

Mendiola, Doris

Subject: FW: Docket ID NRC-2016-0146
Attachments: XE-X1-LD-G0-L01-100396_Comments to NRC Draft Vision & Strategy Document.pdf

From: Dimitri Lutchenkov [<mailto:DLutchenkov@x-energy.com>]
Sent: Monday, September 19, 2016 4:15 PM
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Subject: [External_Sender] Docket ID NRC-2016-0146

Dear Ms. Bladey:

Attached please find X Energy, LLC comments on NRC's draft Vision and Strategy: Safely Achieving Effective and Efficient non-Light Water Reactor Mission Readiness.

Regards,

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September 19, 2016

XE-X1-LD-G0-L01-100396

Cindy Bladey
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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: X Energy, LLC Comments on NRC's Draft Vision and Strategy: Safely Achieving Effective and Efficient non-Light Water Reactor Mission Readiness -- Docket ID NRC-2016-0146

The purpose of this letter is to forward X Energy, LLC (X-energy) comments on the NRC's draft Vision and Strategy document (ML16139A812, draft revision 1). We also note that X-energy has read the comments issued by NEI and is aligned with them.

X-energy understands that the key metrics/challenges for the NRC regulatory process are:

- How to achieve a shorter more effective, efficient, predictable, and technology inclusive regulatory framework and, directly related,
- How to minimize regulatory cost of the review and closure of the application process.

Both points are extremely important to developers of the next generation of advanced non-Light Water Reactor (non-LWR) designs. Non-LWR developers are typically smaller startups with limited capital resources that are strongly driven by "time to market". The latter is important in attracting stakeholders (partners or investors), which is critical to the non-LWR developer's viability. Time is of the essence.

X-energy offers the following comments for NRC's consideration.

- The development of the Vision & Strategy document shows progress which is positive and commendable. We concur with the key elements presented and the initial focus on enhance technical readiness, optimize regulatory readiness, and optimize communication as the key areas to be initially addressed with actionable and measureable criteria. That said, the concern is that the big picture timeline is too long. The vision/strategy timeline is still tens of years. NRC indicates that timing vis-à-vis maturity of the non-LWR design development is important. In that regard, NRC should take into account that DOE's FOA 1313 scope includes interactions with NRC. These interactions are expected to include submittal of critical white papers that have overarching impact on the safety case, fuel qualification approach, and overall advancement of the design. NRC needs to be ready for these early actions now (within 18-24 months) not years from now.

- We concur with the concept of an optional staged approach commensurate to the maturity of the design. The use of Topical Reports and Standard Design Approvals in the early stages of engagement will provide more certainty by virtue of an “approval” of major critical pieces of the design which can be referenced in future applications. However, more clarity and definition on outcome of Conceptual Design Review, White Papers and Technical Reports is needed. Investing in the development (by the applicant) and review (by NRC) into these products must have meaningful and predictable outcomes that justify the time and resources expended. The implementation of these steps must lead to progressive regulatory closure and certainty which in turn allows for advancement of the design.
- In the Executive Summary, NRC states that they “...could review and license a non-LWR design today, if needed” and in 3.1 “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 framework in general, there are tools such as computer models related to the safety review that are not sufficiently mature for use on most, if not all, non-LWR designs. Enhancement, development, and V&V of appropriate codes is a long lead item that must take priority in the NRC’s readiness plan.
- The NRC has stated that they can conduct a review of an administratively complete application within 39 months. It is understood that this applies to the LWR technology which NRC has the most experience with to date. The notional schedules presented in the Vision & Strategy document show non-LWR review periods of 4-5 years. These time frames are not consistent with expectation from two aspects.
 1. The expectation of the Commission’s 2008 “Policy Statement on the Regulation of Advanced Reactors” is that Generation IV non-LWRs will provide enhanced margins of safety and/or use simplified, inherent (walkaway safe in many cases), passive, or other innovative means to accomplish their safety and security functions. In addition it is expected that they will have less safety systems as well. In turn these attributes should reduce the overall scope of review.
 2. Implementation of a staged review will provide closure of major portions of the design before application review is initiated which in turn should reduce the scope of review.

At a minimum, these attributes should align the review duration of non-LWRs with the 39 month period, or shorter, not a 60 month period.

- The notional schedules show a “Test or Prototype Reactor Licensing” activity which runs in parallel with the 9 year “NRC Technical & Regulatory Readiness Activities”. It is not clear what is intended to be within the scope of this activity. The NRC should provide additional insight as to what is intended to be in the scope.
- The Vision & Strategy document identifies 10CFR 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 & Strategy document is reactor-centric and needs to be expanded to address fuel fabrication as well.

X-energy appreciates the opportunity to provide input at this stage and looks forward to future interactions with NRC staff in the process of finalizing NRC's Vision and Strategy document. Please do not hesitate to contact me if you have any questions or concerning regarding our comments at 410-370-9090 or by e-mail at dlutchenkov@x-energy.com.

Sincerely,



Dimitri Lutchenkov
Vice President, Licensing
X Energy, LLC

Cc: Michael S. Jones (NRC)
Michael E. Mayfield (NRC)
Jennifer L. Uhle (NRC)