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September 19, 2016

9/21/2016

81FR 47443

Ms. Cindy K. Bladey
Chief, Rules, Announcements, and Directives Branch (RADB)
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

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Subject: NEI Comments on Draft NRC Vision and Strategy: Safely Achieving Effective and Efficient Non-Light Water Reactor Mission Readiness (Docket ID: NRC-2016-0146)

Project Number: 689

Dear Ms. Bladey:

The Nuclear Energy Institute (NEI)¹ is pleased to provide the attached comments on the NRC's draft Vision and Strategy: Safely Achieving Effective and Efficient Non-Light Water Reactor Mission Readiness. The Vision and Strategy document is an important opportunity to assure alignment of NRC activities with the goals and priorities of the industry as described in NEI's Advanced Reactor Strategic Plan, and the U.S. Department of Energy's (DOE) draft Vision and Strategy document. Good alignment will allow for clear communication and coordination of activities to establish an appropriately focused and efficient regulatory review process for advanced non-light water reactor (LWR) designs.

We appreciate the NRC recognizing in its Vision and Strategy document that, "The agency needs to be effective and efficient as it conducts its safety, security, and environmental protection mission, without imposing unnecessary regulatory burden." From the industry's perspective, the key challenges for the NRC regulatory process are: how to achieve a more effective, efficient, and predictable technology inclusive regulatory review process, and how to minimize regulatory burden in terms of review time and cost. Progress on both fronts is important to developers of the next generation of advanced non-LWR designs, which include smaller startups with limited capital resources and a strong focus on "time to market."

¹ The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

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We wish to highlight one comment in the attachment concerning the timelines for deployment of non-LWRs under two licensing scenarios. We believe that the timelines do not appropriately depict the staff's ability to prepare to conduct effective and efficient non-LWR reviews. Specifically, the timelines show receipt and review of a non-LWR application after nine years of readiness activities. Because establishment of a non-LWR review process is a key strategic goal of NRC readiness activities over the 0-5 year time frame, we believe the timelines should reflect this. Showing readiness to review non-LWR applications after the 0-5 year period would be consistent with the Vision and Strategy which indicates that NRC activities after the 0-5 year period will shift to a focus on rulemaking. We and the staff have agreed that rulemaking would be pursued at an appropriate time, as needed, and is not necessary for review of initial non-LWR applications.

We are committed to working with the staff to resolve policy issues and develop guidance for risk-informed, performance-based safety reviews of advanced reactor designs in the next five years as outlined in the draft Vision and Strategy document. The attached comments include alternative timelines for NRC consideration that we believe better reflect the plans and actions of the NRC and industry to achieve NRC readiness to perform effective and efficient non-LWR reviews within five years.

We look forward to working with the staff as the NRC engages stakeholders in the October timeframe to discuss Implementation Action Plans for near-term strategies and alignment of priorities. If you have any questions concerning the industry's comments, please contact me or Kati Austgen (202.739.8068; kra@nei.org).

Sincerely,



Russell J. Bell

Attachment

c: Dr. Jennifer L. Uhle, NRO, NRC
Mr. Michael E. Mayfield, NRO/DEIA, NRC
Ms. Deborah A. Jackson, NRO/DEIA, NRC
Mr. Michael S. Jones, NRO/DEIA/ARPB, NRC
NRC Document Control Desk

**NEI Comments on NRC's Draft Vision and Strategy: Safely
Achieving Effective and Efficient Non-Light Water Reactor Mission Readiness**

The industry appreciates the NRC recognizing that "The agency needs to be effective and efficient as it conducts its safety, security, and environmental protection mission, without imposing unnecessary regulatory burden." From the industry's perspective, the key challenges for the NRC regulatory process are: how to achieve a more effective, efficient, and predictable technology inclusive regulatory review process, and how to minimize regulatory burden in terms of review time and cost. Progress on both fronts is important to developers of the next generation of advanced non-light water reactor designs, which include smaller startups with limited capital resources and a strong focus on "time to market."

Recognizing NRC's Vision and Strategy document as an important tool for agency planning and stakeholder communication, we offer the following comments and recommendations:

Timelines

1. The Vision and Strategy's strategic objectives: technical readiness, regulatory readiness, and communication are appropriate, and the document identifies necessary actions to support each objective. The near term regulatory readiness activity (0-5 years) to "establish a more flexible, risk-informed, performance-based, non-LWR regulatory review process within the bounds of existing regulations" mirrors the industry's focus over the same period and is expected to result in policy issue resolutions and guidance sufficient for effective and efficient reviews of non-LWR applications.

We appreciate that the NRC has provided timelines for deployment of non-LWRs under two licensing scenarios, but we believe that the timelines do not appropriately depict the staff's readiness to conduct effective and efficient non-LWR reviews. Specifically, the timelines show receipt and review of a non-LWR application after nine years of readiness activities. Because establishment of a non-LWR review process is a key strategic goal of NRC readiness activities over the 0-5 year time frame, we believe the timelines should reflect this. Showing readiness to review non-LWR applications after the 0-5 year period would be consistent with the Vision and Strategy which indicates that NRC activities after the 0-5 year period will shift to a focus on rulemaking. We and the staff have agreed that rulemaking would be pursued at an appropriate time, as needed, and is not necessary for review of initial non-LWR applications.

The NRC added a note on the timelines to explain the nine years of readiness activities stating, "The estimated activity durations shown above reflect the longest timeframes allowable in order for the NRC to achieve alignment with DOE's goal of non-LWR deployment (construction) in the early 2030s." Rather than attempt to mitigate via notation the strong visual effect of the timeline, the timeline should be modified to better reflect plans and expectations regarding readiness for efficient, effective regulatory review of non LWRs. It is unnecessary to depict the "longest timeframes allowable" for meeting the DOE goals. Moreover, rather than present timelines based on DOE goals, the NRC timelines should focus on NRC readiness and the

expectation that an efficient and effective regulatory process can be in place after five years. The NRC could choose to include a note on the timelines or in the text stating that the NRC timelines provide ample margin to meet the DOE goal of non-LWR deployment (construction) in the early 2030s.

In addition, the timelines should reflect that pre-application activities could begin within the 0-5 year period. In this regard, we note that the scope of DOE's advanced reactor Funding Opportunity Announcement awards include interactions with NRC. These interactions are expected to include submittal of white papers, within the next few years, addressing topics that would have an overarching impact on the safety case and overall advancement of the design. Attached are proposed alternate timelines that reflect this shorter regulatory readiness timeframe as well as modified review timeframes (further discussion on review timeframes is provided in other comments). Because of the importance of the timelines as a communication tool, we believe it is important that they appropriately reflect plans and expectations regarding readiness for efficient, effective regulatory review of non LWRs.

2. The notional schedules presented in the Vision and Strategy document show non-LWR review periods of 4-5 years. These time frames are not consistent with the expected safety focus and efficiency benefits of the more effective and efficient review process that is a key objective over the next five years. In addition, it is expected that review time can be shorter for advanced non-LWR reactors that, consistent with the Commission's 2008 Policy Statement on the Regulation of Advanced Reactors, "provide enhanced margins of safety and/or use simplified, inherent, passive, or other innovative means to accomplish their safety and security functions." We note that the NRC has established a 39 month review schedule for design certification application for a (LWR) Small Modular Reactor.

As shown in the alternative timelines attached, we recommend the use of ranges to account for the potential that periods for pre-application interactions, design review, and construction may be shorter than assumed in the NRC timelines.

Non-LWR Strategic Goal and Objectives

3. The Vision and Strategy document identifies 10 CFR Part 70, "Fuel Fabrication Facility Construction and Operation License" in Section 5.1 as an element of the process, but does not address any details in regard to staff readiness to review fabrication of fuel. It is recognized that the NRC considers viability of non-LWR fuel as a key element in decisions regarding maturity of the technology. While LEU (<20%) fuel will be utilized in non-LWR designs, the enrichment levels of many non-LWRs are expected to be above that currently utilized in the commercial reactors licensed to date (<5%). In this regard, the Vision and Strategy needs to be expanded to address front-end of the fuel cycle issues and processes.

Non-LWR Strategies and Contributing Activities

4. On page 15, the second Contributing Activity under computer codes and tools seems to be incomplete as it only addresses identifying the current state of the art. It is suggested that this activity be modified to require a gap assessment and to develop and implement a plan to ensure tools and codes and training will be available when needed.
5. On page 17, "Identify and resolve technology-specific policy issues" is listed in the mid-term strategies (5-10) years. For two reasons, we recommend that this item also be included in the near-term strategies along with "identify and resolve technology-neutral policy issues." It is appropriate to include addressing technology-specific issues in both the near and mid-term strategies because 1) technology specific policy issues may arise as the generic work is being addressed, and 2) there is potential for an applicant to begin pre-application interactions within the next five years that may address technology-specific issues.
6. On page 17 under "Develop and implement a structured, integrated strategy ...," it is suggested that DOE be added to the list of stakeholders in the contributing activity "Promote the exchange of non-LWR technical and regulatory experience...." DOE is a stakeholder in the development of advanced technologies and has relevant experience through previous NGNP work.
7. On page 17 under the mid-term strategy to "Acquire/develop sufficient technical skills and capacity...," the contributing activity "Prepare to conduct regulatory reviews and oversight of non-LWR test and prototype reactors" seems out of place. The Vision and Strategy as a whole is preparing the NRC for review of advanced non-LWRs. Therefore, it is not clear why a separate item is necessary for NRC to prepare to conduct reviews for non-LWR test and prototype reactors. In addition, the notional timelines show a "Test or Prototype Reactor Licensing" activity which runs in parallel with the 9 year "NRC Technical & Regulatory Readiness Activities." The licensing processes for test and prototype reactors are quite different, and so it is not clear what is intended to be within the scope of this activity. Please clarify the activities related to non-LWR test and prototype reactors and the unique attributes relative to commercial non-LWR reactors. It is also suggested that test or prototype licensing activities be removed from the timelines in keeping with the main focus of the timelines on deployment of commercial reactors. The NRC could choose to retain a note on each timeline such as: "Timeline is for licensing commercial (including prototype) non-LWRs; plans for a test reactor prior to a commercial application are not reflected in the timeline."
8. On page 18, the strategy to "Initiate and develop a new non-LWR regulatory framework that is risk-informed ..." is appropriate and necessary, but the scope of this effort is not clear. Our understanding is that the staff envisions a shift in the 5-10 year time frame toward rulemaking activities, as appropriate, to codify the regulatory process for non-LWRs. We recommend that the NRC clarify the scope of its envisioned activities in the 5-10 year time frame and consider defining "regulatory framework," in the Vision and Strategy document, as inclusive of rulemaking activities.
9. On page 18, the mid-term regulatory framework item should include the phrase "if needed" as is included in the long-term regulatory framework item.

Implementation Action Plans

10. On page 18, in Sections 4.5 and 4.6, the development of Phase 2 Implementation Action Plans (IAPs) should also include the prioritization of work activities recognizing that in Section 4.6 the implementation of IAPs will be performed within assigned resources, and not all activities may be performed on schedule if there are inadequate resources available. The Vision and Strategy states that these activities "will be incorporated and managed within NRC's normal planning and budgeting processes." These sections could be enhanced with a discussion of how specifically appropriated funds will impact the planning and execution efforts. Finally, the NRC should discuss mitigation plans in case there are not sufficient resources to accomplish activities before they need to be completed to support applications.

Staged Review Process

11. We concur with the concept of an optional staged approach to application review and approval that would provide regulatory certainty commensurate to the maturity of the design. The use of Topical Reports and Standard Design Approvals in the early stages of engagement can provide more certainty by providing the basis for NRC approval of key elements of the design which can be referenced in future applications. However, more clarity and definition on the outcome of Conceptual Design Assessment, White Papers and Technical Reports is needed. Investment in the development (by the applicant) and review (by NRC) of these products must have meaningful and robust outcomes that justify the time and resources expended. To be of value, the implementation of these steps must lead to progressive issue closure and regulatory assurance which in turn allows for advancement of the design. We look forward to continued discussion of these NRC tools and processes with the staff.
12. On page 25, the statement that Part 52 requires a "final design" is not accurate. In the context of the passage on p. 25, we recommend the sentence be revised to read "...than for a Part 52 application, which ~~does require a final design~~ requires more complete design information sufficient to support required NRC safety findings." A similar change is needed on p. 21 in place of the terms "detailed design" and "final design."
13. On page 25, in the last sentence of the third paragraph it is suggested that "or design certification" be added after "comprehensive SDA." The new sentence would read "The SDA path could thus provide a way to lessen financial risk by allowing a staged submission of major portions of the design for approval, with a final comprehensive SDA or design certification issued once the entire design has been submitted and approved."

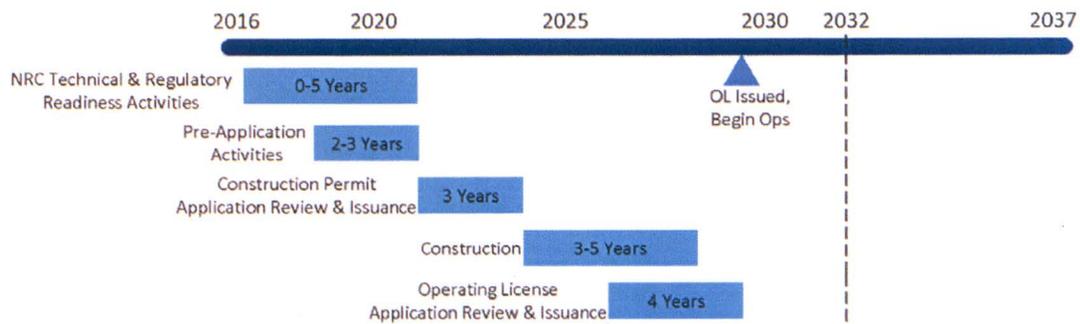
General

14. In the Executive Summary, NRC states that the staff "...could review and license a non-LWR design today, if needed" and Section 3.1 states, "The NRC is fully capable of reviewing and reaching a safety finding on a non-LWR design if an application were to be submitted today." While that may be correct in regard to utilizing the existing LWR centric review processes and framework, there are tools such as computer models related to the safety review that may not be sufficiently mature for use on non-LWR designs. The industry recognizes that enhancement,

development, and verification and validation (V&V) of appropriate codes is a potential long lead item and recommends that the Vision and Strategy emphasize this as priority.

15. The Vision and Strategy uses the phrases "commensurate with the risks posed by the technology" and "commensurate with the demonstrated safety performance." It is appropriate to recognize that requirements and review efforts should be adjusted based on the risks posed by the technology. For consistency, it is suggested that the phrase "commensurate with the risks posed by the technology" be used throughout the document rather than "commensurate with the demonstrated safety performance." The latter implies physical testing or full scale demonstration that may not be necessary and is not required.
16. The Vision and Strategy document could be enhanced by either providing a list of technical and policy issues that still need to be addressed and/or pointing the reader to a web location where additional information on technical and policy issues can be found.
17. Section 5.2.1 makes reference to past NRC interactions with non-LWR vendors via vendor white papers on key licensing matters such as licensing basis event selection. We recommend a brief summary of the results and conclusions that were achieved through those interactions be included in the Vision and Strategy document, in keeping with the NRC's goal of providing early regulatory feedback.
18. The Vision and Strategy could be enhanced to highlight areas where public interaction, input and comment will be sought. For example, the gap analyses that are mentioned in the document could benefit from stakeholder input.

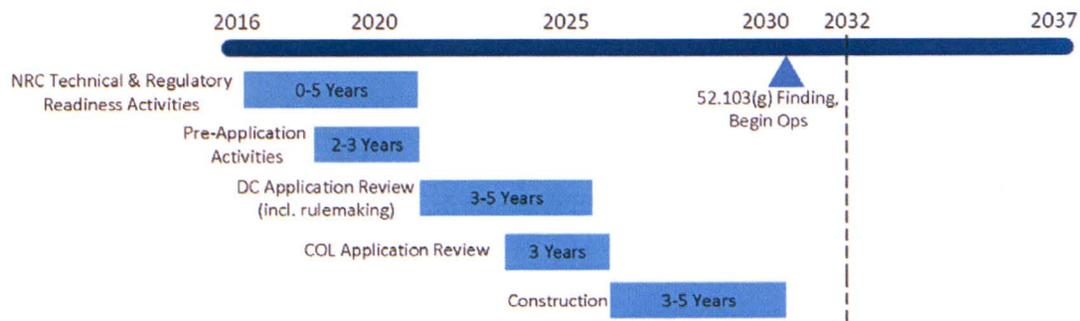
Non-LWR Deployment Timeline with Part 50 Construction Permit and Operating License*



*Timeline is for licensing a commercial (including prototype) non-LWR; plans for a test reactor prior to a commercial application are not reflected in the timeline.

DOE Vision Alignment Point @2032

Non-LWR Deployment Timeline with Part 52 Design Certification/Combined License*



*Timeline is for licensing a commercial (including prototype) non-LWR; plans for a test reactor prior to a commercial application are not reflected in the timeline.

DOE Vision Alignment Point @2032