



## **Testimony for the Record**

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**Appropriations Subcommittee on Energy and Water Development**

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The American Nuclear Society (ANS)<sup>1</sup> appreciates the thoughtful and deliberate manner in which the House Subcommittee on Energy and Water Development has historically approached nuclear-related funding and policy issues. ANS also appreciates the opportunity to provide testimony on Department of Energy (DOE) FY2021 programs to the Subcommittee.

On behalf of the over 11,000 men and women of the American Nuclear Society and the entire nuclear community we express our gratitude to the Subcommittee for past and present attention paid to our unique set of nuclear challenges: a targeted research and development program to promote sustainability of our current light water reactor fleet; a program to accelerate development and licensing of Small Modular Reactors (SMRs); research and development programs focused on the nuclear fuel cycle process, advanced reactors, developing simulation and modeling tools that have broad application across the nuclear sector; and continued federal stewardship for University-based nuclear education programs. In general, ANS continues to support the Subcommittee's work and we are hopeful the Subcommittee will continue its support for nuclear energy in FY2021.

ANS encourages Congress's continued focus on research, design, and development as well as research infrastructure investments which can help sustain the existing nuclear fleet and domestic fuel cycle operations, and the near-term deployment of new nuclear energy technologies. In addition, Congress should also continue to provide funding to meet the commitments of affected communities conducting cleanup of DOE's shutdown uranium enrichment facilities. Completing safe cleanup operations at legacy sites should also remain a key priority.

Lastly, ANS recognizes the continued political stalemate that has obstructed progress on the back-end of the fuel cycle. The U.S. must move forward and take interim storage into account when seeking remedies for facilities looking to rid themselves of their spent nuclear fuel. However, industry professionals agree that without Yucca Mountain (the permanent repository designated in the Nuclear Waste Policy Amendments Act of 1987), siting an interim storage

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<sup>1</sup> ANS works on behalf of its members to advocate for policies that advance nuclear science and technology. In Washington, D.C. and at the state level, ANS looks for opportunities to support policies that advance nuclear science in medicine, energy, education, and aerospace. ANS works in a variety of ways to encourage policies that recognize the benefits nuclear science and technology brings to our lives.

facility will be challenging. Alternative proposals have been recommended in the “Spent Fuel Storage Program” section of this testimony.

ANS has several additional recommendations related to programs under the Subcommittee’s jurisdiction we would like to bring to your attention.

### **DOE Nuclear Energy Research and Development**

#### **Request: At least \$1.89 billion for DOE Office of Nuclear Energy**

Over the past 5 years, Congress has provided significantly increased support for the U.S. nuclear research and development enterprise. This investment has enabled accelerated development of new, advanced reactor designs; a cost-shared, public-private partnership for licensing the NuScale advanced light water SMR design; new accident tolerant fuel prototypes for the current U.S. LWR fleet currently being tested; world leading modeling and simulation capabilities for current and advanced reactors; and strong support for nuclear education programs at U.S. universities.

The administration’s Budget Request for DOE proposes funding the Office of Nuclear Energy at \$1.3 billion in FY2021, a 15.6% cut from FY2020 enacted levels. In our view, the administration’s request does not appear to provide enough funding for federally-sponsored nuclear research, development, and educational activities, specifically advanced nuclear demonstration programs, reactor concepts R&D; advanced SMR support and the Versatile Test Reactor program; and nuclear energy enabling technologies.

ANS urges the Subcommittee to consider an appropriated funding level of at least \$1.89 billion for the Office of Nuclear Energy in FY2021.

ANS is also concerned that DOE funding for advanced fuel cycle R&D has been in steady decline over the last few fiscal years. The FY2020 bill initiated a National Academies study on the waste aspects of advanced reactors, however, without sufficient funding for laboratory and university-based R&D in this area, the U.S. is at risk of losing significant human capacity in this area in the near term. We encourage the Committee to ensure that it provide additional FY 2021 funds to this increasingly important area.

### **DOE Nuclear Energy University Program (NEUP)**

For the past decade, the NEUP program has served as the primary vehicle through which DOE supports nuclear energy related R&D at America’s college and universities. Administered by the DOE Office of Nuclear Energy, NEUP provides peer-reviewed, competitively-awarded grants to departments of nuclear engineering and related disciplines for mission-related R&D focused on advancing nuclear energy technologies.

While never specifically authorized or appropriated by Congress, DOE has consistently kept its commitment to dedicate approximately 20 percent of funds appropriated to its R&D programs

for “work to be performed” at U.S. colleges and universities.<sup>2</sup> In practice, DOE has awarded \$50-60 million in NEUP funding each year since FY 2009. These awards have created numerous collaborations between universities, national labs, and industry partners. They have also led to some of the most innovative advanced reactor designs being developed today.

Federal interest in providing a strong and stable funding mechanism for university based nuclear education could not be clearer. Nuclear Engineering continues to be one of the most expensive education programs to operate in a campus environment. The federal government is the single largest consumer of nuclear talent within the United States. Nuclear engineering graduates frequently move on to federal careers in government agencies, national laboratories, and the military. Their work underpins regulatory and nonproliferation agencies, ensuring the safety and security of all who use nuclear technology. Federal stewardship is vital to secure the talent pipeline for the future federal nuclear workforce.

ANS encourages appropriators to continue monitoring NEUP progress through quarterly briefings to both House and Senate Appropriations Committees mandated in last year’s appropriations legislation to ensure that DOE does not again divert NEUP funding to other programmatic areas.

#### **DOE/NRC Integrated University Program (IUP)**

**Request: \$15 million in IUP funding for the Nuclear Regulatory Commission and \$5 million for DOE Office of Nuclear Energy (unchanged from FY2020)**

ANS is extremely grateful to the Subcommittee for its continued support of the Integrated University Program. The IUP continues to provide critical support for university-based programs in nuclear engineering and related disciplines through scholarships, fellowships, and young faculty awards. The federal government, through science-centric agencies such as the National Science Foundation, has consistently provided funding for these activities in other scientific and engineering disciplines. However, NSF has consistently demonstrated an unwillingness to provide support for nuclear engineering and related fields, thus necessitating the dedicated stream of funding that the IUP provides.

Each year, OMB proposes the termination of the IUP, justifying their decision with a vague indication that NSF should provide support for nuclear engineering and technology education. We remain convinced that termination of the program would result in significant harm to the US nuclear engineering education enterprise, especially given the department’s recent cut to NEUP funding.

#### **Spent Fuel Storage Program**

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<sup>2</sup> “In FY 2009, NE will continue to support R&D activities at university and research institutions through competitive awards focused on advancing nuclear energy technologies. Through its Nuclear Energy Research Initiative process, NE will designate at least 20 percent of funds appropriated to its R&D programs for work to be performed at university and research institutions.” Source: FY 2009 DOE Congressional Budget Justification

Despite the great promise nuclear energy holds as a clean, reliable source of energy, nuclear waste management remains a vexing problem for the nation. ANS has in the past made a number of recommendations for addressing the issue, but we recognize the upcoming year is unlikely to see an end to the policy stalemate that has already existed for far too long. With an eye towards the possible, ANS has identified a number of near-term productive actions the government should take into consideration that would enable future success - without favoring or foreclosing any policy options. Those actions are outlined in the ANS Issue Brief "A Proposal for Progress on Nuclear Waste Management" which is attached along with this testimony. Enacting at least some of these measures in FY2021 appropriations would send the positive message that the government is serious about addressing its waste management responsibilities.

**DOE; Office of Science, Low Dose Radiation Research Program**

**Request: \$20 million to support Low Dose Radiation Research Program activities**

Understanding of the health effects of ionizing radiation at low doses and low dose rates is critically important for the success of a broad range of social endeavors, from medical advancements to space exploration, energy production, and advanced nuclear pioneering. Yet federally sponsored research in this area effectively ended more than a decade ago, leaving large gaps in our understanding of radiation hazards and human biological protection mechanisms.

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 funding level of no less than \$5 million for FY2020. To maintain progress in FY 2021, 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.

A sustained low dose program will benefit the regulated community through harmonization of radiation standards and alignment of regulatory approaches both domestic and international, as well as risk informed decision processes based on science.