U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT
SUBCOMMITTEE ON ENERGY

HEARING CHARTER

Judicious Spending to Enable Success at the Office of Nuclear Energy

Thursday, October 21, 2021
10:00 a.m. EDT
Zoom

PURPOSE

The purpose of this hearing is to discuss several financial assistance awards made recently by the Department of Energy's Office of Nuclear Energy on a non-competitive basis. The Members and Witnesses will discuss best practices and principles for financial assistance agreements and contracting, including maximizing competition, limiting risk to the taxpayer, and informing spending decisions with technical and market analysis and documentation. The hearing will also seek to understand priorities of the Office of Nuclear Energy and discuss steps taken to date to carry out the relevant directions and authorizations provided in the Energy Act of 2020.

WITNESSES

- **Dr. Katy Huff,** Acting Assistant Secretary, Office of Nuclear Energy, U.S. Department of Energy
- **Ms. Amy Roma,** Founding Member, Nuclear Energy and National Security Coalition, Atlantic Council and Partner, Hogan Lovells US LLP
- **Dr. Todd Allen,** Director, Michigan Memorial Phoenix Project and Glenn F. and Gladys H. Knoll Department Chair of Nuclear Engineering and Radiological Sciences, University of Michigan
- **Mr. Scott Amey,** General Counsel and Executive Editorial Director, Project on Government Oversight

BACKGROUND

General Information on Office of Nuclear Energy

The mission of the Office of Nuclear Energy (NE) is to advance nuclear energy science and technology to meet U.S. energy, environmental, and economic needs.[1] NE is tasked with research, development, demonstration, and commercial application of innovations to support existing nuclear power plants and to enable new civilian reactor designs, among other supporting

[1] https://www.energy.gov/ne/about-us

areas, such as fuel cycle and advanced fuel technologies research. In recent years, NE's budget has been on a steady upward trend; the current FY21 level ($1.51 billion)[2] is nearly double the FY15 level ($833 million)[3]. The FY22 budget request for the office is $1.85 billion.[4] Historically, much of the critical nuclear energy research supported by the office has been carried out at Department of Energy (DOE) national laboratories. In recent years, there has been a large shift in efforts to further involve academic and industrial entities in the activities of NE. One example of this is the Advanced Reactor Demonstration Program (ARDP), which is a cost-shared public private partnership program that awarded grants following merit-based competitions with the ultimate goal of demonstrating advanced reactor technologies.[5] Another example is the development of the Versatile Test Reactor, which is a research reactor that will be capable of performing unique irradiation testing that is currently unavailable worldwide.[6] This type of testing is needed to help qualify materials required in advanced reactors. Beyond specific projects, NE has also stood up novel programs that increase the participation of varying entities to help enable innovation, such as the Gateway for Accelerated Innovation in Nuclear program, or GAIN, as well as the National Reactor Innovation Center, or NRIC. Both of these programs are designed to accelerate the development of nuclear energy technologies, with GAIN focusing on the beginning stages of technology development and NRIC focusing on the later stages.

Recent Non-Competitive Spending

May 2019 award to Centrus LLC

High-assay, low-enriched uranium (HALEU) is a nuclear reactor fuel that has been enriched to concentrations of 5-20% of Uranium-235, with the remainder consisting of Uranium-238. It is manufactured either by enriching lower concentrations, including U-235 found naturally in the earth, or by down-blending higher concentrations that may have originally been created for weapons or other purposes. HALEU is expected to be required for nearly all of the proposed advanced civilian reactor designs being developed today.[7]

On January 7, 2019, NE issued a Notice of Intent to award a no-bid contract to Centrus LLC to demonstrate production of HALEU at an enrichment facility in southern Ohio. On May 31, 2019, the Department formally noticed a contract for $115 million over three years to achieve this demonstration by June of 2022.[8]

In the Justification for Other than Full and Open Competition (JOFOC) that accompanied the announcement, DOE cited authority 6.302-1: Only one responsible source and no other supplies or services will satisfy agency requirements.[9] DOE argued that Centrus was the only firm qualified to perform the demonstration because it is U.S.-owned and controlled, and thus would

[2] https://www.energy.gov/sites/default/files/2021-06/doe-fy2022-budget-volume-3.2-v3.pdf
[3] https://www.energy.gov/sites/default/files/2015/02/f19/FY2016BudgetVolume3_7.pdf
[4] https://www.energy.gov/sites/default/files/2021-06/doe-fy2022-budget-volume-3.2-v3.pdf
[5] https://www.energy.gov/ne/advanced-reactor-demonstration-program
[6] https://www.energy.gov/ne/versatile-test-reactor
[7] NuScale's reactor designs do not require HALEU.
[8] https://science.house.gov/imo/media/doc/11.13.19%20DOE%20HALEU%20.pdf
[9] https://sam.gov/opp/f2ea2ab3c8258c1c1a77503c889ab6a3/view?keywords=high-assay&sort=-relevance&index=&is_active=true&page=1

allow for HALEU produced to be used in "defense-related" applications. In conversations with Science Committee staff, DOE referred to a policy limitation in the 1992 Treaty of Washington as justification for this restriction. However, DOE did not provide any direct reference to the Treaty in the JOFOC, nor did it articulate an argument for why NE would restrict competition in order to provide for defense applications, which are the responsibility of the Department of Defense (DOD) and DOE's National Nuclear Security Administration (NNSA). Neither DOD nor NNSA contributed funds to the Centrus award. Further, at least one foreign-owned, domestically-operated enrichment services company might have been in a position to compete for the contract if not for the restriction DOE issued to require a U.S.-owned firm for the contract.

Section 988(c) of the Energy Policy Act of 2005 requires no less than a 50% cost share from non-federal sources for DOE demonstration projects. For the Centrus LLC contract, then-Secretary of Energy Dan Brouillette waived that requirement, thus making NE responsible for up to 80% of project costs. In addition, DOE did not request appropriations in FY19 for a demonstration of HALEU production, and accordingly Congress did not allocate funds for this project that fiscal year. In order to gather the funds needed for the Centrus award, DOE withdrew $23 million from the Nuclear Engineering University Program (NEUP) – nearly one-third of its budget – in the middle of its funding cycle. The Nuclear Energy Department Heads Organization (NEDHO) wrote to then-Secretary Brouillette on February 1, 2019 describing this withdrawal as a significant hardship for university nuclear engineering programs.

Chairwoman Johnson and Ranking Member Lucas wrote to DOE in November 2019 articulating these concerns and seeking further information.[10] DOE responded in January 2020.

October 2020 award to CFPP LLC

NuScale Power is a private company headquartered in Oregon that develops small modular reactors (SMRs) for power generation. With bipartisan support from Congress, NE has been a partner to NuScale in its efforts to commercialize its design over the past decade, beginning in 2013 with a $224.5 million financial assistance award for research and development.

In 2015, Utah Associated Municipal Power Systems (UAMPS), a coalition of 46 community-owned power systems, formally launched the Carbon Free Power Project (CFPP) to develop NuScale SMRs for power production within their service territory. This project was to be the world's first demonstration of an advanced reactor. In December 2018, DOE announced a Memorandum of Understanding with UAMPS and Battelle Energy Alliance which described DOE's intent to support the CFPP and to make one of the twelve planned reactor modules available to Idaho National Laboratory for the Joint Use Modular Plant (JUMP) research and demonstration program. By December 2019, UAMPS had subscribed 200 megawatts (MW) of offtakers from among its 46 Members to the CFPP, which was planned to be twelve 60 MW

[10] https://science.house.gov/news/press-releases/committee-members-seek-answers-from-doe-on-sole-source-award-for-production-of-high-assay-low-enriched-uranium

units (for a total of 720 MW). In August 2020, the Nuclear Regulatory Commission (NRC) issued a design certification for NuScale's 50 MW SMR design.[11]

On October 16, 2020, NE finalized a non-competitive cooperative agreement with CFPP LLC to provide $1.355 billion in NE funds over ten years, subject to appropriations, to support commercial development of the CFPP.[12,13] $1.355 billion represents roughly one fiscal year's budget for the entirety of NE. The award was made two weeks before the October 31, 2020 "off ramp" date by which CFPP utility partners would have to secure financial commitments from their local city councils to remain project participants.

In the summer of 2020, DOE eliminated the JUMP program and rededicated the twelfth module to regular electricity production to be sold to UAMPS utilities.[14] The FY2020 Energy & Water Development Conference Report had allocated $10 million specifically for JUMP.[15]

As of October 2020, CFPP was slated to begin construction in 2023, with an anticipated completion date of 2029 and a levelized cost of electricity (LCOE) target of $55/megawatt-hour. In its justification for the non-competitive agreement, DOE argued that it knew of "no other entity which is conducting or is planning to conduct such an activity." However, several companies had recently submitted proposals to DOE for commercializing an advanced reactor by 2027 as part of the ARDP, many of which were small modular reactors, and two meritorious companies were awarded funds toward those efforts in September 2020, just a few weeks before the non-competitive award to CFPP LLC.

DOE is front-loading the cost share over the 10-year award tenure such that CFPP LLC bears a lower proportion of overall project costs in the earlier years of the project. DOE is slated to contribute 22.5% of total project costs over 10 years, but has agreed to cover up to 80% of annual project costs over the first three years.

About three weeks after DOE's award to CFPP LLC was announced, NuScale announced that it would be uprating its reactor design from 60 MW to 77 MW, and UAMPS announced that the CFPP would deploy only six of these 77 MW units, rather than the originally-planned twelve. The new reactor size will trigger the need for further safety evaluation and an updated design certification from the NRC. As of October 2021, DOE and CFPP LLC are in the process of negotiating the financial assistance agreement to reflect the changing project scope and its effects on both cost and timelines.

September 2021 award to Exelon

On January 12, 2021, NE signed a Determination of Non-competitive Financial Assistance (DNFA) for a non-competitive cooperative agreement with Exelon. The award will give $50

[11] https://www.nrc.gov/docs/ML2023/ML20231A804.pdf
[12] https://www.energy.gov/ne/articles/doe-approves-award-carbon-free-power-project
[13] 41df5556-8f47-47c3-af10-d3665271fd20 (uamps.com)
[14] https://www.losalamosnm.us/government/departments/utilities/energy_resources/CFPP/july_21_c_f_p_p_virtual_meeting
[15] HR083.PS (congress.gov) Page 100

million in DOE funds over 5 years to develop, demonstrate, upgrade, and modernize the instrumentation and controls at the Limerick Generating Station in Pennsylvania.[16] On February 25, DOE approved Exelon to begin incurring at-risk expenses on the project, called the Nuclear Industry Safety System Digital Upgrade. On September 30, DOE finalized the contract with Exelon to execute the agreement. The overall project cost is $92 million, thus making the cost share 54% federal. In the DNFA, DOE argued that the project is both a research activity and a demonstration and as such, the Upgrade does not require a waiver to satisfy 50-50 cost share requirements as required in Section 988 of EPAct of 2005. DOE acknowledged that the safety system design of the Limerick station is representative of other Boiling Water Reactors (BWRs) in the industry, which ensures that the lessons learned from the Upgrade are applicable at a minimum to other BWR operators, but also suggests that other BWRs in the United States could have competed for the award. DOE also pointed to a time pressure factor in making this award, arguing that competing the award would have made it impossible to meet the facility outages that were already planned for the Limerick reactors in 2025 and 2026.

Laws, Regulations, Guidelines, and Best Practices for DOE Spending

- **Regarding cost share:** Section 988(c) of the Energy Policy Act of 2005 requires no less than a 50% cost share from non-federal sources for DOE demonstration projects. Research and development projects must meet a 20% non-federal cost share. There is no statutory definition of what distinguishes "research and development" activities from "demonstration," although DOE Financial Assistance Rules do include a definition for research and development.[17]

- **Regarding DOE contracts:** All DOE contracts follow the government-wide Federal Acquisition Regulations (FAR). The FAR notes that "[c]ontracting without providing for full and open competition or full and open competition after exclusion of sources is a violation of statute, unless permitted by one of the exceptions in 6.302."[18] It articulates seven discrete statutory authorities under which noncompetitive contracting may be justified. It also requires that agencies gather special approvals and a written justification, a Justification for Other than Full and Open Competition (JOFOC), when offering contracts on a non-competitive basis.

- **Regarding DOE grants, cooperative agreements, and technology investment agreements:** There is no government-wide regulatory equivalent to the FAR for these types of federal expenditures. Instead, the Office of Management and Budget (OMB) issues guidance to Federal agencies on government-wide policies and procedures for the award and administration of grants, agreements, and regulations to implement those guidelines.[19] Agencies then prepare their own policies and regulations for grantmaking that are expected to satisfy the guidelines, OMB regulations, and other applicable laws.

[16] Award number DE-NE0009042
[17] https://www.law.cornell.edu/cfr/text/10/600.3
[18] https://www.acquisition.gov/far/6.301
[19] 2 CRF, Grants and Agreements. Available at https://www.ecfr.gov/current/title-2/subtitle-A/part-1

DOE's agency-specific Financial Assistance Rules can be found at 10 CFR 600.[20] They specify conditions under which DOE may authorize a "deviation" from normal grantmaking conditions. In addition, DOE's lengthier Guide to Financial Assistance notes that it is DOE policy to use competition in the award of grants and cooperative agreements to the maximum extent feasible."[21]

Relevant Nuclear Energy Legislation

Nuclear Energy Innovation Capabilities Act

This bill led by Energy Subcommittee Ranking Member Weber and Chairwoman Johnson provided significant authorization for NE. It included general authorization for nuclear energy research, development, demonstration, and commercial application activities supported by the office, and also authorized the establishment of a Versatile Test Reactor as well as the National Reactor Innovation Center, among other activities. The bill became law in September 2018.

Nuclear Energy Research and Development Act and the Energy Act of 2020

Prior Energy Subcommittee Chairman Lamb led the Nuclear Energy Research and Development Act which ultimately became law as part of the Energy Act of 2020 in December 2020. This bill updated and expanded upon the nuclear energy authorization in statute from the Nuclear Energy Innovation Capabilities Act and the Energy Policy Act of 2005. It authorized research, development, demonstration, and commercial application programs that would assist both the existing fleet of nuclear reactors as well as advanced nuclear reactor development. It authorized the ARDP, a HALEU program, used nuclear fuel research, and a suite of nuclear educational research and development programs, among other activities.

National Nuclear University Research Infrastructure Reinvestment Act of 2021

Rep. Gonzalez introduced this bill with Rep. Casten, Rep. Meijer, and Rep. Foster in July 2021. The bill establishes two initiatives which build off of Committee-led university reactor legislation authorized in the Energy Act of 2020. The first would provide additional authorization that would promote collaboration between research reactors and relevant users and entities, as well as upgrade existing research reactor facilities. The second initiative is focused on building new facilities and reactors to help advance nuclear energy technologies.

[20] https://www.law.cornell.edu/cfr/text/10/600.1

[21] https://www.energy.gov/sites/default/files/2021-07/FA%20GUIDE%20SEPT%202020_0.pdf