

POLICY ISSUE
NOTATION VOTE

RESPONSE SHEET

TO: Carrie M. Safford, Secretary

FROM: Commissioner Marzano

SUBJECT: SECY-25-0052: Nth-of-a-Kind Microreactor Licensing and Deployment Considerations

Approved X Disapproved Abstain Not Participating

COMMENTS: Below Attached X None

Entered in STAR

Yes X
No

Signature
Matthew J. Marzano

Date

Commissioner Marzano's comments on SECY-25-0052: Nth-of-a-Kind Microreactor Licensing and Deployment Considerations

I appreciate the staff's efforts to explore flexibilities within the NRC's existing regulatory framework to align with emerging microreactor deployment models. Microreactors are expected to feature simplified designs and operations that are less dependent on site-specific characteristics, such that their operational programs could conceivably be well defined in the design phase. Therefore, it is appropriate to confirm a pathway to review, approve, and offer finality to operational programs early in the licensing process. Doing so increases regulatory stability and efficiency and streamlines the transition to nth-of-a-kind (NOAK) deployments.

I approve Option 2, which would afford the staff the ability to provide finality for standardized operational programs, or parts thereof, if the use of such programs is requested, described, and justified in a design certification (DC) or manufacturing license (ML) application. I applaud the staff's thoughtful evaluation of the range of operational programs that may be presented in a DC or ML. The proposed use of parameter envelopes, defining site-specific and operational characteristics to be confirmed at the operating license stage, is a promising approach. As noted in the paper, practical application of this approach will become clearer as it is exercised. Defining a site-parameter envelop at the design stage that supports finality of an operational program may be design specific and, in some cases, not be feasible. The staff's efforts to remain responsive as reactor deployment models develop and mature have been commendable. Proactive stakeholder engagement must continue as reactor designers and prospective licensees refine their operational plans.

I appreciated the graded approach proposed in Enclosure 2 to tailor the NRC environmental evaluation processes to enhance the simplicity, efficiency, and timeliness appropriate to the unique needs of microreactors. Timely licensing and environmental reviews of NOAK reactor designs necessitate a significant departure from the current process, although with an expectation that environmental impacts from a particular design at the NOAK stage of deployment will be well characterized. A systematic approach should provide an orderly transition of the review process throughout the deployment life-cycle for a given reactor design.

Furthermore, as I stated in my vote for SECY-25-0056, "Final Rule: Categorical Exclusions from Environmental Review," I urge the staff to continue seeking opportunities to streamline the process of identifying and establishing actions suitable for categorical exclusion where possible, without compromising the integrity of the agency's reviews. Categorical exclusion stems from technically rigorous analyses that support and substantiate inclusion in NRC's regulations. The opportunities for microreactor design-specific categorical exclusion, contemplated in Alternative E4 in Enclosure 2, will be well served by ongoing partnership with our national labs. Maintaining awareness of the maturity of advanced analysis approaches that leverage artificial intelligence will ensure the agency is well-positioned to review future applications.

The staff also points out that "some topics raised in this paper and its enclosure could be relevant to the deployment of other reactor technologies, such as small modular reactors and larger reactors" and previews that "the NRC staff will consider opportunities to apply the strategies described in this paper to other reactor technologies." I fully endorse this sentiment; considering forward-looking approaches in the context of microreactors only may unnecessarily link these ideas to the size or power level of the reactor and invites a narrow definition of applicability of consequence-based, performance-based, risk-informed approaches. To the extent practicable, the staff should consider the applicability of the topics raised in this paper to other reactor technologies. In addition, to the extent practicable, the staff should identify appropriate ways to incorporate and/or align the recommendation in this paper with other ongoing rulemaking and guidance efforts, such as those associated with the Part 53 and Part 57 rulemakings.