

**Remarks of Chairman Kristine L. Svinicki**  
**International Conference on Effective Nuclear and Radiation**  
**Regulatory Systems:**  
**Working Together to Enhance Cooperation**  
**November 4, 2019 – The Hague, Netherlands**

*Effective Regulation in Changing Times:  
Lessons from the Past and Transformation for the Future*

Good morning. It is my distinct pleasure to join such an esteemed group of speakers to add my welcome to this fifth International Conference on Effective Nuclear and Radiation Regulatory Systems. I would like to begin by thanking the Government of the Netherlands for its gracious hospitality. I would also like to express my appreciation to the IAEA, Dr. Larsson, and the program committee for their hard work in planning such an ambitious and thoughtful agenda this week. I know that planning an event of this magnitude is never easy, and I share the view of the importance of these conferences for exchanging ideas, engaging in frank discussions, and laying the groundwork for future cooperation. While international cooperation has always been a valuable resource for regulators, in this increasingly global industry – as technology advances at an increasing pace – coming together at gatherings such as this allows us to share perspectives and lessons learned.

Over the course of its history, the U.S. Nuclear Regulatory Commission or NRC has moved cautiously from a prescriptive regulatory approach to one that places greater emphasis on risk assessment. In the mid-1990s, the Commission adopted a policy statement encouraging broad application of risk assessment in the regulatory process and embraced “risk-informed, performance-based regulation.”

In the United States, regulatory requirements for both reactor and materials applications were originally developed to provide “reasonable assurance of adequate protection of public health and safety.” The objective of these requirements has always been to achieve a low probability of accidents with the potential for adversely affecting public health and safety. However, when many of the requirements were initially developed, risk assessment tools were not always available to facilitate quantitative estimates of risk. As a result, certain areas of our regulations have been established through the application of conservative, deterministic assumptions.

By the 1990s, risk assessment technology in certain areas, such as reactor regulation, had matured sufficiently to allow for direct inclusion of this information in decision making in the form of risk insights. “Risk insights” refers to the results and

findings that come from risk assessments. Doing this allows the NRC to answer a set of questions relevant to estimating risk, referred to as the “risk triplet”: what can go wrong, how likely is it, and what are the consequences. The inclusion of a postulated accident’s likelihood allowed the NRC to explore and comprehend dimensions of the foundation safety considerations in ways that determinism could not. By quantifying the change in risk associated with proposed actions, the agency could now more reliably ensure safety while at the same time reducing unnecessary conservatism.

Put more simply, the greater inclusion of risk insights has allowed the NRC to better focus licensee and regulatory attention on design and operational issues commensurate with their importance to public health and safety. Even so, the state of the art in risk assessment is still evolving and, at the present time, continues to present limitations and uncertainties that necessitate a blended approach. This blended approach, called “risk-informed decision making,” considers both deterministic and probabilistic information in making decisions.

The NRC is currently focused on how our staff can make decisions more efficiently through the increased use of risk insights to determine and guide the quality and level of effort appropriate for a given activity. The agency is also focused on how to translate successes in risk-informed decision making into regulatory arenas that may still rely primarily on deterministic approaches. We are challenging ourselves to learn from our past successes and failures in risk-informed decision making, as we seek to develop new tools, train a new generation of regulatory staff, and regulate a new generation of nuclear technology.

This approach to increasing our leveraging of risk insights has also been instrumental as the agency considers how to adapt to face new technologies, such as preparing to license small modular reactors and other advanced designs. As a part of this process, the NRC is examining existing regulatory approaches and seeking to adapt the regulatory framework to a new generation of designs. We are benefitting in this work from the insights provided by the commissioning of reactors around the world, as well as the insights from our own experiences.

To prepare for these new reactor technologies, the NRC has developed a vision and strategy to ensure NRC readiness to effectively and efficiently conduct its mission for these technologies. The strategy encompasses three objectives, which are 1) enhancing technical readiness, 2) optimizing regulatory readiness, and 3) optimizing communication. The NRC has developed implementation action plans to identify the specific activities the NRC will conduct in the near-term (within five years), mid-term (five to ten years), and long-term timeframes to prepare to regulate advanced reactors.

In the near term, the NRC has six individual strategies that support the objectives. These individual strategies are:

- Acquire sufficient knowledge, technical skills, and capacity to perform Non-Light Water Reactor regulatory activities
- Develop computer codes and tools to perform these reviews
- Develop guidance for a flexible review process within the boundaries of existing regulations, including the use of conceptual design reviews and staged-review processes
- Facilitate industry codes and standards needed to support this work, including both fuels and materials
- Identify and resolve technology-inclusive policy issues that impact regulatory reviews, siting, permitting, and/or licensing of non-light-water reactor nuclear power plants
- Develop and implement a structured, integrated strategy to communicate with internal and external stakeholders having interests in these technologies

As a final discussion topic, let me discuss the agency's focus on transformation and innovation, with the goal of allowing the agency to prepare for and to adapt to the future. In support of these efforts, the agency began a parallel evaluation of how industry and the NRC's regulatory environment might look in the year 2030 and beyond. The NRC published a report on this evaluation in January of this year. The evaluation used scenario planning to examine the external operating environment and develop four alternative hypothetical futures built around varying estimates of future U.S. nuclear power demand and the level of innovation in nuclear power globally. These possibilities will inform the agency's near- and mid-term planning related to budget, workload, workforce issues, agency organization and structure, and opportunities to innovate. The NRC will continue to enhance our ability to respond to changing demands to support a dynamic but uncertain future and continue to look to risk-informed and performance-based approaches to guide regulatory oversight.

In a parallel fashion, the NRC continues to address expected human capital changes and enhance its workforce. We have looked at skill adequacy and gaps through a systematic, enhanced Strategic Workforce Planning process with a 5-year workload planning horizon. This planning process will be addressed annually and include all major agency offices. This effort supports short- and long-term workforce planning strategies and action plans and provides insights into training needs to address workforce gaps and surpluses. This process has highlighted the need to develop a pipeline of future talent to fill anticipated vacant positions due to increased attrition expected over the next five years. Without entry-level hiring of a

demographically-balanced workforce, the agency's ability to accomplish its mission could be negatively impacted.

Going forward, the NRC is committed to ensuring that we have an organizational culture, an expert staff, and the processes and tools necessary to continue to accomplish our safety and security mission. Thank you for the opportunity to address you today and for your kind attention.