

WRITTEN STATEMENT  
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UNITED STATES NUCLEAR REGULATORY COMMISSION  
TO THE  
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS  
JANUARY 15, 2020

Good morning Chairman Barrasso, Ranking Member Carper, and distinguished members of the Committee. I appreciate the opportunity to appear this morning with Deputy Chief Financial Officer Ben Ficks to testify on the U.S. Nuclear Regulatory Commission's (NRC) activities and progress implementing the Nuclear Energy Innovation and Modernization Act, or NEIMA.

My testimony will describe how the NRC is ensuring timely implementation of the Act's requirements as well as provide to you an update on the agency's progress towards implementing various sections of NEIMA. Mr. Ficks will cover the budget-related sections of NEIMA.

The NRC has made significant progress in implementing the provisions in NEIMA.

To date, the NRC has submitted 9 of the reports required by NEIMA to Congress since April 2019, in addition to completing other actions pursuant to NEIMA provisions. We have also undertaken significant efforts to implement the advanced-reactor-related provisions in NEIMA, including the requirement to develop a rulemaking for a "technology-inclusive regulatory framework."

### Section 103: Advanced Nuclear Reactor Program

NEIMA directs the NRC to establish performance metrics and milestone schedules and to accelerate planned activities in the areas of advanced reactors and research and test reactors licensing, while soliciting input from the Department of Energy (DOE), reactor developers, and other stakeholders. The NRC has been preparing for the licensing of advanced reactors for several years and is ready to review potential near-term applications, the first of which is anticipated to be submitted this month. As part of our preparation, the NRC staff has been holding periodic public meetings with the advanced reactor community since 2016. The NRC has also issued its vision and strategy for preparing to license non-light-water reactor designs. These activities built upon the progress the agency has made for light-water small modular reactors, Generation III+ designs such as the AP1000 reactors, and previous advanced reactor activities, including our cooperation with DOE on the Next Generation Nuclear Plant Project. In addition, the NRC has completed several “staged licensing” procedural activities, including the issuance in December 2017 of the guidance document, “A Regulatory Review Roadmap for Non-Light Water Reactors,” which provides details of the options available to developers of new reactors to navigate the regulatory review process.

NEIMA also requires the NRC to develop and implement strategies to increase the use of risk-informed licensing within the existing regulatory framework and to complete a rulemaking to establish a technology-inclusive regulatory framework for advanced reactors. The NRC staff’s interaction with the Licensing Modernization Project, a DOE cost-shared initiative led by Southern Company and coordinated by the Nuclear Energy Institute, resulted in the NRC’s issuance of a draft regulatory guide proposing to endorse industry guidance for advanced reactor licensing. The agency is also interacting with the industry on another DOE-supported project to ensure that potential future applications for advanced reactors would focus on the

most risk-significant aspects of advanced reactor designs. These activities provide a foundation for the rulemaking to establish a technology-inclusive regulatory framework for advanced reactors.

The NRC is using risk-informed, performance-based techniques and guidance for the resolution of numerous policy issues regarding new reactors, including those specifically mentioned in NEIMA. Examples include the Commission's approval of the use of more realistic approaches to estimate potential radiological consequences for new reactor technologies, a methodology to define containment performance criteria, and, for the Early Site Permit for the Tennessee Valley Authority's Clinch River site, a dose-based, consequence-oriented methodology for determining the appropriate size of the emergency planning zone at the site.

Regarding research and test reactors, the NRC is able to license these reactors under existing regulations, including prototype or demonstration plants. As required by NEIMA, the necessary guidance to implement the licensing process for new research and test reactors will be in place by January 2021.

The NRC is addressing the issue of staff training and expertise identified in NEIMA through an action plan for staff development and knowledge management. The NRC has completed many activities under this plan, including staff training on various advanced reactor technologies, and continues to assess the need for additional training and hiring. The NRC has also established agreements with DOE to share technical expertise and knowledge. The NRC is interacting with both DOE and the U.S. Department of Defense on matters related to the development and possible deployment of micro-reactors.

#### Section 104: Baffle-Former Bolt Guidance

Last April, the NRC submitted a report to Congress concluding that further revision to the industry Baffle-Former Bolt (BFB) Guidance is not necessary. The staff has verified that licensees are properly implementing the industry guidance and that corrective actions appear to be effective. Since the submission of the April 2019 report, subsequent baffle-former bolt examinations have been completed at most of the high-susceptibility plants. The observed baffle-former bolt cracking raised no immediate safety concern. Baffle-former assemblies are constructed with a significant amount of structural margin and can maintain structural integrity despite the failure of a large number of bolts. The follow-up examinations found a large number of degraded original bolts in only one of the seven high-susceptibility plants, Salem Unit 1 in New Jersey. In light of this new operating experience, the NRC staff continues to monitor the issue and licensee corrective actions through its inspection program and through its continued engagement with the industry. The NRC will continue to evaluate the need for further revisions to industry guidance for BFB examinations.

#### Section 105: Evacuation Report

On July 12, 2019, the NRC submitted a report to Congress on the actions NRC has taken to consider lessons learned regarding evacuations in densely populated areas since September 11, 2001, and during other recent natural disasters. In developing this report, NRC consulted with experts in analyzing human behavior and probable responses to a radiological incident: State emergency planning officials and the Federal Radiological Preparedness Coordinating Committee chaired by FEMA. The report concludes that the NRC's approach to evacuations as part of the NRC's emergency planning programs for currently operating power reactors remains valid, and that the NRC's understanding of evacuations can help risk-inform future power reactor emergency planning programs.

### Section 106: Encouraging Private Investment in Research and Test Reactors

NEIMA amended the Atomic Energy Act (AEA) to include criteria for whether a utilization facility is licensed as a noncommercial research and development facility or as a commercial facility. According to the new criteria, the NRC is authorized to license a utilization facility as a research and development facility subject to the condition that the licensee shall recover not more than 75 percent of the annual cost of owning and operating the facility from commercial activities, of which not more than 50 percent can be from sales of energy such as electricity or process heat. The new criteria became effective January 14, 2019, and the NRC staff is applying the new criteria to issuance of NRC licenses after that date. The NRC staff is also assessing the impacts of the new criteria on existing research and test reactor licensees. To further understand the potential impacts of the new criteria on existing licensees, on September 26, 2019, NRC staff conducted a public meeting with these stakeholders. The NRC staff is considering the stakeholder feedback it has received and is developing a rulemaking plan to update NRC regulations to reflect the new criteria in the AEA and clarify the applicability of the new criteria to existing licensees.

### Section 107: Commission Report on Accident-Tolerant Fuel

NEIMA directs the NRC to submit a report to Congress on the status of preparations to license accident-tolerant fuel technologies. The NRC has a project plan to align agency regulatory readiness with industry and fuel vendor plans for regulatory submittals related to fuel technologies. The U.S. nuclear industry, with DOE's assistance, is planning to deploy batch loads of accident-tolerant fuel in the operating fleet by the mid-2020s. The industry expects that these new fuel technologies will offer power plant owners more flexibility in how they operate their plants and will provide more robust performance during normal operations, as well as

under potential accident conditions. In FY 2020, the NRC staff will continue to engage with vendors, licensees, DOE, international counterparts, and other stakeholders to ensure all sides are prepared for licensing and oversight of accident tolerant fuel.

#### Section 108: Best Practices for Establishment and Operation of Local Community Advisory Boards

The Act requires the NRC to conduct a series of public meetings and then develop a report to Congress on best practices for community advisory boards associated with decommissioning nuclear plants. The NRC conducted two public webinars and held 11 public meetings throughout the United States. The NRC was able to accommodate all meeting requests submitted by April 2019 and held meetings near the following sites that are planning or undergoing decommissioning: Palisades in Michigan; Humboldt Bay, Diablo Canyon, and San Onofre in California; Vermont Yankee in Vermont; Pilgrim in Massachusetts; Kewaunee in Wisconsin; Zion in Illinois; Indian Point in New York; Oyster Creek in New Jersey; and Crystal River in Florida. The results of these meetings, along with the data collected, will be summarized in the report to be submitted to Congress by July 14, 2020.

#### Section 109: Report on Study Recommendations

NEIMA directed the NRC to submit a status report detailing the efforts to address and implement the recommendations contained in the memorandum of the Executive Director for Operations entitled, "Tasking in Response to the Assessment of the Considerations Identified in a 'Study of Reprisal and Chilling Effect for Raising Mission-Related Concerns and Differing Views at the Nuclear Regulatory Commission.'" The NRC submitted the report on April 9, 2019.

## Section 201: Uranium Recovery Report

NEIMA directed the NRC to submit a report describing the duration of uranium recovery license issuance and amendment reviews, and recommendations to improve the efficiency and transparency of these reviews. The NRC completed its review and submitted this report on April 10, 2019.

## Transformation

In addition to carrying out the requirements under NEIMA, the NRC continues to conduct activities in support of its transformation. These transformation initiatives will help us achieve our vision of being a more modern, risk-informed regulator, while building upon and complementing the important work currently occurring throughout the agency to fulfil our nuclear safety and security mission.

The NRC also made some significant organizational changes in 2019. In October, the NRC completed the merger of the Office of Nuclear Reactor Regulation and the Office of New Reactors and reorganized the Office of Nuclear Materials Safety and Safeguards. The resulting program structure provides greater flexibility to respond to a dynamic environment, supports earlier alignment on technical and regulatory issues, and allows the NRC to incorporate best practices from different parts of the organization more efficiently.

**CLOSING**

We appreciate the Committee's interest and support as we implement this important legislation. Chairman Barrasso, Ranking Member Carper, and distinguished members of the Committee, this concludes my written testimony. On behalf of the staff of the NRC, thank you for the opportunity to appear before you and for your support of the vital mission of the NRC. We are pleased to respond to your questions. Thank you.