

Chair Christopher T. Hanson
U.S. Nuclear Regulatory Commission
Remarks for the NRC & Idaho National Lab
New & Advanced Reactors: Codes & Standards
Public Meeting
April 4, 2024

INTRODUCTION

Good morning and welcome to everyone joining us today in the room and virtually. I'm so excited to be here. Today's meeting kicks off a joint project with the Idaho National Lab to look at how small and advanced reactor design, licensing, and construction costs intersect with our codes and standards, so that both can be right-sized to better account for enhanced safety of new designs.

We have over 275 registered participants joining us today. In addition to the NRC and Idaho National Lab, we have representatives from the Canadian Nuclear Safety Commission, American Society of Mechanical Engineers, American Nuclear Society, Institute of Electrical and Electronics Engineers, and several advanced reactor vendors. You will hear today from representatives of three different Standards Development organizations: American Nuclear Society (ANS), American Society of Mechanical Engineers (ASME), and the Institute of Electrical and Electronics Engineers (IEEE).

I'm sorry that Dr. Wagner from INL was not able to make it but I'm thrilled to have Dr. Jess Gehin, Nuclear Science and Technology Associate Lab Director, in person with us.

I also want to give a big thank you to the NRC and INL staff for all your efforts putting together this workshop.

NRC CODES PROGRAM

I want to give a little background on the codes and standards program here at the NRC. Michele Sampson leads our codes and standards program and serves as the Agency Standards Executive. Michele and the NRC's program are located in the Office of Research, but codes and standards involve staff from every program office and many regional offices.

NRC has worked with over 35 national or international Standards Development Organizations to develop consensus standards. Our staff participate in a significant number of working groups and code committee meetings each year.

For each of the Standards organizations, the NRC has identified a staff coordinator who has the important role of working with the NRC staff — who attend the working groups and committee meetings — to gather and organize information, recommend priorities, and aid expression of views consistent with formal NRC positions.

Participation in consensus codes and standards organizations is a very active program here at that NRC, that involves hundreds of dedicated staff working to support the development of standards that address current and anticipated regulatory needs.

ADVANCED REACTOR LANDSCAPE

In 2017, in response to an increasing interest in the development of new advanced reactor designs, the staff developed a vision for enabling NRC's readiness to regulate advanced reactors. As part of that effort, it was acknowledged that there was a lack of codes and standards for these new technologies, so staff identified the need to facilitate the development and endorsement of industry codes and standards to license and regulate advanced reactors more effectively and efficiently. Since then, the NRC staff has made significant progress, including endorsing key technology-inclusive codes and standards.

The advanced reactor landscape has changed even since then. We've seen the interest and demand for new nuclear increase significantly, here in the US and internationally.

At the U.N. Climate Change Conference in Dubai, United Arab Emirates (or COP28) in December, the United States recognized the key role that nuclear energy plays in achieving global net-zero greenhouse gas emissions by joining leaders from four continents in announcing a declaration to triple the global installed nuclear power capacity by 2050. In addition to climate goals, new nuclear is a factor in energy resilience and independence.

For the United States to meet its ambitious goal of achieving a carbon pollution-free power sector by 2035 and a net zero greenhouse gas emissions economy by no later than 2050, the NRC will need to review and license large numbers of new nuclear power plants.

In the next two years alone, the NRC is projecting applications for two combined licenses, one standard design approval, three operating licenses and nine construction permits. That's a lot of work.

With that nuclear landscape in mind, at the RIC a few weeks ago, I laid out my vision for the agency going forward. I expect every leader in the NRC to look closely at the "why" of our policies, processes, and procedures, and develop more efficient and effective ways to accomplish our safety mission while making room for the increased scope of our work. While our current frameworks allow for the licensing of advanced nuclear reactors right now, the time is right to prepare the agency for what I have been calling the "serial deployment" of micro-reactors and small modular reactors. That hard look at the "why" includes codes and standards.

Last month we signed a Coordination Plan – an information sharing effort – with Idaho National Lab, which includes specific objectives, activities, and timeframes. One of those activities is a public meeting – which is why we're here today.

Today's goals are to – one – understand the needs and prioritize where agency resources are applied to ensure we are focusing on the codes and standards that fill the most significant and impactful needs. Second is to identify opportunities to streamline and right-size the review and endorsement process for advanced reactor codes and standards. I see several benefits of this effort. They include:

- Development of advanced reactor standards that provide for public health and safety, applying a graded approach that aligns the requirements with the radiological risk and also considers the inherent design aspects associated with advanced reactors.
- Predictability and transparency to facilitate the “nth of a kind” reactor licensing. And
- Efficiency for new reactor design and construction through the application of risk-informed consensus codes and standards.

Through this coordination effort with INL, including today's meeting, we hope to gain insights on needed codes and standards for advanced reactors, as well as the effectiveness of the NRC's program to provide timely review and endorsement of new or revised codes and standards. Our aim is to establish a better understanding of the most critical codes and standards needed for advanced reactors, and to brainstorm new or novel approaches to improve our codes and standards program.

Although the NRC has made strides and is ready and actively reviewing advanced reactor applications today, the NRC needs to continue to make process improvements by adopting approaches that make the best use of limited resources and help make timely regulatory decisions. We've also been scaling our regulations for advanced reactors, while maintaining reasonable assurance of adequate protection, on multiple fronts – emergency preparedness, population-based siting, security, Part 53 more broadly. Codes and standards are in that mix.

For decades, we've been focused – successfully – on large light water reactors. Our current requirements and processes, including those related to codes and standards, are optimized for traditional, large light water reactors. But advanced reactors contemplate design features that are significantly different. They may employ functional containment, a low-pressure design, inherently stable fuel forms, and passive safety features. So, this raises some important questions about the extent of traditional codes and standards being fully necessary to ensure reasonable assurance. Do we have the RIGHT codes and standards for advanced reactors? If applicants can demonstrate that their advanced reactor design meets certain risk and performance criteria, should there be flexibilities to justify use of alternative codes and standards? As I said at the RIC, reflexively doing things the way we've always done them is simply not going to work going forward.

For example, it can take a very long time—years—for a new or revised standard to go from the technical working group level to being endorsed by the NRC through a regulatory guide or through regulation. So, we need to ask ourselves—what timeline is acceptable for the rapidly evolving area of new and advanced reactors?

Following today's conference, I expect the NRC staff to develop near-term actions for development or endorsement of specific codes and standards. I also expect, in short order, to see an NRC action plan with milestones and dates for implementation of proposed changes to improve the effectiveness and efficiency of the NRC's codes and standards program, aligned with the Principles of Good Regulation and that present new or novel approaches to develop regulatory guidance.

I realize these are ambitious plans, but I think everyone is excited to undertake this challenge and I personally look forward to reviewing the results. I encourage all of you to explore new ideas and think innovatively during today's workshop.

Thank you again for your active participation in today's meeting. I am excited to have you all here and look forward to seeing what you come up with.