

March 28, 2016

Mr. Thomas Bergman  
Vice President, Regulatory Affairs  
NuScale Power, LLC  
1100 NE Circle Boulevard, Suite 200  
Corvallis, OR 97330

SUBJECT: RESPONSE TO NUSCALE KEY ISSUE RESOLUTION LETTER

Dear Mr. Bergman:

The purpose of this letter is to provide the U.S. Nuclear Regulatory Commission (NRC) staff response to issues raised in your July 22, 2015, letter, "NuScale Power, LLC Key Issue Resolution Prior to Design Certification Application (NRC Project No. 0769)," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15203B306). This NuScale Power, LLC (NuScale) letter raised four potential policy issues and provided a proposed list and schedule for pre-application engagement topics and a schedule for topical reports (TR). This letter addresses those items and additional topics of mutual interest.

The NRC staff responses to the NuScale questions on the four potential policy issues related to the design certification (DC) application you intend to submit are stated below.

1. *Are exemptions and departures necessary for regulations that are not technically relevant?*

First, a "departure" is a term used in connection with a combined license (COL) applicant who references a design certification in its COL application. If the COL applicant chooses not to follow a portion of the design certification it references in its application, it must request a departure from that portion of the design certification that it is not incorporating into its application. An example of how the NRC approaches departures in design certifications is found at 10 CFR Part 52, Appendix D, Sections II.C and VIII.A-B. Therefore, where NuScale states its intent to seek departures from NRC regulations, the NRC Staff understands that NuScale is referring to the 10 CFR 50.12 exemption process.

Second, the concept of "technical relevance" applies *only* to the requirements of 10 CFR § 50.34(f), since 10 CFR § 52.47(a)(8) requires an applicant for design certification to include in its application information to demonstrate compliance with the "technically relevant" portions of 10 CFR § 50.34(f), with certain exceptions. The NRC staff notes that the technical relevance of a particular regulation is informed, in part, by the functions addressed by that regulation. If a 10 CFR § 50.34(f) requirement is technically relevant to the design, NuScale must either comply or justify an exemption from the requirement in accordance with 10 CFR § 50.12.

In addition, other NRC regulations by their terms may or may not apply to the NuScale design. For example, a regulation that applies only to boiling water reactors would not apply to the NuScale design, which is a pressurized water reactor. In general, a regulation that requires, for example, a certain function or design attribute will apply to NuScale design. The mere fact that the NuScale design employs a novel means to perform a required function or include a required design attribute does not necessarily trigger a need for an exemption, nor is the novel means for compliance a reason why the regulation would not apply.

Should NuScale take the position that a regulation is not applicable to its design or that a portion of 10 CFR § 50.34(f) is not relevant to the design, it is incumbent that NuScale provide the technical basis to justify that position. This important documentation must be provided as part of the DC application so that the NRC staff can determine whether or not the regulation applies to the design, or whether the portion of § 50.34(f) in question is technically relevant to the design. To the extent NuScale shows that a requirement in a regulation is not necessary for the NuScale design to meet the underlying purpose of the regulation, that showing would appear to address the “special circumstances” required to justify an exemption from the regulation under 10 CFR 50.12, and an exemption would appear to be the correct regulatory process for NuScale to pursue.

Should NuScale request an exemption from a regulation, the specific criteria for considering exemptions in 10 CFR 50.12, “Specific Exemptions,” should be addressed in Chapter 1 of the future DC application, and the technical basis for each proposed exemption should be clearly identified in the appropriate chapter.

NuScale submitted a letter dated July 31, 2014, “Gap Analysis Summary Report,” Revision 1 (Report) (ADAMS Accession No. ML14212A832) that identifies 19 Gap issues. The NRC staff reviewed the Report and noted that it contained a number of areas where NuScale considers a regulation not technically relevant to the design and other instances where an exemption was being considered. The NRC staff is responding to each of the 19 Gap issues identified in the Report and will document the NRC staff’s position in regard to each gap in letters to NuScale in which the staff will also identify any need for exemptions. A response to the issue identified as Gap 2 in the Report is included in this letter.

2. *Is there a need to distinguish between multi-module and multi-unit issues?*

There have been several public meetings where the multi-module and multi-unit questions have been raised but not fully resolved. The NRC staff has finalized Revision 3 to SRP Section 19.0, which may provide insight on multi-module risk assessment reviews by the NRC staff. However, further engagement is warranted and the NRC staff intends to hold a public meeting with NuScale on this topic.

3. *Can an exemption to 10 CFR 50.54(m) be included in the DC?*

The NRC staff understands that NuScale seeks to resolve both the control building design and operator staffing level matters relating to 10 CFR 50.54(m) at the DC stage to the greatest extent possible. This area is one of significance to both NuScale and the NRC staff and, as such, the NRC staff has responded in a separate letter on this topic dated January 14, 2016, “NuScale Control Room Configuration and Staffing Levels,” (ADAMS Accession No. ML15302A516).

That letter included a response to your June 30, 2015, letter, "NuScale Power, LLC Submittal of Proposed Scope of Human Factors Engineering Information in Design Certification Application," (ADAMS Accession No. ML15181A475).

4. *Can the design certification application address regulations not yet in effect?*

In your letter you describe two potential rulemakings that may become final shortly after submittal of your application: Mitigation Strategies for Beyond Design Basis Events (Regulations.gov, Docket ID: NRC-2014-0240) and Performance-Based Emergency Core Cooling Systems Cladding Acceptance Criteria (Regulations.gov, Docket ID: NRC-2008-0332). Note that as drafted, the proposed rule for mitigating beyond-design-basis events is not applicable to an applicant for design certification. Nonetheless, proposed 10 CFR § 52.80(d) would require an applicant for a combined license to include specified information regarding the proposed mitigation strategy requirements in its COL application. Should NuScale wish to address some portions of proposed 10 CFR § 50.155 in the DC application, consideration should be given to the degree of finality desired.

However, in response to your question, the application must address all regulations that are effective when you file the application, and the NRC staff will conduct the acceptance review based on those regulations. The application may address future regulations and guidance to the extent NuScale wishes to include this information in the application. However, the NRC staff will not use the information in the application or the proposed rule in its review of the application unless the Commission issues a final rule on that subject. Until the Commission issues a final rule, there is no regulatory foundation upon which to perform the review, and the rule or its applicability may change.

#### Pre-Application Topics

With respect to additional discussions your July 22, 2015 letter, Attachment 2, identifies pre-application topics. However, a number of topics were not included in the attachment. For example, many of the 19 Gap issues from the Report for which NuScale requested feedback are not on the list. In the interim between your letter and this response, NuScale and the NRC staff have agreed to a more inclusive list of pre-application topics and have held meetings to address many of these topics.

#### Topical Report Submittal Schedule

The pre-application list in Attachment 2 of your July letter also includes the schedule for submitting the TRs. In a January 28, 2016, letter "NuScale Power, LLC Final Schedule for Topical Report Submittals (NRC Project No. 0769)," (ADAMS Accession No ML16029A315) NuScale provided an update to the TR schedule. In your January letter you requested feedback from the NRC staff regarding the availability of NRC resources for review of these TRs in accordance with the submittal dates. The NRC staff is currently reviewing several TRs that have been submitted and will continue to provide resources to review the NuScale TRs in accordance with the Commission-directed budget and office priorities. Your January letter showed that the dates of several TRs moved out in time by a number of months and are now much closer to the application submittal date; three reports are scheduled for submittal two months prior to the prospective DC application submittal date.

Based on the recent TR submittal schedule, review of many of the technical issues in the TRs will not be complete prior to DC application submittal. This will impose additional technical and schedule risk for the DC. Since these TRs will be referenced by your DC and provide the underlying technical foundation in some areas, should some of the technical issues in the TRs become challenging to resolve, there could be a direct impact on the DC review schedule.

### Related Control Room Topics

There are additional pre-application topics related to control room staffing and design for which the NRC staff is responding to in this letter. NuScale has submitted several letters to the NRC staff regarding Human Factors Engineering (HFE) supporting material. "NuScale Power, LLC Submittal of Human Factors Engineering (HFE) Implementation Plans," letter dated May 6, 2015 (ADAMS Accession No. ML15139A223), and "NuScale Power, LLC Submittal of a Second Set of Human Factors Engineering (HFE) Implementation Plans," letter dated August 6, 2015 (ADAMS Accession No. ML15223A099), provided draft HFE Implementation Plans for NRC staff review. The NRC staff will present its comments on these plans at a series of recently scheduled monthly HFE telecommunication public meetings.

Also, a related control room design issue on the safety parameter display system (SPDS) was identified in the Report as Gap 2. The Report stated NuScale would "seek NRC concurrence that integration of the NuScale SPDS into the control room human-system interface design will not require an exemption from 10 CFR 50.34(f)(2)(iv)." Section 50.34(f)(2)(iv) states:

*Provide a plant safety parameter display console that will display to operators a minimum set of parameters defining the safety status of the plant, capable of displaying a full range of important plant parameters and data trends on demand, and capable of indicating when process limits are being approached or exceeded.*

The NRC staff notes that the rule language does not require a separate SPDS console and the NRC staff has not required a separate SPDS console for recent applications. Therefore, based on the information available to date, the NRC staff view is that the integration of the SPDS into the control room human-system interface design should not require an exemption from 10 CFR 50.34(f)(2)(iv).

### Accident Scenario Considerations

The NuScale design incorporates multiple design and operational aspects that differ from existing pressurized water reactors. However, those design and operational differences also create the possibility that a NuScale-designed plant might experience an anticipated operational occurrence (AOO), transient, or accident scenario of a different type than those considered for currently-licensed plants, or that the frequency of such an events could be measurably different for a NuScale-designed module compared to currently-licensed plants. For example, the failure of equipment or human errors during movement of an entire module or partially disassembled reactor or containment components during refueling, and the resulting consequences, need to be considered in development of the application. In the alternative, NuScale should provide a justification for why such information would not be needed based upon the robustness of the design. The AOO, transient, accident, and severe accident scenarios described in a future DC application should include, in addition to those scenarios identified in the NuScale Design Specific Review Standard, any other scenarios resulting from the novel aspects of the NuScale design.

Risk Informed Review

The NRC staff is preparing for a risk-informed review of portions of the NuScale DC application in accordance with "Introduction – Part 2," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: Light-Water Small Modular Reactor Edition" (SRP-LWSMR Edition). The review guidance in the SRP-LWSMR Edition covers methods the NRC staff uses to review an application, and does not change the level of information required in the application. An application is required to provide the information specified in 10 CFR 52.47, "Contents of applications; technical information." This information must include a safety analysis of the structures, systems, and components and of the facility as a whole, various descriptions, performance requirements, technical justifications, analyses, and evaluations. As such, the staff's risk informed review, which is founded in part on the risk significance of a system, structure or component, may not always directly correspond to the depth and breadth of information required in the application for the NRC staff to make the required findings.

Should you have any questions, please contact Mr. Greg Cranston, Senior Project Manager for the NuScale DC at (301) 415-0546 or via email at [gregory.cranston@nrc.gov](mailto:gregory.cranston@nrc.gov).

Sincerely,  
*/RA/*

Frank Akstulewicz, Director  
Division of New Reactor Licensing  
Office of New Reactors

Project No.: PROJ0769

cc: NuScale Power LLC Listserv

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Should you have any questions, please contact Mr. Greg Cranston, Senior Project Manager for the NuScale design certification at (301) 415-0546 or via email at [gregory.cranston@nrc.gov](mailto:gregory.cranston@nrc.gov).

Sincerely,  
/RA/

Frank Akstulewicz, Director  
Division of New Reactor Licensing  
Office of New Reactors

Project No.: PROJ0769

cc: NuScale Power LLC Listserv

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**\*via email**

**NRO-002**

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