Congress of the United States

Washington, DC 20510

February 4, 2022

The Honorable Gene L. Dodaro
Comptroller General
US Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Dodaro:

We request that the US Government Accountability Office (GAO) undertake a review to assess the Nuclear Regulatory Commission's (NRC) preparedness to review and approve applications for advanced nuclear reactor designs.

Advanced nuclear reactor designs are expected to be smaller, safer, and more economically competitive than the Light Water Reactor (LWR) technology currently used by today's operating reactors. The designs are expected to generate electricity in a more flexible system, could generate heat to be used for non-electric purposes, and will utilize different fuel forms and coolants, which will allow reactors to run longer between refueling outages. Congress has consistently provided bipartisan support—both funding and authorizing specific advanced nuclear programs—to develop and deploy these advanced nuclear reactors.

The *Energy Act of 2020*, enacted under Division Z of the *Consolidated Appropriations Act of 2021*,[1] established the Department of Energy's (DOE) Advanced Reactor Demonstration Program (ARDP) to demonstrate a variety of advanced nuclear reactor technologies. The bill set an ambitious, but achievable goal to demonstrate these technologies within seven years. Meeting that target will require that all stakeholders—the ARDP awardees, DOE, NRC, and other project partners—advance swiftly through the project development and regulatory milestones. The recently enacted *Infrastructure Investment and Jobs Act*[2] appropriated nearly $2.5 billion in taxpayer money to cover DOE's share of the project's funding.

Beyond the two companies selected to receive the primary ARDP awards, innovative nuclear businesses are moving forward on their own initiative and are engaged in regulatory discussions with NRC. On November 30, 2021, NRC accepted an application to construct a unique test reactor in Tennessee—a major step to demonstrating nuclear technology for commercial use.[3]

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[1] P.L. 116-260.
[2] P.L. 117-58.
[3] *NRC—Kairos Power, LLC*, 86 Fed. Reg. 68,290 (Dec. 1, 2021), https://www.federalregister.gov/documents/2021/12/01/2021-26119/kairos-power-llc.

NRC is working with multiple other companies in pre-application reviews to reach a shared understanding of regulatory issues prior to the formal licensing process.[4]

To realize the environmental, economic, and national security benefits of these advanced nuclear technologies, NRC must be prepared to license and oversee the development and deployment of the designs.

Congress passed the *Nuclear Energy Innovation and Modernization Act* (NEIMA) in December 2018 with overwhelming bipartisan support.[5] The bill directs NRC to develop the regulatory framework to license and oversee advanced reactor technologies no later than December 31, 2027. At the direction of the Commission, NRC staff is diligently working to complete that framework, known as "Part 53," on an accelerated schedule.[6] To meet the ARDP goals, as well as successfully enable other first movers, applicants must utilize NRC's existing nuclear safety regulations. These existing regulations are designed for LWR technologies.

The existing regulations, known as "Part 50" or "Part 52," have notably different structures.[7] The Part 50 license is a two-step process—first, NRC issues a construction permit, which authorizes the company to begin building their reactor. Second, prior to the reactor coming online, the licensee must receive a separate license—known as an operating license. All reactors currently operating in the United States have been licensed under this two-step process. Concerns about uncertainty with the two-step process led to the creation of a new, single-step licensing process. The Commission approves a single combined operating license (COL) under this licensing framework—what is known as "Part 52." The COL authorizes the licensee to build and operate a new reactor, conditioned on the licensee meeting all terms and conditions of required by the COL.

In addition to the Part 50 and Part 52 regulations, applicants and NRC staff may utilize other tools embedded in the licensing process. For example, applicants can submit what are known as "topical reports" as part of an applicant's initial engagement—prior to formally submitting a license. NRC staff will review and, if appropriate, approve those topical reports. Topical reports are a means to establish regulatory clarity with respect to certain novel licensing issues. NRC states that these pre-application discussions are critically important to ensuring a successful engagement on licensing issues.[8]

First movers for advanced nuclear technologies must be capable of navigating these existing regulations. Recent NRC actions concerning certain licensing activities raise questions about the agency's capability to manage effectively first-mover applications for new, advanced

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[4] NRC, *Nuclear Reactors—New Reactors—Advanced Reactors (non-LWR design)*, https://www.nrc.gov/reactors/new-reactors/advanced/ongoing-licensing-activities/pre-application-activities.html.
[5] P.L. 115-439.
[6] NRC, *Part 53 – Risk Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors*, https://www.nrc.gov/reactors/new-reactors/advanced/rulemaking-and-guidance/part-53.html.
[7] "Part 50" and "Part 52" references the portion of Title 10 of the Code of the Federal Regulations (CFR) containing the respective regulations.
[8] NRC, *Best Practices and Lessons Learned from Review of the Clinch River Nuclear Site Early Site Permit Application* (2021), https://www.nrc.gov/docs/ML1919/ML19190A078.pdf.

technologies.[9] In a 2019 report to Congress, NRC stated it is "fully capable of reviewing and making safety, security, or environmental findings on an advanced reactor design if an application were to be submitted today."[10] The same report acknowledges that "the efficiency of existing processes and requirements could be improved."[11] Similarly, NRC staff issued a draft white paper on licensing strategies for micro-reactors that stated it will "leverage flexibilities in existing regulations and identify options for changes to regulatory requirements that could provide additional flexibilities," as allowed by Commission policy and the law.[12] In light of NRC's recent actions, we seek to understand if and how those improvements are being pursued and how NRC staff, in communication with the license applicant, will leverage existing flexibilities.

To assist our understanding of NRC's preparedness to review and approve license applications for advanced nuclear technologies, we ask that you address the following questions:

1. What steps has NRC completed in its preparations to review and approve applications to license advanced reactor technologies?

2. How is NRC assessing various organizational approaches to establish the most effective structure to review those applications efficiently?

3. What innovative and flexible regulatory approaches are being implemented to review forthcoming applications?

4. How is NRC staff working with license applicants during the pre-application and initial license review phases and communicating key issues in order to establish a predictable schedule with clear, achievable milestones?

5. How is NRC staff engaging with the Advisory Committee on Reactor Safeguards to address and resolve evolving novel issues?

6. What organizational approaches have other governmental agencies successfully used to review and approve the use of new technologies that NRC could adopt to review and approve forthcoming applications?

Thank you for your prompt attention to this request.

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[9] Letter from NRC to Dr. Jacob DeWitte, Oklo, Inc. on Oklo Power LLC – Denial of the Aurora Combined Operating License Application for Failure to Supply Information (January 6, 2022), https://www.nrc.gov/docs/ML2014/ML20149K616.pdf.

[10] NRC, Report to Congress, *Increasing the Use of Risk-Informed and Performance-Based Evaluation Techniques and Regulatory Guidance in Licensing Commercial Advanced Nuclear Reactors* 3 (2019), https://www.nrc.gov/docs/ML1912/ML19128A324.pdf.

[11] *Id.*

[12] NRC, *Micro-reactors Licensing Strategies* (2021), https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21235A418.

Sincerely,

Shelley Moore Capito
United States Senator
Ranking Member
Committee on Environment
and Public Works

Cathy McMorris Rodgers
Member of Congress
Ranking Member
Committee on Energy and Commerce