New nuclear reactor deployments also have the potential to decarbonize many industrial sectors in the United States and abroad. Ensuring this future for our nation and our allies must include a secure source of fuel for today's nuclear power plants and those of tomorrow. DOE is pleased to announce that initial funding from the Civilian Nuclear Credit Program (CNC), authorized and funded by the Infrastructure Investment and Jobs Act, was awarded on November 21, 2022 and we are working hard to publish guidance outlining certification criteria for the second round of the CNC program which will support additional nuclear reactors that may be at risk of closing. We greatly appreciate the committee's support of this important program and other policies that support the continued deployment of clean energy that nuclear energy provides.

The Russian Federation's full-scale invasion of Ukraine has demonstrated the grave threat to global energy security posed by dependence on Russian-supplied fuels. Russia, the largest global enricher of uranium, currently supplies a significant fraction of the nuclear fuel supply chain to the United States and our international allies and partners. In particular, conversion and enrichment services from trusted sources are insufficient to replace current imports from Russia in the long-term. Without expansion of the domestic fuel cycle capacity, the United States cannot reliably support the low enriched uranium (LEU) needs of today's reactor fleet or make sufficient high-assay LEU (HALEU) available for advanced reactors, research reactors, and medical isotope production.

The Department is working to address these energy security challenges in the face of ongoing global events. As noted, the United States currently purchases a significant amount of uranium from Russia. We cannot continue to infuse the Russian state with this source of income, especially as it engages in reckless strikes that threaten a nuclear incident in Ukraine.

We want to thank this Committee for your leadership in the development of proposed legislation aimed at tackling this very important issue facing our nation and the world. As you know, there is no quick, easy path to reduce our dependence on Russian-supplied fuels. Expanding our domestic fuel capacity will require a significant strategic investment coupled with import restrictions that protect those investments well into the future.

S. 3978 - "NO RUSSIA Act of 2022"

American dependence on Russian uranium threatens our energy security. Energy security is national security and untrustworthy state-sponsored programs have no place in our energy policy. However, any ban on uranium imports from the Russian Federation should be accompanied by strategic investments that strengthen our domestic nuclear fuel supply chain.

The bill recognizes the need to eliminate reliance on Russia and establish secure domestic sources of nuclear fuel materials, proposing a national strategic uranium reserve, similar to what was proposed during the previous administration by the Nuclear Fuel Working Group in 2020. The reserve would contain uranium produced and converted in the United States to be used in the event of a supply disruption. The bill calls for cost recovery based on fair market value and includes the use of revenues to be reinvested by the program. The bill also shifts the efforts previously funded in the National Nuclear Security Administration (\$75 million in FY2021) for uranium and conversion purchases to the Office of Nuclear Energy and authorizes \$150 million/year from FY2023 through FY2032. Further, the legislation seeks to allow for the expansion and refilling of the American Assured Fuel Supply and directs the Secretary to establish a program within 60 days of enactment to ensure the availability of uranium produced, converted, and enriched in the United States.

Draft bill, Nuclear Waste Administration Act

The promise of new advanced reactors can most responsibly be realized in conjunction with progress on the management of their spent nuclear fuel. The draft bill "Nuclear Waste Administration Act" (NWAA) aims to support the future of U.S. nuclear energy by addressing

the back end of the fuel cycle – which is an ongoing concern that the Department is working to address in partnership with Congress.

The Department sees merit in a number of the bill’s objectives. The bill recognizes that a consent-based siting process should be used for developing interim storage and disposal options. DOE is making progress on consent-based siting for one or more Federal consolidated interim storage facilities under existing authority. In December 2021, DOE issued a request for information on consent-based siting and received over 200 responses. A summary of those responses was published in September 2022 and is available at [Energy.gov/consentbasedsiting](https://www.energy.gov/consentbasedsiting). The feedback DOE received suggested that funding and technical assistance be provided to enable communities and Tribes to build internal capacities and engage with DOE in a consent-based siting process. In September of this year, DOE issued a \$16 million funding opportunity announcement to provide resources for communities and other stakeholders interested in learning more about consent-based siting, management of spent nuclear fuel, and interim storage facility siting considerations. Applications are due December 19th, and we expect to place those awards in 2023.

Authority to pursue consent-based siting for disposal facilities would enable progress toward a final solution for spent nuclear fuel and high-level waste management, as well as reassure communities contemplating hosting federal interim storage facilities that nuclear material stored in their communities has a path to disposal.

DOE has worked with National Laboratory experts and reactor designers to collect data on proposed advanced reactor fuel forms to prepare to manage spent nuclear fuel from those reactors which is both similar to and different from conventional light water reactor spent nuclear fuel. More work in this area will be needed, and DOE welcomes the legislation’s attention to this topic. DOE would be happy to work with Congress to further develop the draft Nuclear Waste Administration Act to enable our current consent-based siting efforts to progress beyond siting and achieve licensing, construction, and operation of one or more federal consolidated interim storage facilities., to be followed by consent-based siting of one or more disposal facilities.

Cybersecurity, Energy Security, and Emergency Response

S. 4651 – “Prohibiting SPR Sales to Rogue States”

This proposed legislation would limit the sale and exportation of petroleum products from the SPR to countries that are designated as countries of concern for religious freedom under the International Religious Freedom Act of 1998 (currently Burma, China, Iran, Eritrea, DPRK, Pakistan, Russia, Saudi Arabia, Tajikistan, and Turkmenistan).

The proposed legislation would establish certification requirements and limits on auction sales of SPR products to state-owned entities. Under such circumstances, if the Secretary of Energy determines that the United States has banned, or imposed sanctions with respect to, the purchase of crude oil from one or more countries, a state-owned entity would be required to certify that it has not purchased crude oil from countries subject to a U.S. ban or sanctions while the bans or sanctions were in effect to be eligible to bid in auctions. If the Secretary of Energy determines a

state-owned entity participating in the auctions has purchased crude from such countries, then DOE would be prohibited from selling those entities' products from the SPR.

S. 4515 – No Emergency Crude Oil for Foreign Adversaries Act

S. 4515 would require the Secretary of Energy to stipulate, as a condition on the sale at auction of any crude oil from the SPR, that the crude oil not be exported to the People's Republic of China, the Russian Federation, the Democratic People's Republic of Korea, and the Islamic Republic of Iran.

The proposed legislation would allow the Secretary to waive the prohibition, prior to the date of the applicable auction, if the sale of crude oil to these countries is in the national security interests of the United States.

The proposed legislation also requires the Secretary to submit a report on the route to destination and place of refinement of all crude oil sold at auction from the SPR since November 23, 2021, and on the ownership of the refinement facilities where SPR crude oil sold at auction since November 23, 2021, was refined.

For both S. 4515 and S. 4651, the Department notes that barring exceptions in 42 USC 6212a, the SPR has a limited ability to restrict which countries receive oil, and the Department currently has no way to track the movement of the crude oil after delivery. Custody transfer of crude oil from the SPR takes place at either a pipeline boundary of the SPR site, commercial crude oil storage facility, or at the vessel which the crude oil is loaded. Once the vessel is loaded, the crude oil on that vessel may be sold multiple times prior to reaching the intended destination. After the exchange, the Department does not have visibility on the destination of the crude oil.

Fossil Energy and Carbon Management

S. 3915 – "Technology Grants to Strengthen Domestic Mining Education of 2022 (The Mining Schools Act of 2022)"

This bill would authorize the Secretary of Energy to establish a program to strengthen domestic mining education under which the Secretary would award competitive grants to mining schools for the purpose of recruiting and educating the next generation of mining engineers and other qualified professionals to meet the future energy and mineral needs of the United States. This bill would allow the Secretary to select recipients for grants to ensure region-specific specialties are developed for region-specific geology.

In addition, the proposed legislation would establish a Mining Professional Development Advisory Board of six members appointed by the Secretary. Board members will be selected no later than 180 days after the date of enactment of this Act. The draft bill would require that three of the six board members will be active mining professionals in the mining industry, and that the other three will have academia implementing experience, as well as having experience operating professional skills training and education programs in the mining sector. The board will evaluate

grant applications, propose the amounts of the grants, and perform oversight to ensure the funds are used in accordance with the statute.

The Department notes there are programs such as the Carbon Ore Processing Program hosted between the Department of Energy’s Office of Fossil Energy and Carbon Management (FECM) and National Energy Technology Laboratory (NETL) that support the mining industry and professions identified in S. 3915 by increasing demand for mined resources through developing products from coal and coal wastes outside of traditional thermal and metallurgical markets.

Similarly, FECM–NETL’s University Training & Research (UTR) Program supports using competitive grants as the programmatic vehicle to support “mining schools.” NETL has observed continued success within the UTR program by waiving the cost-sharing requirement on grants to university partners. This cost share waiver, which is renewed on a multi-year basis, allows for a reduced burden on prospective applicants. This approach ensures that compelling ideas for promising and impactful research compete on an equal playing field.

S4420 – “Carbon Removal and Emissions Storage Technologies Act of 2022 (CREST Act)”

Carbon dioxide removal (CDR) has a critical role in helping the United States achieve net-zero emissions by 2050. CDR refers to approaches that capture carbon dioxide (CO₂) directly from the atmosphere and store it in geological, biobased, and ocean reservoirs or in value-added products to create negative emissions. To reach our global climate goals, gigatons of atmospheric CO₂ must be removed every year by mid-century, alongside aggressive decarbonization.

To advance the development of this emerging and necessary industry, DOE launched Carbon Negative Shot—the U.S. Government’s first major effort in CDR. Carbon Negative Shot is an all-hands-on-deck call for innovation in CDR pathways that will capture CO₂ from the atmosphere and store it at gigaton scales for less than \$100/net metric ton of CO₂-equivalent.

Many of the activities authorized in the Carbon Removal and Emissions Storage Technologies Act of 2022 (CREST Act) align with DOE’s existing work on the Carbon Negative Shot, and we look forward to working with Congress on the continued development and deployment of CDR technologies.

Loan Programs Office

S. 3152 – Regarding the Loan Programs Office

This legislation would prohibit DOE from making a loan guarantee if the borrower has previously defaulted on an obligation guaranteed under the Title 17 Innovative Clean Energy Loan Guarantee Program (Title 17); and would prohibit DOE from making a loan if the borrower has previously defaulted on an obligation provided under the Advanced Technology Vehicles Manufacturing Loan Program (ATVM). DOE understands this to mean, in both cases, a default resulting in a loss. However, LPO continuously works to improve program oversight, manage project risk, and achieve its mission of investing in the deployment of innovative technologies

where commercial debt markets cannot or are unwilling to intervene. Despite the amount of risk that is actively managed by LPO, the portfolio is robust and healthy, as indicated in LPO's FY 2021 Annual Portfolio Status Report. LPO is committed to working with Congress to ensure transparency about its project portfolio, its due diligence and risk management processes, and oversight of its programs. Prior to making any loan, LPO conducts rigorous due diligence that is comparable to best practices in the private sector. LPO relies upon professional staff and sophisticated third party legal, technical, market and financial advisors, in line with best diligence and underwriting practices in the private lending markets, to ensure that deals adequately protect the interests of the federal government and support DOE's determination of reasonable prospect of repayment.

Energy Efficiency and Renewable Energy

S. 3112 – “Hydrogen for Industry Act”

This bill would establish the “Hydrogen Technologies for Heavy Industry Grant Program.” The legislation would authorize the Department to provide grants to commercial-scale demonstration projects that demonstrate industrial end-use applications of hydrogen. The authorization of appropriations covers FY 2022 to FY 2026 and would provide \$1.2B over that time frame, with a limitation of \$400M for any single grant. The program would require a minimum 20 percent non-Federal cost share for demonstration projects and would prioritize projects with the greatest impact on avoiding or reducing GHG emissions. When providing grants, the bill would require the Department to also consider projects with the greatest benefits to low income or disadvantaged communities. The purpose of the Program would be to support the adoption of hydrogen as an emissions reduction technology for heavy industry, including in applications where hydrogen is blended with other fuels or feedstocks. The bill would also require the Secretaries of Energy, Commerce, and Transportation to submit a report on the potential for emissions reductions at industrial facilities through hydrogen applications and address existing challenges to ensuring the safe use and handling of hydrogen and hydrogen-based fuels in industrial systems.

The Hydrogen for Industry Act would support the Department's H2@Scale initiative by demonstrating hydrogen's versatility to decarbonize heavy industry at a commercial-scale. In the industrial and chemical sectors, steel manufacturers, fertilizer producers, and producers of liquid fuels – such as sustainable aviation fuels – are increasingly turning to clean hydrogen as one of the few means to achieve their decarbonization goals. Emissions-free technologies in such industries can also address environmental justice in certain regions of the country, and hydrogen technology deployments can support good paying jobs in new clean energy industries. However, the definition of "low income or disadvantaged community" is not consistent with the Department working definition. The proposed statutory definition within this provision relies solely on income and does not consider environmental hazards, socio-economic vulnerabilities, or other factors. In addition, Section 988 of the Energy Policy Act of 2005 requires a minimum 50 percent cost share for demonstration projects. DOE believes that 50 percent or higher cost share requirements are appropriate for demonstration projects at or near a scale relevant for commercial operations.

Conclusion

Thank you for the opportunity to appear before the Committee today. We look forward to working with you to provide American families and businesses with a wider range of energy and mobility options that offer more affordability, reliability, and security of our nation's energy. We look forward to your questions.