

FY2024 Recommendations:
Senate 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 FY2024 appropriations levels for nuclear programs under the Subcommittee’s jurisdiction. The American nuclear community is grateful to the Committee for its 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, 2024, ANS recommends a minimum of **\$2.34 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

NEUP, SBIR/STTR, and TCF (FY2024 Recommendation: \$146.7 million)

ANS strongly supports the administration’s request for this category. Specifically, the NEUP program; for over a decade, NEUP 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. 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. For FY2023, ANS recommends that Congress permit DOE to set final NEUP

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>

funding amounts within its respective account line but subject the Department to a congressionally mandated “floor” of \$60 million. ANS also encourages the Subcommittee to continue monitoring NEUP progress through quarterly briefings with appropriate DOE staff.

Advanced Reactor Demonstration Program (ARDP) (FY2024 Recommendation: \$212 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 FY2024 ANS recommends \$120 million for Risk Reduction for Future Demonstrations, \$20 million split between demonstrations 1 and 2, \$55 million for NRIC, \$11 million for Regulatory Development, and \$6 million for Advanced Reactor Safeguards.

Fuel Cycle R&D; Advanced Nuclear Fuel Availability Program (FY2024 Recommendation – \$500 million)

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 large-scale federal investment will be required to stimulate sufficient commercial interest. Therefore, ANS requests \$500 million for FY2024 to further support the deployment of a U.S. commercial HALEU supply chain and a fresh HEU downblending bridge program.

Fuel Cycle R&D; Fuel Cycle Core R&D (FY2024: Recommendation \$29 million)

ANS recommends not less than \$20 million for metallic fuels and \$9 million for additional fuel cycle laboratory R&D.

Accident Tolerant Fuels (FY2024 Recommendation: \$151 million)

ANS recommends \$136 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 \$15 million for work on ceramic cladding fuel.

TRISO Fuel and Graphite Qualification (FY2024 Recommendation: \$25 million)

Light Water Reactor Sustainability (FY2024 Recommendation: \$45 million)

ANS supports increased funding to accelerate LWR modernization efforts while continuing to support hydrogen demonstrations. ANS also requests that no less than \$4 million be used to support new or previously awarded hydrogen demonstration projects.

Advanced SMR R&D Support (FY2024 Recommendation: \$165 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 (FY2024 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.

Used Nuclear Fuel Disposition R&D (FY2024 Recommendation: \$46.9 million)

INL Facilities Operations & Maintenance (FY2024 Recommendation: \$318.9 million)

Program Direction (FY2024 Recommendation: \$85.5 million)

The management responsibilities that come with DOE NE program additions have increased substantially over the past several years while staffing levels have reduced. This convergence has created challenges in many areas, including contracting management and program execution. ANS recommends \$85.5 million for FY2024 which will allow DOE NE to continue adding experienced staff while addressing current staffing deficiencies.

International Nuclear Energy Cooperation (FY2024 Recommendation: \$13 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 (FY2024 Recommendation: \$49 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 \$49 million total for the subprogram.

CHIPS Act Provisions (FY2024 Recommendation: \$190 million)

ANS supports authorization level funding for the National Nuclear University Research Infrastructure Reinvestment provision (Subtitle L) within the recently passed CHIPS and Science Act to upgrade university infrastructure and assist with the commercialization advanced reactors. For FY2024, ANS recommends \$55 million for Section 10743, \$45 million for section 10744, and \$15 million for section 10745. ANS also recommends an additional \$75 million for the CHIPS and Science Act Fission for the Future provision (Subtitle P – Section 10781).

Nuclear Regulatory Commission (FY24 Recommendations: \$25 million for Advanced Reactor Regulatory Infrastructure, \$20 million for University Leadership Program, and \$19 million for Office of International Programs)

The Committee should emphasize that the NRC has a direct impact on the nation's ability to meet clean energy and national security goals and ensure an affordable energy supply, and the NRC should act with urgency in ensuring that the regulation of nuclear activities is efficient and does not unnecessarily limit the potential of nuclear technology to maximize its contribution to the benefit of society.

*****Civil Nuclear Enrichment Program Proposal Supplemental (FY2024 Recommendation: \$300 million)**

The U.S. reactor fleet currently obtains about 20% of its enriched uranium from Russia. The U.S. nuclear energy industry is committed to ceasing reliance on Russian enriched uranium. ANS encourages the Committee to work with the authorizing committees to provide supplemental funding for new programs to increase LEU enrichment capacity and increase diversity of supply.

DOE Office of Science

Isotope R&D and Production Program (FY2024: \$142.6 million)

ANS strongly supports the President's request for 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. 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 (FY2024 Recommendation: \$20 million to support low-dose radiation research activities)

To maintain progress on this important program in FY2024, and with the 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. This amount 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.

Fusion Energy Sciences Program (FY2024 Recommendation: \$1.043 billion)

ANS extremely appreciates the President's Request for the Fusion Energy Sciences Program. It certainly is a significant step in the right direction for U.S. fusion energy R&D. ANS's request for this program is consistent with full funding levels authorized in the bipartisan CHIPS and Science Act. These funding levels are also consistent with the findings and recommendations of two significant reports released in February 2021 by the Fusion Energy Sciences Advisory Committee and the National Academies that represented a broad community consensus on the next steps necessary for fusion research to achieve the ultimate goal of a commercially viable power plant.

Fusion Energy Sciences Program; Public-Private Partnerships; Milestone-Based Program (FY2024 Recommendation: \$135 million)

In recent years, several new small and mid-sized start-up companies have emerged proposing fusion energy device configurations which, if successful, could dramatically accelerate the development and deployment of commercial fusion reactors. However, none of these are expected to ultimately scale up to a commercial, competitive reactor without more substantial federal support in the research, development, and demonstration phases. To better support this emerging industry, a program that would provide federal funding to private companies upon confirmation of the achievement of agreed-upon technical milestones was authorized. DOE formally launched the milestone program for fusion on September 22, 2022, and it is already significantly oversubscribed. Given the breadth, growth, and the technical accomplishments of private sector fusion ventures over the last several years, this program warrants far greater support than has been provided to date.

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