U.S. House of Representatives

Committee on Energy and Commerce

Subcommittee on Energy, Climate, and Grid Security

Hearing Entitled:

American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment

July 18, 2023

Questions for the Record for Ted Nordhaus

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I would like to express my gratitude once again for the opportunity to share my insights and perspectives during the American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment hearing on July 18, 2023. I am equally appreciative of the chance to address the follow-up questions posed by The Honorable Jeff Duncan and The Honorable Rick W. Allen. Your attention to these crucial matters is greatly appreciated

The Honorable Jeff Duncan

1. As you reflect on the discussion at the hearing, please provide any additional comments you believe would be useful for improving the proposed legislation or our broader work to improve NRC licensing and oversight of existing and advanced reactors?

Response

One of the major topics that the hearing focused on was staffing at the NRC. While it is almost certainly the case that the NRC will need more staff in order to successfully license the significant number of expected applications as advanced nuclear technologies are commercialized, increasing staffing and salaries without fixing the NRC's broken and highly inefficient licensing practices is unlikely to solve the problem. In order for efforts to recruit and retain staff to bear fruit, the NRC bureaucracy will need to be reformed in order to be much more efficient.

Two specific areas that I would flag as priorities are **NRC mission modernization** and **aligning the NRC's risk paradigm with other federal agencies**. The NRC has interpreted its mandate narrowly. The Atomic Energy Act directs the Atomic Energy Commission, and therefore, its successor institution the NRC, to take into consideration a multitude of factors in its decisions. Congress needs to re-establish, in no uncertain terms, that the NRC has a broad mandate to assure secure and reliable energy and protect public health and environment beyond a narrowly defined focus on safe operations at the plant level. The draft NRC Mission Alignment Act would represent an important step in this direction. Second, the NRC's public health standards are not grounded in epidemiologically observable metrics and are far more conservative than other federal agencies and should be aligned with public health standards at EPA and other federal agencies tasked with safeguarding the nation's public health.

2. I'd like to help restore an NRC culture of achievement that, of course, assures adequate safety for the public but with a broader measure on the benefits of nuclear.
    a. What potential legislative or oversight actions might we consider helping develop at NRC a culture of achievement, in keeping with the Atomic Energy Act goals?

Response

The NRC is an agency in transition. Since its inception, it has regulated a technology, large water cooled reactors, that had already been commercialized and a fleet of reactors that had already been licensed and had largely already been built. At the same time, a large portion of the NRC's workforce is beyond retirement age.[1] As a result, agency surveys on the NRC's culture, find that while the "NRC maintains a few strengths compared to external benchmarks, results have declined significantly in a number of areas."[2]

In order to meet the challenges of the present and the needs of the new advanced nuclear sector, the NRC will need to adapt in order to meet the moment. Reestablishing a culture of achievement at the NRC will require getting back to basics: reestablishing the goals of the Atomic Energy Act to enable the safe use of civilian nuclear power, protect the environment, and improve the general welfare and setting clear goals and establishing performance metrics that align with the goals of the AEA.

Congress can assist the NRC in accomplishing this by providing direction, resources and oversight. As noted above, Congress should clearly reestablish that the NRC's mission is to advance the national interest and that mandate requires consideration of the benefits of nuclear energy. Congress should insist that the NRC establish an efficient, risk-informed, performance based framework for licensing advanced reactors. It should then provide the resources required to achieve the goals and the oversight to ensure the agency is meeting or exceeding those goals consistently.

The Honorable Rick W. Allen

1. The discussion draft for the Nuclear Licensing Efficient Act includes a provision that would amend the Nuclear Energy Innovation and Modernization Act (NEIMA) to require the NRC to review, assess, and revise, as appropriate, licensing performance metrics and milestone schedules required under the NEIMA to provide the most efficient performance metrics and milestone schedules reasonably achievable.
    a. Could you each explain what implications this could have for the industry, and how this goal of providing the most efficient performance metrics and milestone schedules could best be achieved?

Response

[1] Study of Retirement Eligibles, April 6, 2021, https://www.nrc.gov/docs/ML2109/ML21095A071.pdf

[2] NRC Office of the Inspector General Safety Culture and Climate Survey, July 29, 2020, https://www.oversight.gov/sites/default/files/oig-reports/OIG-20-A-14-NRC%20Office%20of%20the%20Inspector%20General%20Safety%20Culture%20and%20Climate%20Survey%28BXK%29.pdf

The diversity of nuclear energy technology and applications for that technology is increasing dramatically. The NRC needs to modernize to efficiently and effectively regulate these new designs. With such a dramatic shift, it is necessary to ensure that the NRC is meeting the expectations of Congress, the public, and other stakeholders. It is difficult to track the NRC's progress with the current absence of clear performance metrics.

The performance metrics and milestones section in the draft Nuclear Licensing Efficiency Act reduces the buffer before reporting to Congress after missing a milestone from 180 days to 90 days and also requires the NRC to update those generic milestones every 3 years to provide milestones that are reasonably achievable.

The NRC provided generic milestones and timelines, as required by NEIMA.[3] However, the generic timelines don't reflect Congressional intent to enable innovation and commercialization of new technologies. Experience has already shown that the metrics are overly cautious. The NRC estimated a 22-month review schedule for the Kairos Hermes reactor construction permit application,[4] compared to the generic timeline of 36 months. The generic schedule does not differentiate between LWR vs. non-LWR, or power reactor vs. non-power reactor. Generic timelines should be periodically reevaluates as experience is gained.

Reducing the timeline to report to the relevant congressional committees is reasonable. As experience is gained over time the uncertainty related to review timelines should be reduced and the NRC should become more confident in review schedules.

[3] Generic Milestone Schedules of Requested Activities of the Commission, https://www.nrc.gov/about-nrc/generic-schedules.html

[4] Kairos Power, LLC - Hermes Test Reactor Construction Permit Application Review Schedule and Resource Estimate, December 15, 2021, https://www.nrc.gov/docs/ML2134/ML21343A214.pdf