February 16, 2021 Docket No. 99902078

U.S. Nuclear Regulatory Commission
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Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Submittal of "NuScale 250 MWt Standard Design Approval Regulatory Engagement Plan," PL-0002-66070, Revision 2

REFERENCE: Letter from NuScale Power, LLC to NRC, "NuScale Power, LLC Submittal 'NuScale Standard Design Approval Regulatory Engagement Plan,' PL-0002-66070, Revision 1," dated January 23, 2020 (ML20023D069)

Enclosed for your review is the NuScale Small Modular Reactor (SMR) Standard Design Approval (SDA) Regulatory Engagement, PL-0002-66070, Revision 2. This plan is intended to guide interactions between NuScale and the NRC for the planned submittal of the Standard Design Approval application for the NuScale small modular reactor design.

Enclosure 1 contains the proprietary version of "NuScale 250 MWt Standard Design Approval Regulatory Engagement Plan," PL-0002-66070, Revision 2. NuScale requests that the proprietary version be withheld from public disclosure in accordance with the requirements of 10 CFR § 2.390. The enclosed affidavit (Enclosure 3) supports this request. Enclosure 2 contains the nonproprietary version of the plan.

This letter makes no regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions, please contact Michael Melton, Licensing Manager, at 240-883-3007 or at mmelton@nuscalepower.com.

Sincerely,

Carrie Fosaaen
Director, Regulatory Affairs
NuScale Power, LLC

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Enclosure 1: "NuScale 250 MWt Standard Design Approval Regulatory Engagement Plan," PL-0002-66070-P, Revision 2, proprietary version

Enclosure 2: "NuScale 250 MWt Standard Design Approval Regulatory Engagement Plan," PL-0002-66070-NP, Revision 2, nonproprietary version

Enclosure 3: Affidavit of Carrie Fosaaen, AF-0221-74019

NuScale Power, LLC
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Enclosure 1:

"NuScale 250 MWt Standard Design Approval Regulatory Engagement Plan," PL-0002-66070-P, Revision 2, Proprietary Version

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Enclosure 2:

"NuScale 250 MWt Standard Design approval Regulatory Engagement Plan," PL-0002-66070-NP, Revision 2, Nonproprietary Version

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NuScale 250 MWt Standard Design Approval Regulatory Engagement Plan

February 2021

Revision 2

NuScale Power, LLC

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Executive Summary

The purpose of this regulatory engagement plan (REP) is to guide interactions between NuScale Power, LLC (NuScale), and the U.S. Nuclear Regulatory Commission (NRC) for submittal of a standard design approval (SDA) application for a NuScale power plant design. This plan identifies the regulatory approach and describes interactions, roles, and responsibilities to improve efficiency, enhance communication, and reduce regulatory uncertainty.

The SDA application will describe a NuScale power plant incorporating 250 MWt modules in a design based on the NuScale Design Certification Application (DCA).

The REP emphasizes early and frequent communications between NRC staff and NuScale to ensure both parties succeed in their roles. NuScale intends to maintain nontechnical planning and interaction (P&I) information available in a form accessible to the NRC staff for planning and administrative use.

The DCA, the associated NRC final safety evaluation report, the DCA review experience, and approaches described in this REP provide an opportunity to control project schedule and costs while assuring resource availability and increasing regulatory efficiency during staff evaluation of the design's safety.

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1.0 Purpose of Regulatory Engagement Plan (REP)

The purpose of this regulatory engagement plan (REP) is to guide interactions between NuScale Power, LLC (NuScale), and the U.S. Nuclear Regulatory Commission (NRC) for submittal of a standard design approval (SDA) application for a NuScale power plant design. This plan identifies the regulatory approach and describes interactions, roles, and responsibilities to improve efficiency, enhance communication, and reduce regulatory uncertainty.

The plan describes activities designed to achieve:

- Timely and complete submittal of a risk-informed SDA application with technical information and analyses results that provide a basis for the staff to fulfill their responsibilities in the regulatory process. NuScale may submit application parts and document sections as early as possible with the goal of early submittal to improve efficiency and reduce application review time. See Section 3.0 of this plan.

- Frequent open and closed meetings to identify and resolve technical issues related to the application process and content directed toward ensuring the information the NRC staff needs to complete their regulatory responsibilities is provided in a timely manner and complete form. Communication of plans and interactions that do not involve technical discussions will be reduced to improve efficiency and timeliness. See Section 4.0 of this plan.

This plan is a living document that will be updated as plans evolve and the process is implemented. This plan is based on Guidelines for Development of a Regulatory Engagement Plan, NEI 18-06 (Reference 10.1).

1.1 Contact Information

The point of contact for written correspondence with NuScale is:

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Lead point of contact for the SDA and coordination of routine interactions is:

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1.2 Company and Project Structure

Not used.

1.3 Summary of Strategic Project Approach and Goals

NuScale is using the SDA licensing process in 10 CFR 52, Subpart E (Reference 10.8) to obtain NRC approval for the NuScale design. Each module will generate up to about 250 MWt in a core and vessel design similar to those described in the NuScale DCA (Reference 10.14). NuScale believes that the 250 MWt design is an evolutionary step forward from the design in the DCA.

NuScale will submit the final design in a Final Safety Analysis Report (FSAR) in accordance with 10 CFR 52.135 (Reference 10.9) including the associated changes to referenced topical and technical reports. The application will also include other parts as described in Section 3.1.1. Although the SDA will describe the entire facility, NuScale will describe NuScale Power Module (NPM) and NPM-specific details on a per-module basis. The application will describe and analyze plant common, shared, and module-specific structures, systems, and components (SSC) and operations.

Consistent with 10 CFR 52.133 (Reference 10.10), the SDA may be referenced by construction permit or combined license (COL) applicants.

The SDA application will be similar to the DCA design for the NuScale Standard Plant DCA. The SDA application will leverage prior NRC interactions and reviews to improve regulatory efficiency, reduce cost and resource requirements, and thereby reduce time to obtain SDA approval due to NRC familiarity with the basic design. This plan incorporates DCA review lessons learned.

NuScale may submit application parts and document sections as early as possible to provide opportunity for NRC staff to review, request clarification and additional information within the scope of the submittals, and complete preliminary safety evaluation reports. The goal of early submittal is to improve efficiency and reduce application review time.

NuScale will pursue a risk-informed licensing process to leverage the inherent safety of the NuScale design. Preapplication engagements will include interactions with NRC staff to reach mutual agreement on desired outcomes while considering agency resource availability.

Engagements will include discussion of design changes with the purpose of gaining alignment on whether any significant technical and policy issues arise as a result of the changes in the design. NuScale desires that this alignment be documented during the preapplication phase so that it can be referenced throughout the duration of the review as changes occur in both organizations.

1.4 Background

NuScale submitted a DCA in accordance with 10 CFR 52, Subpart B (Reference 10.11) and an SDA in accordance with 10 CFR 52 Subpart E (Reference 10.8). The NRC granted an SDA for the NuScale DCA design on September 11, 2020 (Reference 10.15). The DCA design and the SDA design are identical; both describe a facility with up to twelve 160 MWt NuScale Power Modules.

More than 100 engagements over five years, both preapplication and during the post-submittal review, were conducted with NRC to resolve first-of-a-kind (FOAK) issues associated with the NuScale design. In addition, numerous meetings with the Advisory Committee for Reactor Safeguards (ACRS) were also held to further discuss and challenge the NuScale design as a part of the certification process.

This SDA application intends to take advantage of these prior interactions and issue resolutions. NuScale has identified some valuable design changes during the final design process for the DCA that would be most beneficial to its current and future COL clients.

1.5 REP Approach

Risk-informing the licensing process is relevant to the NuScale design as documented in safety conclusions reached during the NuScale DCA (Reference 10.16). NuScale will coordinate with NRC staff to satisfy NRC policies and requirements.

The basis for NRC regulatory actions including technical details of the design, operation, and safety of the design will be open to public scrutiny consistent with regulatory requirements.

Nontechnical planning and interaction (P&I) information that does not provide technical details nor supports the safety evaluation or conclusions will be made available via an Electronic Reading Room (eRR).

This approach will facilitate communication and maintenance of current information by NRC staff and NuScale, thereby supporting process efficiency, cost containment, resource allocation, and schedule goals.

Although NuScale maintains this REP, licensing staff solicit NRC staff input for consideration and inclusion with regard to any matter described here. NuScale will update this REP as information and plans evolve. The REP will describe and document agreement between NuScale and the NRC staff regarding licensing approach, resolution of issues, schedule expectations, and interaction protocol. Prior to official updates to the plan, the NuScale SDA Licensing manager will contact the lead project manager (PM) for the NRC to communicate planned changes prior to transmittal. Internal NuScale licensing processes will be consistent with the related information in this REP (e.g., the process for written submittals).

2.0 Technology Summary

The NuScale design in this SDA application is for a facility similar to that described in the previously submitted NuScale DCA with each module generating up to about 250 MWt.

3.0 Regulatory Strategy

3.1 Application Type

NuScale is using the SDA licensing process in 10 CFR 52, Subpart E (Reference 10.8) to obtain NRC approval for the NuScale design. According to 10 CFR 52.135 (Reference 10.9), an application that is submitted to the NRC in support of an SDA may consist of either the final design for the entire facility or the final design of major portions thereof. NuScale's plan is to submit an SDA application for the entire facility that encompasses the complete design and includes all design changes from that described in the earlier DCA design. NuScale may submit application parts and document sections as early as possible to provide opportunity for NRC staff to review, request clarification and additional information within the scope of the submittals, and complete preliminary safety evaluation reports. The goal of early submittal is to improve efficiency and reduce application review time.

The submittal of the entire FSAR for the SDA application demonstrates that NuScale has performed a comprehensive review against the DCA-FSAR of record. Consistent with 10 CFR 52.133 (Reference 10.10), the SDA may be referenced by construction permit or combined license (COL) applicants.

3.1.1 Application Content

The SDA application submittal will meet regulatory requirements described in 10 CFR Part 52 Subpart E (Reference 10.8). The general information required for an SDA application, per 10 CFR 52.136 (Reference 10.12), is similar to that provided in Part 1 of the DCA, plus additional corporate information not required for the DCA: (a) name of applicant; (b) address of applicant; (c) description of business or occupation of applicant; (d) the state where the applicant's company is incorporated or organized and the principal location where it does business; (e) the names, addresses, and citizenship of its directors and of its principal officers; and (f) whether it is owned, controlled, or dominated by an alien, a foreign corporation, or foreign government.

Although the majority of the SDA application scope is an FSAR (per 10 CFR 52.137 [Reference 10.13]) and the associated changes to topical and technical reports that are incorporated by reference, the application will also include other parts. Additional information will be required by COL applicants in order to complete their application that references the NuScale SDA. A review of Regulatory Guide 1.206 (Reference 10.2) was performed in order to determine the various parts of the SDA application that will be needed. Table 3-1 lists the parts of the application required for a DCA, a COLA, and the following parts proposed for inclusion in the NuScale SDA application submittal:

Part 1	General and Financial Information
Part 2	Safety Analysis Report (comparable to Part 2 Tier 2 of the DCA)
Part 4	Technical Specifications
Part 7	Exemptions
Part 8	Inspections, Tests, Analyses and Acceptance Criteria (ITAAC)

Part 9	Withheld Information
Part 10	Quality Assurance Program Description

NuScale may choose to submit these parts either as a part of a broader SDA package or separately on the docket. Portions of the application that are proposed for inclusion but not required by regulation will be discussed with NRC during preapplication engagement.

In addition to the parts listed above, NuScale may submit licensing topical reports that support evaluation and safety determination. Topical reports typically provide detailed information regarding methods and report results that support regulatory review. Topical reports are submitted for review, evaluation, and approval independent of the SDA application.

NuScale may submit technical reports to provide supporting information for the design and operations described in the application. The technical reports are not submitted for approval and provide information and details that are not to be considered incorporated by reference unless explicitly identified in the report.

Similar to early submittal of topical reports, NuScale is exploring and plans to solicit NRC staff input regarding submittal of portions of the application earlier than the final SDA submittal as described above. Early submittals will provide opportunity for the staff to review, request clarification and additional information within the scope of the submittals, and complete preliminary safety evaluations. The goal is to provide early communication of application details, thereby improving efficiency and reducing application review time.

3.1.2 Precedent

The NRC granted an SDA for the NuScale DCA design on September 11, 2020. That design and the SDA are identical: both describe a facility with up to twelve 160 MWt NuScale Power Modules.

Outside of the NuScale 2020 precedent, the NRC has recently granted an SDA in concert with approval for a design control document (DCD) submitted for a certified design for an international design. KEPCO/KHNP submitted Rev. 3 of their DCD for the APR1400 on August 13, 2018 (Reference 10.17) and concurrently requested approval of the APR1400 standard design pursuant to Subpart E of 10 CFR Part 52, in addition to the request for design certification under Subpart B of 10 CFR Part 52. On the basis of its FSAR for the DCA (Reference 10.18), the NRC also issued a standard design approval (Reference 10.19) on September 28, 2018. The design and application of the approved design certification and the SDA is identical, however.

Under prior Title 10 regulations, design certification applicants were required and did receive Final Design Approval (FDA) prior to requesting design certification. Some applicants sought and received FDA independent of design certification.

The current 10 CFR 52, Subpart E, Standard Design Approval (Reference 10.8) process has not been completed for an application separate from design certification. However, the FDA precedent may be useful in informing discussions with NRC staff on this process.

3.1.3 Application FSAR Content

The primary scope of the SDA application is the FSAR, which NuScale is developing based on Part 2, Tier 2 of the DCA, referred to as the DCA-FSAR.

Although NRC requirements do not include Tier 1 information for an SDA application, NuScale is proposing inspections, tests, analyses, and acceptance criteria (ITAAC) in Chapter 14 of the FSAR. These ITAAC will provide a basis for the ITAAC for a future COLA submitted under 10 CFR 52 Subpart C (Reference 10.22).

The DCA-FSAR will be modified to include changes that have been identified and approved for the SDA application. The requirements for SDA application are similar to and encompassed by the requirements used in the NRC staff review of the DCA-FSAR as part of the design certification under 10 CFR 52 Subpart B (Reference 10.11). The existing detail in the DCA-FSAR and the full scope SDA application satisfies the technical content requirements of 10 CFR 52.137 (Reference 10.13).[1]

Several types of changes are being made to the information that was provided in the DCA-FSAR. Major changes from the DCA-FSAR address:

- design changes related to the NPM power increase with other valuable changes identified during the final design process for the DCA
- risk-informing content by limiting detail not associated with nor supporting a NRC safety finding
- resolution of some COL items included in the DCA-FSAR
- changes to regulatory requirements and guidance since the submittal of the DCA[1]

Each of these topics is discussed in more detail below.

3.1.3.1 Design Change

The design of the NuScale design in this SDA application is similar to that described in the DCA with a thermal power increase and other changes. A review of the significant design changes will be the subject of a separate preapplication meeting.

3.1.3.2 Risk-Informing FSAR Content

Risking-informing FSAR content will remove content not relevant in the FSAR not needed for NRC staff to make a safety finding. NuScale will use risk insights and possible safety impacts to provide a streamlined FSAR.

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[1] The SDA FSAR includes one requirement that does not exist for a DCA FSAR: “Information pertaining to design features that affect plans for coping with emergencies in the operation of the reactor facility or a major portion thereof” (10 CFR 52.137(a)(11) [Reference 10.13]). This information should be satisfied by the DCA FSAR, but may need to be specifically identified within the SDA FSAR.

NuScale will use guidance regarding the required level of detail provided in the latest revision to Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition (SRP) NUREG-800 (Reference 10.3), Design-Specific Review Standard for NuScale Design (Reference 10.4), and Regulatory Guide 1.206 (Reference 10.2) to identify appropriate level of FSAR content. The level of detail in the FSAR will be consistent with the safety significance being provided.

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}}2(c),(d)

Illustrative values, equipment design details, and other specificity unrelated to the safety of the facility will be considered for minimization or removal. Industry experience in operational facility safety analyses report contents may be considered in defining appropriate content of the FSAR.

3.1.3.3 Additional Detail to Resolve Some COL items

Since the design detail has progressed since the DCA, some additional standard design details that were defined in the DCA-FSAR as COL responsibility as COL items will be included instead in the SDA application in part or in whole. NuScale will remove these corresponding COL items from the SDA after information required to support a safety finding is incorporated into the SDA or revised if fulfilled in part.

These changes will be communicated to the planned COL applicants so that the follow-on COL applications reflect these COL item updates. No updates are planned for COL items that require site-specific information.

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3.2 National Environmental Policy Act (NEPA)

Actions required by NEPA and 10 CFR 51 will not be included in this SDA application.

3.3 Principal Design Criteria (PDC) and General Design Criteria (GDC)

Adherence to PDC and GDC will be described in the SDA application Part 2, the Final Safety Analysis Report, and Part 7, Exemptions. Changes from the approved NuScale DCA will be presented to the NRC. Preapplication engagements will be considered for these items.

3.4 Selection of Applicable Guidance

Since the NuScale DCA was submitted in December 2016, there may be changes in the regulations and regulatory guidance documents that must be addressed by the SDA application. The DCA reflects regulations in effect and applicable as of the completion of design certification, and the regulatory guidance in effect six months prior to the docket date of the application.

The SDA application will include an evaluation of the standard plant design against regulations and the Standard Review Plan (SRP) revision in effect six months prior to the docket date of the application and will be listed in Section 1.9 of the FSAR, *Conformance with Regulatory Criteria.*

Example – SRP revisions to a number of sections (e.g., SRP Section 3.9.4)

Updates to SRP sections have occurred, with the conformance to the SRP and the Design-Specific Review Standard (DSRS) documented in Table 1.9-3 of Tier 2 of the DCA FSAR. An example of one of the updates is that SRP, Section 3.9.4 – Control Rod Drive Systems – was updated to Rev. 4 in March 2017 (after DCA submittal) whereas the DCA references conformance with acceptance criteria in Rev. 3 (March 2007).

3.5 Use of Standard and Industry Guidance

Industry guidance applicability will be listed throughout the SDA application Part 2, the FSAR. Changes from the approved NuScale DCA will be presented to the NRC. Preapplication engagements will be considered for these items.

3.6 Assessing Alignment and Gaps

To assist NRC reviewers, it would be helpful for them to know what information in the SDA application is unchanged from the DCA, and a risk-informed indication as to whether NuScale believes the changes might have possible safety or risk significance {{ }}[2(c),(d)]. NuScale proposed to provide analyses for each change from the DCA and whether it is believed the changes might have possible safety or risk significance via an internal significance review (SR) process, as described to the staff in an April 2020 preapplication meeting (Reference 10.38).

The SR process identifies changes from the DCA that are determined to be significant by the effected locations in the FSAR and has the ability to identify significant changes associated with each FSAR section. NuScale intends to communicate SR process results to NRC staff during the preapplication. The information will support efficient allocation of regulatory resources and scheduling of work activities by highlighting significant changes from the DCA.

3.7 Design-Centered Review Approach

NuScale does not intend to use a design-centered work group for the SDA application.

3.8 Keys Issues

Anticipated key issues are addressed with major design changes discussed in Section 3.6 and preapplication topics discussed in Section 4.1.

3.9 NRC Review Timeframes

Preliminary discussion with the NRC indicates a required {{ }}[2(c),(d)] NRC review period to provide the advanced Safety Evaluation Report (SER) without open items to the ACRS. Further discussion is included in Section 4.4.

The NRC and NuScale have established several metrics for requests for additional information (RAIs). These metrics are goals used to monitor the health of the project. If metrics are not being met, the concerns that are causing the delays will be escalated up the managerial chain.

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}}2(c),(d)

Table 3-1. SDA application format and content

APPLICATION PART	COMBINED LICENSE	DESIGN CERTIFICATION	SDAA – Required by Regulation	SDAA – Needed to Support COL	Include as Part of SDAA Submittal
Transmittal Letter	✓*	✓	✓	N/A	Yes
Part 1: General and Financial Information	✓	✓ (financial info. Not required)	✓ (financial info. Not required)	N/A	Yes
Part 2: Safety Analysis Report – Tier 1	N/A	✓	No	No	No
• Ch 1 – Introduction	N/A	✓	No	No	No
• Ch 2 – Unit Specific SSCs Design Descriptions and ITAAC	N/A	✓	No	ITAAC Only	ITAAC Only (see Part 08)
• Ch 3 – Shared SSCs and Non-SSCs Design Descriptions and ITAAC	N/A	✓	No	ITAAC Only	ITAAC Only (see Part 08)
• Ch 4 – Interface Requirements	N/A	✓	No	No	No
• Ch 5 – Site Parameters	N/A	✓	No	No	No (in FSAR Ch 2)
Part 2: Safety Analysis Report – Tier 2	✓	✓	✓	Yes	Yes
Part 3: Environmental Report	✓	✓	No	No	No
Part 4: Technical Specifications	✓	✓	No	Yes	Yes (could also be included in FSAR Ch 16)

APPLICATION PART	COMBINED LICENSE	DESIGN CERTIFICATION	SDAA – Required by Regulation	SDAA – Needed to Support COL	Include as Part of SDAA Submittal
Part 5: Emergency Plans	✓	Optional (Limited Scope) Not in NuScale DCA	No	No	No
Part 6: Security Plans	✓	Optional (Limited Scope) Not in NuScale DCA	No	No	No
Part 7: Exemptions, Departures, and Variances	Yes, if Applicable	Yes, if Applicable	Yes, if Applicable	N/A	Yes – Exemptions
Part 8: License Conditions; Inspections, Tests, Analyses and Acceptance Criteria	✓	✓ (ITAAC only) NuScale DCA references Part 2 Tier 1	No	Yes (only ITAAC)	Yes (only ITAAC) Could include as a separate IBR report
Part 9: Withheld Information	✓	✓ NuScale DCA provides list of tables and figures	✓	N/A	Yes
Part 10: Quality Assurance Program Description	✓	✓ NuScale DCA references separate topical report	✓	Yes	Yes
Part 11: Supplemental Information (e.g., Limited Work Authorization)	Yes, if Applicable	Yes, if applicable None for NuScale DCA	No	No	No

* The symbol “✓” denotes mandatory information.

4.0 Preapplication Engagement

NuScale will conduct preapplication meetings (teleconferences, videoconferences, and face-to-face) with NRC staff to identify, assess, and mitigate regulatory risks associated with the SDA application. The primary benefit planned for this engagement is alignment on the risk-informed content of the application, and scope and depth of the NRC review. Design changes to be included in the SDA application will also be discussed to identify and align on any new significant technical or policy issues. The SDA preapplication process will leverage the experience and lessons learned from the preapplication and safety review of the DCA. There is no intent to revisit topics previously discussed and resolved during the DCA review process.

During preapplication engagement, NuScale will encourage, propose, and support frequent open and closed meetings with NRC staff. These meetings will focus on scheduling and process until immediately before submittal. They will ensure that NRC staff has timely and accurate information to complete regulatory responsibilities in making their safety determination with respect to agency resource availability.

NuScale understands the need to notify the public of agency meetings and will support efforts for early meeting notification. NuScale points of contact will work with NRC staff to coordinate a schedule of meetings. In addition, meeting planning will consider participation by attendees in multiple time zones.

4.1 Identification of Topics

Specific topics for discussion include:

- proposed SDA application licensing strategy including the protocol, process, and implementation of a risk-informed (safety-focused) review
- explain and gain general agreement on the proposed SDA application licensing strategy and method of indicating changes from the DCA
- explain and gain general agreement on the scope of the SDA application parts, including topical and technical reports
- schedule for SDA application review and approval
- differences between DCA design and the SDA design
- differences in analytical methods and results in the SDA application from those in the DCA
- gain agreement on the portions of the SDA application that NuScale seeks to include that are not required by regulation, to ensure that NRC will review and grant finality on those portions
- gain agreement on the content of Part 7, Exemptions, Departures, and Variances, with respect to several regulations that the design certification will address (10 CFR 50.54(m) [Reference 10.20] and 10 CFR 50 Appendix J [Reference 10.21]), and whether those same regulations can be addressed by the SDA

- gain agreement on a preliminary schedule for SDA application review and approval
- alignment on risk-informed content of the application including NuScale and NRC expectations for SDA application FSAR level of detail, including NuScale's planned methodology for identifying extraneous information to remove
- discuss and document protocol/process and implementation of a risk-informed (safety-focused) review
- potential NRC preapplication audit of the SDA application prior to the planned submittal date (similar to that done for the DCA)

Agreements reached during the preapplication meetings regarding the review process (nontechnical topics) will be captured in writing by the NRC to guide their review. For example, it is expected that certain tests conducted to support the DCA will not be necessary to be repeated to support the SDA application. Documenting the resolution of application and review topics is key to ensuring consistency during the review process.

4.2 Types and Frequency of Interactions

NuScale will conduct regular P&I meetings with NRC staff to ensure appropriate management of schedule, cost, resource availability, regulatory efficiency, and audits. These nontechnical discussions will not exchange safety or technical information supporting a safety evaluation or determination by the staff. The intent is to coordinate, monitor, and identify opportunities to improve efficiency associated with costs, schedule duration, and resource availability.

The type and frequency of interactions between the NRC and NuScale will vary depending on the needs of both parties, and the availability of NRC and NuScale resources.

4.2.1 Routine Project Management Discussions

Prior to and following submittal of the SDA application, routine and frequent interaction is expected via phone and email between the assigned NRC project manager (PM) and the NuScale SDA Licensing manager. These interactions will establish and maintain consistent understanding of issues' status and help to coordinate planned teleconferences and meetings.

4.2.2 Project Management "Drop-Ins"

"Drop-in" visits – periodic, nonpublic meetings between NuScale and NRC project management (which may include participation by various levels of NuScale and NRC management) will be conducted periodically to exchange general information on nontechnical topics such as planning for future interactions, status, and schedule updates. Limited discussion of technical issues may occur, but typically it will be in the context of status of review or identification of topics for separate discussion.

4.2.3 Application Strategy and Technical Discussions

Initial discussions between NuScale and the NRC staff will be concerned primarily with the planned strategies for development and submittal of the application, including the different parts of the application. The objective of technical discussions will be to focus on the differences in design between this SDA application and the DCA. Topics for these discussions, as well as follow-up interactions, will be developed by the NuScale SDA Licensing manager in consultation with the NRC PM. Discussions may focus on individual topics or several topics combined (for efficiency).

4.2.4 NRC Staff Familiarization

No additional familiarization meetings or submittals are planned outside of those otherwise described in Section 4.2.

4.2.5 Written Submittals

Other than the SDA application submittal itself (See Section 5.2), a number of other written submittals will be provided on the docket, including white papers, presentations, and topical and technical reports impacted by the SDA design changes. The topical and technical reports were incorporated by reference (IBR) within the reference DCA. These reports will be updated, if necessary, and submitted either prior to the SDA application transmittal or concurrently. Topical reports are standalone documents with associated safety evaluation reports (SERs). Topical reports typically address a technical issue, methodology, or process submitted for review and approval. When approved, they may be referenced by NuScale and other license applicants. Since topical report revisions supersede prior versions, separate submittal of these topical reports containing non-editorial changes may be required on the SDA application docket. Technical reports are similar and provide support for and clarification of information in an application, but do not receive a separate SER. One area for alignment during preapplication is the extent to which topical and technical reports will be incorporated by reference versus summarized in the FSAR.

NuScale will periodically produce summary reports describing accomplishments, progress, and remaining outstanding items {{ }}[2(c),(d)] to assess the status and current progress. Ideally, the content will be agreed to by both the NRC and NuScale.

4.2.6 Early ACRS Engagement

NuScale understands the benefits of early ACRS engagement on SDA technical matters. However, the first priority will be to propose a four-phase review to the Committee.

4.2.7 Escalation of Issues

NuScale is proposing a modification of issue escalation in a forthcoming DCA lessons learned. The outcome of that proposal will be incorporated into a future revision of this REP.

4.3 NRC Feedback

No additional feedback methods are planned outside of routine feedback received from communication methods described in Section 4.2.

4.4 Schedule Consideration

NuScale's is planning to submit the SDA application {{ }}2(c),(d). Methods of achieving this and specific schedule timelines are included elsewhere in this document.

4.5 Relation to Other Proceedings or Reviews

Section not currently used.

4.6 Preapplication Site Visits, Audits, and Inspections

The NRC may perform preapplication audits to evaluate technical details that are below the level of detail for inclusion in the application. Audits include definition of a finite review scope, entrance meetings to review the purpose, schedule, participants, and requested information. The NRC will use exit meetings or reports to document the scope of activities, information reviewed and considered during the audit, conclusions, and audit participants. The NRC staff may conduct audits in a manner consistent with regulatory responsibilities for SDA application activities. NuScale encourages and will support conduct of audits as a valuable tool for the staff to assess the design and safety of the facility.

5.0 Application Process

5.1 Readiness Assessment Audit

Since numerous audits and inspections were conducted for the DCA, additional preapplication audits are considered to be unnecessary for the SDA application. However, NuScale may request optionally that the NRC staff conduct a readiness assessment audit of the completed (or near-complete draft) SDA application (as done for the DCA). This is a comprehensive review of the draft application over several days.

The conclusion of the audit is a series of observations by the NRC staff, focusing on issues that might preclude acceptance of the application for review if left unresolved or uncorrected. In addition, a secondary objective of the readiness assessment is to identify areas of the SDA application for which clarifications or supplemental information could preclude or minimize major staff requests for additional information. Guidance for NRC conduct of the readiness assessment is given in NRC Office Instruction, NRO-REG-104 (Reference 10.5). The readiness audit should occur with sufficient time to resolve any identified issues prior to the submittal of the application.

5.2 Application Submittal

The SDA application will be submitted before any construction permit or COLA referencing the SDA.

5.3 Acceptance Review and Docketing

NuScale and the NRC are currently discussing a potential 10-day timeline for acceptance reviews. The outcome of this discussion will be incorporated into a future revision of this REP.

5.4 NRC Processes

Section not currently used.

6.0 Post-Application Engagement

6.1 Technical Meetings

Section not currently used.

6.2 Audits and Inspections

Section not currently used.

6.3 Submittal of Additional Information

Section not currently used.

6.4 Frequency of Interaction

Section not currently used.

6.5 Review Phases and Schedule

The SDA application review is anticipated to differ from the NuScale DCA review in the following manner. See Figure 6-1.

- SDA application review is expected to be simplified and shortened to a four-phase review.
- Phases A and B encompass the NRC technical review.
    - If portions of the application complete Phases A and B they may enter Phase C prior to the date indicated on Figure 6-1 and in Section 9.1.
- Phase C encompasses ACRS reviews.
- Phase D is the issuance of the SDA application's final safety evaluation report.

The NRC will make the final schedule determination after receipt of the application.

6.6 Relation to Other Proceedings and Reviews

Section not currently used.

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Figure 6-1. NuScale approach for the SDA application approval review schedule

7.0 Withheld Information

Section not currently used.

8.0 Partnerships and Industry Participation

Section not currently used.

9.0 Other Topics

9.1 Schedule

Preapplication

- periodic NuScale status report letters
  - 07/24/2020 (actual) (Reference 10.23)
  - 10/26/2020 (actual) (Reference 10.24)
  - 01/29/2021 (actual) (Reference 10.25)
- initial SDA application discussion with NRC mgmt. – 03/11/2019 and 12/12/2019 (actual)
- project request letter – 04/30/2019 (actual)
- initial SDA preapplication public meeting with NRC – 09/25/2019 (actual) (Reference 10.26)
- regulatory engagement plan revision 1, public meeting with NRC – 01/30/2020 (actual) (Reference 10.27)
- SDA proposed parts letter – 02/24/2020 (actual) (Reference 10.28)
  - response received from NRC confirming planned submittal parts were acceptable
- planned high-level design updates public meeting with NRC – 04/14/2020 (actual) (Reference 10.29)
- significance review process public meeting with NRC – 04/21/2020 (actual) (Reference 10.30)
- control room staffing topical report public and audit meetings – 05/28/2020 through 12/08/2020 (actual)
- RAI metrics P&I meeting with NRC – 07/28/2020 (actual)
- topical report schedule public meeting with NRC – 08/13/2020 (actual) (Reference 10.31)
- knowledge and abilities catalog public meeting with NRC – 09/16/2020 (actual) (Reference 10.32)
- comprehensive vibration assessment program RG 1.20 public meeting with NRC – 09/17/2020 (actual) (Reference 10.33)
- Technical Specification and bases P&I meeting with NRC – 09/24/2020 (actual)
- NRC and ACRS review schedule P&I meetings with NRC – 09/09/2020, 10/02/2020 and 12/09/2020 (actual)
  - discussions are ongoing to solidify the review schedule for topical reports and the SDA application
- building design and analysis methodology topical report public meeting with NRC – 10/06/2020 (actual) (Reference 10.34)

- ASME code analysis public and P&I meetings with NRC – 10/21/2020 through 12/08/2020 (actual)
- concept of operations human factors engineering document – 12/17/2020 (actual) (Reference 10.35)
- scope and budget management P&I meetings with NRC – commenced 01/11/2021 and scheduled periodically
- future preapplication meetings suggested topics are below:
  - risk-informed review process
    - Purpose: Discuss proposed process to be used for review of the SDA application to utilize risk-informed concepts based on the changes to the DC application and to streamline the review.
  - optimization of FSAR content
    - Purpose: Discuss process for removal of extraneous information in the FSAR not needed to support a safety finding and to utilize risk insights, where appropriate.
  - description of design changes (power increase and value engineering items)
    - Purpose: Familiarize NRC staff with further changes in design and methodology from the DCA and impacts to safety evaluation. This will allow the NRC to allocate review resources based on the degree of changes.
  - updates to topical and technical reports
    - Purpose: Identify SDA application impacts to topical and DCA technical reports, with updates provided via a new submittal or a supplement, and schedule for these submittals.
- preapplication audits and inspections (as needed) – see Section 4.6
- readiness assessment audit (optional) – see Section 5.1

Application

- Improvements in Frequency Domain Soil-Structure-Fluid Interaction topical report ACRS meetings – 09/22/2020 (actual) (Reference 10.36) and 10/08/2020 (actual) (Reference 10.37)
- Control Room Staffing Plan topical report ACRS meetings planned in March of 2021
- submittal of SDA application – {{ }}2(c),(d)
- Final Safety Evaluation Report – {{ }}2(c),(d)
- proposed four phase review

9.2 Budget

Budgeting considerations can be an important consideration in establishing and maintaining the SDA application project schedule. Estimated NRC staff review fees, including review hours, will be estimated at the time of acceptance for review and monitored on an ongoing basis. Both the NRC and NuScale will communicate with each other any expected changes in the level of estimated NRC staff review fees or any funding restrictions.

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10.0 References

10.1 Nuclear Energy Institute, "Guidelines for Development of a Regulatory Engagement Plan," NEI 18-06, Rev. 0, June 2018.

10.2 U.S. Nuclear Regulatory Commission, "Applications for Nuclear Power Plants," Regulatory Guide 1.206, Rev. 1, October 2018.

10.3 U.S. Nuclear Regulatory Commission, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition (SRP)," NUREG-0800.

10.4 U.S. Nuclear Regulatory Commission, "Design-Specific Review Standard for NuScale Small Modular Reactor Design," Rev. 0, June 2016, Agencywide Documents Access and Management System (ADAMS) Accession No. ML15355A295.

10.5 U.S. Nuclear Regulatory Commission (Office of New Reactors), "Pre-application Readiness Assessment," NRO-REG-104, Rev. 0, October 8, 2014, Agencywide Documents Access and Management System (ADAMS) Accession No. ML14079A197.

10.6 U.S. Nuclear Regulatory Commission (Office of New Reactors), "Acceptance Review Process for Early Site Permit, Design Certification, and Combined License Applications," NRO-REG-100, Rev. 2, December 18, 2014, Agencywide Document Access and Management System (ADAMS) Accession No. ML14078A152.

10.7 U.S. Nuclear Regulatory Commission (Office of New Reactors), "Development, Review and Approval Process for Requests for Additional Information," NRO-REG-101, Rev. 2, August 15, 2018, Agencywide Document Access and Management System (ADAMS) Accession No. ML18199A238.

10.8 *U.S. Code of Federal Regulations*, "Licenses, Certifications, and Approvals for Nuclear Power Plants," Subpart E, Part 52, Chapter I, Title 10, "Energy," (10 CFR 52 Subpart E).

10.9 *U.S. Code of Federal Regulations*, "Filing of Applications," Section 52.135, Part 52, Chapter I, Title 10, "Energy," (10 CFR 52.135).

10.10 *U.S. Code of Federal Regulations*, "Relationship to Other Subparts," Section 52.133, Part 52, Chapter I, Title 10, "Energy," (10 CFR 52.133).

10.11 *U.S. Code of Federal Regulations*, "Standard Design Certifications," Subpart B, Part 52, Chapter I, Title 10, "Energy," (10 CFR 52 Subpart B).

10.12 *U.S. Code of Federal Regulations*, "Contents of Applications; General Information," Section 52.136, Part 52, Chapter I, Title 10, "Energy," (10 CFR 52.136).

10.13 *U.S. Code of Federal Regulations*, "Contents of Applications; Technical Information," Section 52.137, Part 52, Chapter I, Title 10, "Energy," (10 CFR 52.137).

10.14 NuScale Power, LLC, "Submittal of the NuScale Standard Plant Design Certification Application (NRC Project No. 0769)," December 31, 2016, ADAMS Accession No. ML17013A229. (Final version of the DCA was provided as Revision 5, July 29, 2020, Agencywide Documents Access and Management System (ADAMS) Accession No. ML20225A044.)

10.15 U.S. Nuclear Regulatory Commission, "Standard Design Approval for the NuScale Power Plant Based on the NuScale 600 Standard Plant Design Certification Application," September 11, 2020, Agencywide Documents Access and Management System (ADAMS) Accession No. ML20247J564.

10.16 U.S. Nuclear Regulatory Commission, "Final Safety Evaluation Report for the NuScale Standard Plant Design", August 28, 2020, Agencywide Documents Access and Management System (ADAMS) Accession No. ML20023A318.

10.17 KEPCO/KHNP, "APR1400 Standard Design Certification Application Design Control Document, Revision 3, Tier 1 and Tier 2," August 13, 2018, Agencywide Documents Access and Management System (ADAMS) Accession No. ML18228A680.

10.18 KEPCO/KHNP, "Advanced Power Reactor 1400 (APR1400) Final Safety Evaluation Report," October 5, 2018, Agencywide Documents Access and Management System (ADAMS) Accession No. ML18087A364.

10.19 U.S. Nuclear Regulatory Commission, "Standard Design Approval for the Advanced Power Reactor 1400," September 28, 2018, Agencywide Documents Access and Management System (ADAMS) Accession No. ML18261A187.

10.20 *U.S. Code of Federal Regulations*, "Conditions of Licenses," Section 50.54, Part 50, Chapter I, Title 10, "Energy," (10 CFR 50.54).

10.21 *U.S. Code of Federal Regulations*, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," Appendix J, Part 50, Chapter I, Title 10, "Energy," (10 CFR 50 Appendix J).

10.22 *U.S. Code of Federal Regulations*, "Combined Licenses," Subpart C, Part 52, Chapter I, Title 10, "Energy," (10 CFR 52 Subpart C).

10.23 NuScale Power, LLC, "Submittal of NuScale Small Modular Reactor, Standard Design Approval Application Status Report" July 24, 2020, ADAMS Accession No. ML20206K934.

10.24 NuScale Power, LLC, "Submittal of NuScale Small Modular Reactor, Standard Design Approval Application Status Report" October 26, 2020, ADAMS Accession No. ML20300A580.

10.25 NuScale Power, LLC, "Submittal of NuScale Small Modular Reactor, Standard Design Approval Application Status Report" January 29, 2021, ADAMS Accession No. ML21029A281.

10.26 U.S. Nuclear Regulatory Commission, "Public Meeting between NRC and NuScale - Discuss Future Standard Design Approval (SDA) Application Submittal" August 5, 2019, ADAMS Accession No. ML19267A059.

10.27 NuScale Power, LLC, "Submittal of Presentation Materials Entitled 'Standard Design Approval: Regulatory Engagement Plan Review and SDA Application Framework,' PM-0120-68531, Revision 0" January 29, 2021, ADAMS Accession No. ML20028D979.

10.28 NuScale Power, LLC, "Submittal of Planned Standard Design Approval Application Content" February 24, 2020, ADAMS Accession No. ML20055E565.

10.29 U.S. Nuclear Regulatory Commission, "Closed Teleconference - NuScale Standard Design Approval (SDA) Pre-Application Activities" April 14, 2020, ADAMS Accession No. ML20094G940.

10.30 NuScale Power, LLC, "Submittal of Presentation Materials Entitled 'NRC Presentation: NuScale Power, LLC, Standard Design Approval Application Significance Review Process,' PM-0420-69680, Revision 0" April 15, 2020, ADAMS Accession No. ML20106F137.

10.31 NuScale Power, LLC, "Submittal of Presentation Materials Entitled, "SDA Pre-Application: NuScale SDAA Overview of Topical Reports," PM-0820-70992, Revision 0" July 30, 2020, ADAMS Accession No. ML20212L873.

10.32 U.S. Nuclear Regulatory Commission, "Public Meeting with NuScale Power, LLC on Operator Licensing Examination Topics" September 16, 2020, ADAMS Accession No. ML20259A475.

10.33 NuScale Power, LLC, "Submittal of Presentation Materials Titled 'SDAA Pre- Application Presentation: NuScale Updates to the Comprehensive Vibration Assessment Program,' PM-0720-71197, Revision 0" September 3, 2020, ADAMS Accession No. ML20247J670.

10.34 NuScale Power, LLC, "Submittal of Presentation Materials Entitled 'SDA Pre- Application Presentation: Building Design and Analysis Methodology for Safety-Related Structures,' PM-0920-71880, Revision 0" September 24, 2020, ADAMS Accession No. ML20268C272.

10.35 NuScale Power, LLC, "NuScale Power, LLC Submittal of 'Concept of Operations,' RP-1020-72177, Revision 1" December 17, 2020, ADAMS Accession No. ML20352A475

10.36 U.S. Nuclear Regulatory Commission, "Agenda Advisory Committee on Reactor Safeguards NuScale Subcommittee, Topical Report, 'Improvements in Frequency Domain Soil-Structure – Fluid Interaction Analysis.'" September 22, 2020, ADAMS Accession No. ML20258A286.

10.37 NuScale Power, LLC, "Submittal of Presentation Materials Entitled 'ACRS Subcommittee Presentation: NuScale Topical Report – Improvements in Frequency Domain Soil-Structure-Fluid Interaction Analysis,' PM-0920-71643, Revision 0" September 18, 2020, ADAMS Accession No. ML20262H288.

10.38 U.S. Nuclear Regulatory Commission, "Summary of the April 21, 2020, Category 1, Public Meeting to Discuss NuScale Power, LLC Standard Design Approval Application Significance Review Process" April 23, 2020, ADAMS Accession No. ML20114E039.

Enclosure 3:

Affidavit of Carrie Fosaaen, AF-0221-74019

NuScale Power, LLC

AFFIDAVIT of Carrie Fosaaen

I, Carrie Fosaaen, state as follows:

(1) I am the Director of Regulatory Affairs of NuScale Power, LLC (NuScale), and as such, I have been specifically delegated the function of reviewing the information described in this Affidavit that NuScale seeks to have withheld from public disclosure, and am authorized to apply for its withholding on behalf of NuScale

(2) I am knowledgeable of the criteria and procedures used by NuScale in designating information as a trade secret, privileged, or as confidential commercial or financial information. This request to withhold information from public disclosure is driven by one or more of the following:

(a) The information requested to be withheld reveals distinguishing aspects of a process (or component, structure, tool, method, etc.) whose use by NuScale competitors, without a license from NuScale, would constitute a competitive economic disadvantage to NuScale.

(b) The information requested to be withheld consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), and the application of the data secures a competitive economic advantage, as described more fully in paragraph 3 of this Affidavit.

(c) Use by a competitor of the information requested to be withheld would reduce the competitor's expenditure of resources, or improve its competitive position, in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product.

(d) The information requested to be withheld reveals cost or price information, production capabilities, budget levels, or commercial strategies of NuScale.

(e) The information requested to be withheld consists of patentable ideas.

(3) Public disclosure of the information sought to be withheld is likely to cause substantial harm to NuScale's competitive position and foreclose or reduce the availability of profit-making opportunities. The accompanying submittal reveals distinguishing confidential, preliminary and/or pre-decisional aspects of NuScale's commercial strategy.

The precise financial value (loss) resulting from public disclosure of the information is difficult to quantify, but it is sensitive information related to NuScale's commercial strategy and, therefore, has substantial value to NuScale.

If the information were disclosed to the public, NuScale's competitors would have access to the information without purchasing the right to use it or having been required to undertake a similar expenditure of resources. Such disclosure would constitute a misappropriation of NuScale's intellectual property, and would deprive NuScale of the opportunity to exercise its competitive advantage to seek an adequate return on its investment.

(4) The information sought to be withheld is in the enclosed submittal entitled "NuScale 250MWt Standard Design Approval Regulatory Engagement Plan," PL-0002-66070, Revision 2. The enclosure contains the designation "Proprietary" at the top of each page containing proprietary information. The information considered by NuScale to be proprietary is identified within double braces, "{{ }}" in the document.

(5) The basis for proposing that the information be withheld is that NuScale treats the information as a trade secret, privileged, or as confidential commercial or financial information. NuScale relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC §

552(b)(4), as well as exemptions applicable to the NRC under 10 CFR §§ 2.390(a)(4) and 9.17(a)(4).

(6) Pursuant to the provisions set forth in 10 CFR § 2.390(b)(4), the following is provided for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld:

(a) The information sought to be withheld is owned and has been held in confidence by NuScale.

(b) The information is of a sort customarily held in confidence by NuScale and, to the best of my knowledge and belief, consistently has been held in confidence by NuScale. The procedure for approval of external release of such information typically requires review by the staff manager, project manager, chief technology officer or other equivalent authority, or the manager of the cognizant marketing function (or his delegate), for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside NuScale are limited to regulatory bodies, customers and potential customers and their agents, suppliers, licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or contractual agreements to maintain confidentiality.

(c) The information is being transmitted to and received by the NRC in confidence.

(d) No public disclosure of the information has been made, and it is not available in public sources. All disclosures to third parties, including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or contractual agreements that provide for maintenance of the information in confidence.

(e) Public disclosure of the information is likely to cause substantial harm to the competitive position of NuScale, taking into account the value of the information to NuScale, the amount of effort and money expended by NuScale in developing the information, and the difficulty others would have in acquiring or duplicating the information. The information sought to be withheld is part of NuScale's technology that provides NuScale with a competitive advantage over other firms in the industry. NuScale has invested significant human and financial capital in developing this technology and NuScale believes it would be difficult for others to duplicate the technology without access to the information sought to be withheld.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 16, 2021.

Carrie Fosaaen