FY2023 Recommendations:
House Appropriations Subcommittee on Energy and Water Development

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On behalf of the 10,000 men and women of the American Nuclear Society (ANS), I am pleased to provide recommendations for FY2023 appropriations levels for nuclear programs under the Subcommittee's jurisdiction. The American nuclear community is grateful to the Committee for its continued, bipartisan support for federal investments to sustain our existing nuclear fleet and accelerate the near-term development and deployment of new nuclear energy technologies. Our recommendations are aligned toward a commercial scale-up of advanced nuclear reactors in the 2030 timeframe and consistent with the 2021 ANS report, "The U.S. Nuclear R&D Imperative."[2] For Fiscal Year, 2023, ANS recommends a minimum of **$2.2 billion** for **Department of Energy (DOE) Office of Nuclear Energy (NE)** programs. We recognize this level of funding will present a challenge to the committee given its current 302(b) allocation. However, the Russian invasion of Ukraine has laid bare the immediate U.S. national security interest in strengthening our nuclear supply chain and reducing our reliance on Russian sources of nuclear fuel and R&D capabilities.

DOE Office of Nuclear Energy

Directed R&D and University Programs (FY2023 Recommendation: $161 million)

ANS strongly supports the administration's request for this new programmatic structure, which consolidates NE funding for universities (and small businesses) into a unified program that will provide stewardship for university-based nuclear education programs, campus research reactors, and start-up companies. While still tightly aligned with Departmental missions, this new structure will eliminate the need to "tax" existing NE

[1] The American Nuclear Society is the premier organization for those who embrace nuclear science and technology for their vital contributions to improving people's lives and preserving the planet. ANS membership is open to all and consists of individuals from all walks of life; including engineers, doctors, students, educators, scientists, soldiers, advocates, government employees, and others. ANS is committed to advancing, fostering, and promoting the development and application of nuclear sciences and technologies to benefit society.

[2] ANS Task Force on Public Investment in Nuclear Research and Development (Feb. 2021). *The U.S. Nuclear R&D Imperative* (pp. 1-39, Rep.) https://www.ans.org/file/3177/2/ANS%20RnD%20Task%20Force%20Report.pdf

programs to provide the funding needed required for effective stewardship of nuclear education and research at U.S. universities.

ANS STRONGLY opposes the inclusion of any congressional earmark in this account. While we are mindful of Congress' power of the purse, the inclusion of project-specific earmarks at this time would effectively gut this new program before it has a chance to become established, negatively impacting existing competitively awarded projects, and inflicting tangible damage to America's overall nuclear competitiveness.

Advanced Reactor Demonstration Program (ARDP) (FY2023 Recommendation: $245 million)

Demonstrating the next generation of advanced reactors will support both domestic deployment and export of U.S. technology and enable broad U.S. leadership in new and innovative advanced nuclear technologies. For FY2023 ANS recommends $140 million for Risk Reduction for Future Demonstrations, $85 million for NRIC, $15 million for Regulatory Development, and $5 million for Advanced Reactor Safeguards.

Advanced Nuclear Fuel Availability Program (FY2023 Recommendation – $360 million: $300 million for commercial enrichment and deconversion capacity and $60 million for downblending of HEU)

Consistent with the Energy Act of 2020, it is imperative that DOE establish a competitive commercial high-assay low-enriched uranium (HALEU) fuel supply chain in the U.S. The urgency is real. Russia can no longer be considered a feasible HALEU supplier. Without a reliable HALEU supply, lead commercial customers will be less likely to make commitments to build advanced reactors. We recognize the administration has not yet submitted a comprehensive plan to address HALEU needs, but there is increasing consensus within the U.S. nuclear community that a $300-400 million level of investment will be required to stimulate sufficient commercial interest. Therefore, ANS requests $300 million for FY2023 to support the deployment of a U.S. commercial HALEU supply chain and $60 million for the fresh HEU downblending bridge program.

High Enriched Uranium Recovery for HALEU (EBR-II) (FY2023 Recommendation: $25.75 million)

ANS recommends $25.75 million to transition EBR-II spent fuel processing operations in order to meet the increasing needs of industry.

Fuel Cycle R&D; Fuel Cycle Laboratory R&D (FY2023: Recommendation $35 million)

ANS recommends not less than $20 million for metallic fuels and $15 million for additional fuel cycle laboratory R&D.

Accident Tolerant Fuels (FY2023 Recommendation: $165 million)

ANS recommends $120 million for continued participation of the industry-led teams in the cost-shared R&D program including support for testing, code development, and licensing of ATF with higher fuel utilization. ANS also recommends $10 million to continue silicon-carbide development and $35 million for laboratory specific work in support of ATF.

TRISO Fuel and Graphite Qualification (FY2023 Recommendation: $37 million)

Versatile Test Reactor (FY2023 Recommendation: $45 million)

Currently, the only fast research reactor available is located in Russia. While the VTR may not be necessary for near-term licensing of certain advanced reactors, the Committee must recognize that a fast neutron irradiation facility remains mission critical for sustaining U.S. advanced nuclear energy in the long-term. We believe NE should use some portion of the requested funding to explore the potential cost savings of aligning VTR component fabrication with Natrium ARDP project and, in concert with the DOE Office of Science, assess opportunities for producing isotopes for which the U.S. currently relies on Russia for significant supply.

Light Water Reactor Sustainability (FY2023 Recommendation: $62 million)

ANS recommends $62 million to enable this program to accelerate LWR modernization efforts while continuing to support hydrogen demonstrations. ANS also requests that no less than $12 million be used to support new or previously awarded hydrogen demonstration projects.

Advanced SMR R&D Support (FY2023 Recommendation: $211 million)

Demonstrating the next generation of advanced light water small modular reactors will support both domestic deployment and export of U.S. technology and enable broad U.S. leadership in new technologies.

Nuclear Waste Disposal / Integrated Waste Management (FY2023 Recommendation: $53 million)

ANS supports the requested level for these programs, recognizing that DOE's authority to make progress on centralized interim storage of spent nuclear fuel is limited under current law.

Program Direction (FY2023 Recommendation: $100 million)

The management responsibilities that come with DOE NE program additions have increased substantially over the past several years while staffing levels have reduced and Program Direction funding has remained consistent. This convergence has created challenges in many areas, including contracting management and program execution. ANS recommends $100 million for FY2023 which will allow DOE NE to add experienced staff and address current staffing deficiencies.

International Nuclear Energy Cooperation (FY2023 Recommendation: $8 million)

The Office of Nuclear Energy plays a critical role in facilitating international nuclear energy cooperation. With nearly 30 countries considering nuclear energy for the first time and many others considering expanding their nuclear energy programs to meet their clean energy and energy security goals; providing the International Nuclear Energy Cooperation program with sufficient funding to meaningfully engage potential partner countries will ensure greater international adoption of U.S. advanced energy technologies.

Advanced Reactor Technologies (FY2023 Recommendation: $70 million)

The Advanced Reactor Technologies subprogram conducts essential R&D activities to reduce technical risks associated with advanced reactor technologies and systems. The subprogram R&D scope reflects input from advanced reactor stakeholders with a goal of enabling industry to mature and ultimately demonstrate advanced reactor technologies by the 2030s. ANS recommends $70 million total for the subprogram, with $16 million for the microreactor program and $20 million for the MARVEL reactor. The MARVEL reactor will support fuel acquisition and construction in FY2023. ANS also recommends $15 million for the ARC-20 program.

DOE Office of Clean Energy Demonstrations

Advanced Reactor Demonstrations (FY2023 Recommendation: $70 million)

While passage of the 2021 Infrastructure and Jobs Act provided funding for the

Advanced Reactor Demonstration Program (ARDP); the bill did not entirely fund both demonstration projects. ANS recommends an additional $70 million for continued ARDP support.

DOE Office of Science

Isotope R&D and Production Program (FY2023: $102 million)

ANS strongly supports DOE's Isotope program and its missions to produce isotopes in short supply, manage DOE inventories of stable and long-lived isotopes, and conduct research and development activities on new isotope applications in medicine and industry. In addition to isotopes produced in DOE reactors and accelerators, there are new opportunities to use DOE legacy materials, such as strontium 90 for space and undersea applications, that were once considered waste. The DOE Isotope office should have the authority and resources it needs to facilitate the beneficial commercial use of these materials.

Low-Dose Radiation Program (FY2023 Recommendation: $20 million to support low-dose radiation research activities)

Through recent congressional direction, the Department of Energy's Office of Science Biological and Environmental Research is to re-establish a research program devoted to the human health effects of low-dose radiation at a funding level of no less than $5 million. To maintain progress in FY2023, and with the imminent release of the National Academies of Sciences guidance report on the development of a long-term strategy for low-dose radiation research in the U.S., ANS recommends $20 million for the program. Expanded funding will allow for new technologies and approaches for examining biological mechanisms by which ionizing radiation produces cancer and non-cancer health outcomes, and the integration of mechanistic biological insights with epidemiological data. This funding is also needed to support interdisciplinary training and integrated cross-professional research programs devoted to understanding and quantifying radiation health effects at low doses. The program will also support education and outreach activities to disseminate information and promote public understanding of low-dose radiation.