



LO-112496

January 28, 2022

Docket No. 99902052

U.S. Nuclear Regulatory Commission
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SUBJECT: NuScale Power, LLC Letter of Intent Providing the Carbon Free Power Project (CFPP) Combined License Application (COLA) Response to NRC Regulatory Issue Summary 2020-02 and Regulatory Engagement Plan

REFERENCES:

1. Letter from CFPP to the NRC, "Licensing Lead for Carbon Free Power Project, LLC," dated October 12, 2021 (ML21299A363)
2. NRC Regulatory Issue Summary 2020-02, "Process for Scheduling and Allocating Resources for Fiscal Years 2023-2025 for the Review of New Licensing Applications for Light-Water Reactors and Non-Light-Water Reactors," dated August 31, 2020 (ML20202A496)
3. NEI 18-06, Revision 0, "Guidelines for Development of a Regulatory Engagement Plan," dated June 2018 (ML21299A363)
4. Letter from UAMPS to the NRC, "Utah Municipal Power Systems Response to NRC Regulatory Issue Summary 2020-02, 'Process for Scheduling and Allocating Resources for Fiscal Years 2023-2025 for the Review of New Licensing Applications for Light-Water Reactors and Non-Light-Water Reactors,'" dated October 23, 2020 (ML20325A141)
5. NRC Regulatory Issue Summary 2006-06, "New Reactor Standardization Needed to Support the Design-Centered Licensing Review Approach," dated May 31, 2006 (ML053540251)
6. U.S. Nuclear Regulatory Commission, "Final Safety Evaluation Report for the NuScale Standard Plant Design," dated August 28, 2020 (ML20231A804)

NuScale Power, LLC (NuScale) has been identified as the licensing lead for the Carbon Free Power Project (CFPP, LLC) and U.S. Nuclear Regulatory Commission (NRC) point of contact for the CFPP Combined License Application (COLA) (Reference 1).

The purpose of this letter is to provide information related to the submission of the CFPP COLA, to include information regarding the primary entities that will be involved in the CFPP COLA development, basic information regarding the status of the project, and known primary

milestones for the project. The CFPP COLA response to NRC Regulatory Issue Summary 2020-02 (Reference 2) is provided as an attachment to this letter.

Additionally, enclosed for your review is the CFPP COLA Regulatory Engagement Plan. This plan is intended to guide interactions between the CFPP and the NRC for the planned submittal of the COLA. This initial revision of a Regulatory Engagement Plan in preparation for the submittal of the CFPP COLA is provided as Enclosure 1, based on guidance provided in NEI 18-06 (Reference 3). NuScale requests written NRC feedback on the Regulatory Engagement Plan within 30 days.

Enclosure 1 is the proprietary version of "Carbon Free Power Project (CFPP) Regulatory Engagement Plan," PL-106946, Revision 0. 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 is 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 John Volkoff at 541-452-7117 or at jvolkoff@nuscalepower.com.

Sincerely,



John Volkoff
Manager, Combined License Applications
NuScale Power, LLC

Distribution: Michael Dudek, NRC
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Attachment: "Carbon Free Power Project (CFPP) Combined License Application (COLA) Response to NRC Regulatory Issue Summary 2020-02"
Enclosure 1: "Carbon Free Power Project (CFPP) Regulatory Engagement Plan," PL-106946-P, Revision 0, proprietary version
Enclosure 2: "Carbon Free Power Project (CFPP) Regulatory Engagement Plan," PL-106946-NP, Revision 0, nonproprietary version
Enclosure 3: Affidavit of John Volkoff, AF-112497

Attachment:

Carbon Free Power Project (CFPP) Combined License Application (COLA) Response to NRC Regulatory Issue Summary 2020-02

The following information is provided in response to NRC Regulatory Issue Summary 2020-02 and is an update to the response provided by Utah Associated Municipal Power Systems (UAMPS) (Reference 4).

Licensing process questions for all potential/future applicants:

1. (a) What types of NRC interactions do you plan to seek (e.g., pre-application, focused review, permit, license, design approval, amendment, renewal, certification)? This may be in the form of a white paper; topical report; CP, DC, ESP, LWA, COL, OL, SDA, ML, or LAR.

Response:

CFPP plans to submit a COLA, referencing the NuScale Standard Design Approval (SDA) for a 77MWe module plant design, seeking NRC approval and issuance of a Combined License (COL) in accordance with 10 CFR Part 52. The CFPP is a wholly-owned subsidiary of UAMPS that was established to develop, own and operate the project.

The COLA and Standard Design Approval Application (SDAA) preparation efforts currently are ongoing in parallel, with the SDAA scheduled to be completed and submitted for NRC review prior to the scheduled submittal of the COLA. The SDA project plans have been communicated with the NRC.

The CFPP will request pre-application meetings in addition to submitting Topical Reports, White Papers, and Technical Reports in preparation for submitting a COLA.

(b) If you plan to request an ESP, will you seek approval of either proposed major features of the emergency plans in accordance with 10 CFR 52.17(b)(2)(i) or with 10 CFR 52.17(b)(2)(ii)?

Response:

The CFPP currently has not developed plans to request an early site permit (ESP), but will inform the NRC if this information changes.

2. In which month and year do you expect to submit your applications or other documents?

Response:

The CFPP COLA is scheduled to be submitted to the NRC in January 2024. The schedule for the submittal of other documents is under development and will be provided to the NRC at the earliest opportunity.

3. (a) If applicable at this time, is there a designated reference COL applicant?

Response:

The CFPP is expected to be the designated reference COL applicant.

(b) In what order would you like the NRC to review the subsequent applications?

Response:

Not applicable.

4. (a) Where will the facility be located?

Response:

The facility will be located at the Idaho National Laboratory complex. The location was toured by NRC staff October 4, 2021.

(b) How many units or modules will the design, or a specific facility, contain, if known?

Response:

The CFPP COLA will include one NuScale Small Modular Reactor (SMR) plant, which will contain six NuScale Power Modules™ (NPMs) in a single reactor building.

5. (a) Will you be part of an organized Design Centered Working Group (DCWG) or Technical Working Group (TWG)?

Response:

Yes. The CFPP plans to use the Design Centered Working Group (DCWG) approach described in RIS 2006-06, "New Reactor Standardization Needed to Support the Design-Centered Licensing Review Approach" (Reference 5). As a precursor to a DCWG, NuScale organized and regularly confers with an advisory board to obtain owner-operator input and perspective on current design and licensing matters.

(b) Who are the other members of the DCWG or TWG?

Response:

The DCWG is currently in the preliminary stages of implementation and has not yet established official membership. Current plans include NuScale as the design vendor, and CFPP as a COL applicant.

(c) Who will be the primary point of contact for each DCWG or TWG?

Response:

NuScale Power has been identified as the Licensing Lead and the primary point of contact for the DCWG (John Volkoff, 541-452-7117, jvolkoff@nuscalepower.com).

Technical questions for all potential and future applicants (to the extent practical and possible):

1. (a) What type of reactor design will be used?

Response:

The NuScale SMR design will be used.

(b) What type of coolant and fuel will be used?

Response:

The NuScale SMR is a pressurized light water cooled SMR. The NuScale fuel assembly design is similar to those of existing pressurized water reactor (PWR) 17x17 fuel assemblies. The only significant difference is a shorter fuel assembly length.

2. (a) What is the current status of the development of the facility design (e.g., conceptual, preliminary, or final)?

Response:

Facility design is considered to be preliminary. Where required, final facility design documentation will be readied in support of the COLA submittal. Continued design finalization will occur throughout the review period in preparation/support of site-specific design, fabrication, and construction activities.

(b) Have you established a schedule for completing the design?

Response:

The CFPP COLA will reference the updated standard design for the NuScale SMR plant (see response to licensing process question 1(a)). Site-specific design activities in support of the CFPP COLA are ongoing. The CFPP intends to provide more detailed information to the NRC when the schedule becomes more developed.

3. (a) Do you plan to submit white papers or technical and topical reports related to the features of your design or for the resolution of policy or technical issues?

Response:

The CFPP will request pre-application meetings in addition to submitting Topical Reports, White Papers, and Technical Reports.

(b) Do you have a schedule for submitting such papers or reports?

Response:

The CFPP will provide a schedule when prepared.

4. (a) Are you interested in licensing and testing a first-of-a-kind plant under the prototype provisions of 10 CFR 50.43(e)?

Response:

No.

(b) If so, to the extent practical, describe milestones, plans, and intended tests.

Response:

Not applicable.

5. (a) Are vendors or consultants assisting you in preparing the application?

Response:

Yes.

(b) If so, please describe their roles and responsibilities for the design and licensing activities.

Response:

NuScale Regulatory Affairs	CFPP COLA Licensing Lead
	COLA Preparation
NuScale Engineering	SMR Design
Fluor Engineering	Engineering, Procurement, Construction (EPC)
	Steam and Power Design
	Environmental Report
	COLA Preparation
Sargent and Lundy	Nuclear Island Engineering
	COLA Preparation
Contingency Management Consulting Group, LLC	Emergency Plan
	COLA Preparation
Rizzo International, Inc.	Site Characterization
	COLA Preparation
CFPP, LLC	UAMPS Representative Responsible for CFPP

6. (a) Are the U.S. Department of Energy, national laboratories, universities, or other institutions assisting you in developing the design or preparing the application?

Response:

Yes.

(b) If so, please describe their roles and responsibilities for the design and licensing activities.

Response:

The U.S. Department of Energy (DOE) approved a cost share award to CFPP, LLC that could provide up to \$1.4 billion to commercialize a NuScale power plant at Idaho National Laboratory (INL). Additionally, the CFPP is coordinating with INL, including data sharing as appropriate to support preparation of the COLA.

7. Have you established a schedule for qualifying fuel and other major systems and components?

Response:

NuScale has an agreement in place with Framatome which specifies a schedule to fabricate and qualify the first NuFuel HTP2 fuel assemblies once a fuel supply contract is signed with a utility. NuScale has established a schedule for all equipment qualifications within the project management system that will be executed through its product suppliers and a designated test and qualification facility.

8. (a) Have you developed computer codes and models to perform design and licensing analyses?

Response:

CFPP anticipates the development of computer codes and models to perform site-specific analyses.

(b) Have you established a schedule for completing the design and licensing analyses?

Response:

Yes. The CFPP has established a detailed resource-loaded schedule for completing the design and analyses needed to support a high-quality COLA. The design and licensing analysis will be completed in time for the CFPP COLA submittal in January 2024.

9. Describe, to the extent practical, your schedule for defining principal design criteria, licensing-basis events, and other fundamental design and licensing relationships.

Response:

Principal design criteria and licensing basis events have been identified per the development of the NuScale SDAA, considering regulatory guidance, with modifications appropriate for the NuScale design. Fundamental design and licensing relationships between the COLA and SDAA development will be established and tracked and, where necessary, are updated to ensure maintenance of rigorous configuration management.

NuScale Nonproprietary

10. (a) Have you developed procedures for the use of thermal fluidic testing facilities and for use of the results of their tests to validate computer models?

Response:

Not applicable.

(b) Have you established a schedule for completing the thermal fluidic testing?

Response:

Not applicable.

(c) Have you established a schedule for the construction of testing facilities?

Response:

Not applicable.

11. (a) Have you identified system and component suppliers (including fuel suppliers), manufacturing processes, and other major factors that could influence design decisions?

Response:

NuScale has identified approximately 50 procurement packages for the NuScale scope of supply which includes the major categories; Fuel fabrication, NPM fabrication, safety instrumentation and controls, and mechanical handling equipment (equipment used to handle, move, inspect, disassemble/assemble the NPM). Although supply agreements have not been finalized, in most cases, suppliers have been identified for more than half of the procurement packages. The balance of the procurement activities will be handled by the EPC, Fluor, and are primarily civil/structural items (e.g., buildings) and balance of plant equipment.

(b) Have you established a schedule for identifying suppliers and key contractors?

Response:

Most of the NuScale suppliers are expected to be selected by the end of 2023.

12. Do you have a quality assurance program or a schedule to develop one?

Response:

Yes.

13. (a) Have you developed the probabilistic risk assessment (PRA) models needed to support your applications, including the information needed to support risk-informed licensing approaches (for Chapter 19)?

Response:

NuScale maintains a PRA consistent with the design. The NuScale PRA evaluates the risk associated with a single NPM and includes both Level 1 and Level 2 evaluations. A limited Level 3 evaluation has also been performed to support the severe accident management design alternatives (SAMDA) analysis. The PRA evaluates the risk of operation at full power as well as low power and shutdown (LPSD) modes of operation for both internal and external hazards, including internal fires and floods, high winds, external floods, and seismic events. The risk associated with multi-module operation is also assessed.

(b) Do you plan to use the PRA for any risk-informed applications (e.g., risk-informed technical specifications, risk-informed inservice inspections, risk-informed categorization and treatment, risk-informed inservice testing)?

Response:

The results of the PRA are periodically published and distributed internally at NuScale. The PRA has been used to risk-inform design decisions and as input to NuScale's design reliability assurance program (DRAP). These applications, or similar, are expected to continue past COLA award. If additional risk-informed applications are planned, they will be identified in the COLA.

(c) Do you plan to use the PRA models in the development of the design?

Response:

The PRA has been used to risk-inform several design decisions (e.g., location of the chemical and volume control system check valves). The PRA has also been used as input to DRAP. Use of the PRA to risk-inform design decisions (e.g., cable routing and separation of safe shutdown equipment) is expected to continue.

(d) At what level will the PRA be prepared, and at what point during the application process will it be submitted?

Response:

Similar to the design certification application (DCA) and the SDAA, the NuScale PRA submitted with a COLA will meet the requirements of 10 CFR 50.71(h), and include a Level 1 and Level 2 PRA that covers applicable hazards, initiating events, and operating modes.

14. Have you developed the plans for the construction and use of a control-room simulator?

Response:

Plans for the CFPP construction and for the use of a control room simulator are in development. The results of the ongoing construction planning will be progressed during COLA preparation and reflected in the COLA.

NuScale's simulator modeling is scheduled to be updated to reflect the 77 MWe module design for the SDAA as final engineering design activities progress.

The CFPP intends to provide further information to the NRC as such plans are developed.

15. (a) Do you have a staffing plan?

Response:

The CFPP has developed a schedule for completing COLA-related activities and plans, including development of a staffing plan which supports the completion of scheduled activities.

(b) What is your current staffing level for the execution and testing of the reactor design?

Response:

Please see response to technical question 15(a).

(c) Do you plan to increase staffing?

Response:

The CFPP expects to align staffing levels to meet project demands.

16. (a) Which systems, structures, and components, including fuel, do you foresee will be fabricated off site and delivered for the manufacturing, fabrication, and site construction of a completed operational nuclear power plant?

Response:

Based on current plans, the CFPP expects that NPM subassemblies (upper containment vessel, upper reactor vessel, lower containment vessel, lower reactor vessel, and riser sections), steel composite wall sections, fuel, control rod drive mechanisms, valves, pumps, instrumentation and control cabinets, module assembly equipment, reactor building crane, power distribution centers, steam turbine generators, and most other mechanical equipment will be manufactured and delivered to the site for final assembly. The NPM subassemblies will be installed after reactor building construction is completed.

(b) What is intended to be assembled and constructed on site versus at a remote facility?

Response:

Plant buildings and structures will be constructed on-site using a combination of in situ and prefabricated component construction (steel composite walls). Bulk materials such as piping, cables, cable trays, structural steel, and concrete will be installed on site. Some equipment packages and building rooms will be assembled modularly off-site and transported to the site for final assembly. Efforts are currently ongoing to identify candidates for modularization.

(c) In addition, and as applicable, provide the construction plans and schedules for the fabrication of large components and modules of the applicable SMR or non-LWR designs when available.

Response:

CFPP is in the early planning stage for construction plans and schedules to fabricate large components and modules of the NuScale SMR design.

Enclosure 1:

“Carbon Free Power Project (CFPP) Regulatory Engagement Plan,” PL-106946-P, Revision 0, proprietary version

Enclosure 2:

“Carbon Free Power Project (CFPP) Regulatory Engagement Plan,” PL-106946-NP, Revision 0, nonproprietary version

Carbon Free Power Project (CFPP) Regulatory Engagement Plan

January 2022

Revision 0

NuScale Power, LLC

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1.0 Introduction

1.1 Purpose of Regulatory Engagement Plan

The purpose of this regulatory engagement plan (REP) is to guide interactions and enhance communication between the Carbon Free Power Project, LLC (CFPP) and the Nuclear Regulatory Commission (NRC) during the development of a combined license application (COLA). This plan identifies the planned regulatory approach and defines interactions and roles and responsibilities in order to enhance communication and reduce regulatory uncertainty.

NuScale, LLC (NuScale) will serve as the licensing lead for Fluor and will be the point of contact for the NRC for the CFPP COLA content. This is consistent with the CFPP letter submitted to the NRC on October 12, 2021 (Reference 10.1), stating that NuScale is authorized to act on behalf of the CFPP when engaging with the NRC.

1.2 Contact Information

The following are points of contact for all correspondence:

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1.3 Company and Project Structure

UAMPS is a nonprofit, joint-action governmental agency providing energy services to its 46 community-owned power system members located throughout the intermountain western states. UAMPS is working to provide the next generation of nuclear reactors at the Idaho National Laboratory (INL) in eastern Idaho as part of its CFPP.

The CFPP is an initiative formally launched in 2015 by UAMPS to advance state and national efforts to reduce carbon emissions and increase air quality. CFPP is a wholly-owned subsidiary of UAMPS that was established to develop, own, and operate the project. This project will provide CFPP with a COLA for a power generation facility using the NuScale small modular reactor (SMR) technology at the INL site. Fluor has the COLA development contract for the CFPP and has delegated to NuScale to: (1) develop a significant portion of the COLA content, and the infrastructure to be used by the project team to prepare the COLA; (2) develop, maintain, and manage the licensing strategy for the CFPP COLA project; and (3) act as the primary project team point-of-contact (i.e., interface) with NRC staff, using an approach substantially similar to that used successfully for the NuScale design certification application. Together, UAMPS, CFPP, Fluor, and NuScale will function as the Project Management Organization (PMO) for CFPP.

1.4 Summary of Strategic Project Approach and Goals

NuScale is using the combined licensing process in 10 CFR 52, Subpart C to develop and submit a COLA to the NRC for a power generation facility using the NuScale SMR technology at the INL site (Reference 10.2). Each module will generate up to approximately 250 MWt in a core and vessel design detailed in the standard design approval (SDA) currently under development.

During preparation of the COLA, NuScale will leverage prior NRC interactions and reviews to improve regulatory efficiency, reduce cost and resource requirements, and thereby, reduce application review time.

1.5 Background

The U.S. Nuclear Regulatory Commission (NRC) completed the review of the design certification application (DCA) for NuScale Power's 160 MWth SMR; issued the final safety evaluation report (FSER) in August 2020 (References 10.3 and 10.4). The FSER represents completion of the technical review and approval of the NuScale SMR design. The NRC granted an SDA for the NuScale DCA design on September 11, 2020 (Reference 10.5).

NuScale is now pursuing a new SDA for a plant comprised of six integrated pressurized water reactors that can generate 250 MWt (77 MWe) per module. This is an evolutionary step forward from the design in the DCA and original SDA. The 250 MWth SDA will be a standalone document that includes all of the needed elements from the DCA and any new elements driven by the increase in power from 160 MWth to 250 MWth. The SDA application is currently underway and the submittal of the application is planned for the fourth calendar year quarter of 2022.

More than 100 engagements over five years, both pre-application and during the post-submittal review, were conducted with the 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. NuScale intends to take advantage of these prior interactions and issue resolutions to meet the review and approval milestones of the COLA.

1.6 REP Approach

This REP is based on Nuclear Energy Institute (NEI) 18-06, "Guidelines for Development of a Regulatory Engagement Plan" (Reference 10.6). NuScale will maintain this REP as a living document and will update as necessary as plans evolve. Although NuScale maintains this REP, licensing staff will solicit NRC staff input for consideration and inclusion in the REP.

The REP will describe and document agreement between NuScale and the NRC staff regarding licensing approach, resolution of issues, schedule expectations, and interaction protocol.

2.0 Technology Summary

A NuScale Power Module™ (NPM) includes the nuclear reactor, steam generators, pressurizer, and containment in an integral package that eliminates reactor coolant pumps and large bore pipes. The NPM is passively safe relying upon natural physics of convection, conduction, and gravity to cool the reactor during normal operation, shutdown, and emergency core cooling. Each NPM produces 77MWe and is factory built

then installed below grade in a seismically-robust building within a steel-lined reactor pool.

3.0 Regulatory Strategy

3.1 Application Type

The CFPP project is pursuing a COLA under 10 CFR 52 Subpart C (Reference 10.2). Additional COLA details are contained in Section 3.1.1.

3.1.1 Application Content

The content and structure of the COLA is well-defined by NRC regulations and guidance. A summary of the elements of the COLA is provided in Table 3-1 below (Reference 10.2). The COLA will incorporate by reference NuScale 250 MWt SDA per 10 CFR 52.73 (Reference 10.7 and 10 CFR 52.133 (Reference 10.8) and will also contain site-specific information for INL. In addition to the parts listed in Table 3-1, the CFPP may submit licensing topical reports that support regulatory review. Topical reports are submitted for review, evaluation, and approval independent of the COL application.

Table 3-1. COLA format and content

APPLICATION PART	COMBINED LICENSE	SDAA – Needed to Support COL	DESCRIPTION
Transmittal Letter	✓*	N/A	
Part 1: General and Financial Information	✓	N/A	Project information and information on the applicant(s).
Part 2: Safety Analysis Report	✓	Yes	SDA incorporated by reference; then deviations are addressed as “departures.” Contains the design information and criteria for the proposed reactor and comprehensive data on the proposed site. It also discusses various hypothetical accident situations and the safety features of the plant that would prevent accidents or lessen their effects.
Part 3: Environmental Report	✓	No	Assessment of the environmental impact of the proposed facility. Used by NRC to support the environmental impact statement (EIS).
Part 4: Technical Specifications	✓	Yes	
Part 5: Emergency Plans	✓	No	
Part 6: Security Plans	✓	No	
Part 7: Exemptions, Departures, and Variances	Yes, if applicable	N/A	
Part 8: License Conditions; Inspections, Tests, Analyses and Acceptance Criteria	✓	Yes (only ITAAC)	Enumerates both operating conditions and Inspections, tests, analyses, and acceptance criteria (ITAAC) that a COL holder must meet to demonstrate that the facility has been constructed in conformance with the design.
Part 9: Withheld Information	✓	N/A	
Part 10: Quality Assurance Program Description	✓	Yes	
Part 11: Supplemental Information (e.g., Limited Work Authorization)	Yes, if applicable	No	

* The symbol “✓” denotes mandatory information.

3.1.2 Precedents

Precedents from COLs issued per 10 CFR 52 will be used to inform development of the CFPP COLA.

3.1.3 SDA Impact on COL Content

The COLA will be developed in parallel to the SDA and that process will inform the development of certain COL sections. The COLA intends to incorporate the SDA by reference and will document proposed departures, address COL items in the SDA, and include supplemental information to generic information in the SDA.

3.2 National Environmental Policy Act (NEPA)

Per 10 CFR 51.50(c), the combined license environmental report will address NEPA requirements (Reference 10.9).

3.3 Principal Design Criteria

This section is not currently used.

3.4 Selection of Applicable Guidance

The primary NRC guidance for the format and content of new plant license applications under 10 CFR 52 is provided in NRC Regulatory Guide 1.206 (Reference 10.10). NRC guidance to their staff for conducting reviews of license applications is contained in NUREG-0800, Standard Review Plan (SRP) (Reference 10.11). For the NuScale design, NRC guidance for staff reviews includes the NuScale Design-Specific Review Standard (DSRS), which is used by the staff in reviewing specific final safety analysis report (FSAR) sections for which the corresponding SRP guidance has been identified as being largely not materially relevant to the NuScale design (see SRP Part 2 Appendix 1). These documents include the experiences gained from past licensing reviews and identify other related NRC expectations and guidance documents (regulatory guides, NUREGs, generic communications, etc.) appropriate for consideration by prospective applicants. The COLA development includes the use of NRC-approved industry standards and previously approved computer codes and modeling methodologies to the extent practical.

Since the staff has not completed any COLA reviews for SMRs (no applications have been submitted to date), it is acknowledged that existing guidance may have limitations or not be directly applicable in all cases. In some cases, exceptions to regulations and departures from guidance may be necessary or desirable to implement the safety advantages inherent in the NuScale nuclear power plant design. SRP Introduction, Part 2 of NUREG-0800, describes the licensing review philosophy and the risk-informed, integrated review framework to be applied by the staff for new SMR applications under 10 CFR Part 52, and incorporates staff commitments made to the Commission in SECY-11-0024 (Reference 10.12). This framework is distinct from the review approach used for non-SMR applications and license amendments and is meant to enhance the efficiency of the review process and to align the staff review focus and resources with risk-

significant structures, systems, and components (SSCs) and other aspects of an SMR design that contribute most to safety. The framework consists of the following three major elements:

1. Incorporates a risk-informed approach by considering both the safety classification and the risk significance of SSCs in order to determine the appropriate level of review (i.e., the framework uses a “graded review” approach)
2. Incorporates an integrated review approach by using the satisfaction of selected requirements to provide reasonable assurance of some aspects of SSC performance
3. The safety/risk categorization and the integrated review approach described are documented in the design-specific review standard (DSRS) for the NuScale design

3.5 Use of Standards and Industry Guidance

Industry standards including consensus standards, NEI guidance, and EPRI guidance will be utilized when appropriate during the COL application process.

3.6 Assessing Alignments/Gaps

As part of the COLA development efforts, it may be necessary to resolve conflicts between existing regulatory infrastructure and new features in the NuScale design. The CFPP may reassess the conclusions reached in a previous gap analysis to identify additional needed exemptions from NRC regulations and deviations from guidance in RG 1.206 (Reference 10.10). For significant gaps, pre-application interactions will be conducted with NRC staff to outline the CFPP strategy and approach.

The NRC staff published a white paper to provide information to advanced reactor developers on the importance of pre-application engagement during application reviews (Reference 10.13). This has been referenced in the preparation of this REP to ensure alignment between NRC staff and the CFPP.

3.7 Design-Centered Review Approach

As per Regulatory Guide 1.206, Applications for Nuclear Power Plants, the NRC encourages the standardization of applications to enhance the safety of nuclear power plants and to facilitate a predictable and consistent method for application review. Under the design center review approach (DCRA), staff performs one technical review for each issue outside the scope of the standard design and intends to make one consistent and justifiable decision to support COLA reviews.

NuScale intends to use the CFPP COLA as the reference COL (R-COL) application and use annotation of the FSAR, Part 2 of the COLA, and other portions of the application to clearly identify:

- sections that incorporate by reference the SDA FSAR
- sections that are standard for all COL applicants that reference the same standard design

- sections that are site-specific and, therefore, only apply to the specific location

3.8 Key Issues

Refer to Section 4.1 for discussion of anticipated key issues.

3.9 NRC Review Timeframes

3.9.1 Proposed Schedule

The NRC generic milestone schedule for a COLA referencing a certified design is 38 months. NuScale anticipates that the SDA can be reviewed within {{ }}^{2(c)} because most of the key safety principles remain unchanged from the DCA. The COLA schedule will assume a {{ }}^{2(c)} review and an overall {{ }}^{2(c)} NRC approval duration. In order to achieve a {{ }}^{2(c)} review, it is imperative that the CFPP COLA development team engage with the NRC through pre-application and receive early concurrence on select regulatory and technical topics to help expedite the application review.

3.9.2 Four-Phased Approach

The NRC utilizes a phased approach for conducting reviews of COLAs. The CFPP will propose to the NRC a four-phase process that will support a condensed COLA review schedule, as follows:

- Phase 1: NRC Issues Requests for Additional Information (RAIs)
- Phase 2: NRC Issues Advanced FSER without Open Items
- Phase 3: ACRS Review of Advanced Safety Evaluation Report (SER) without Open Items
- Phase 4: NRC Issues COLA

A four-phase review will reduce the review effort by the staff and ACRS, which will assist the NRC in managing its review of potentially numerous concurrent applications. Similar to the proposed SDA review, the four-phase review omits the development of a draft SER with open items and the ACRS's review of it. Instead, the staff would proceed directly to developing the advanced FSER with no open items and the ACRS review will be completed in one phase.

3.9.3 Topical Report Applications

Topical reports typically have a review and approval timeframe of 12-18 months. The CFPP will engage in early communication with NRC staff to ensure alignment on schedule. NuScale has the infrastructure in place with Certrec to streamline the review process to support a more efficient review. This process has been successfully utilized by the SDA team with topical reports.

3.9.3.1 Requests for Addition Information (RAIs)

The CFPP is proposing to use the metrics for RAIs listed below. 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. These metrics are listed below and are consistent with those used for the NuScale standard design approval application (SDAA).

- {{

}} ^{2(c)}

4.0 Pre-application Engagement

NuScale will facilitate pre-application meetings (teleconferences, videoconferences, and face-to-face) with NRC staff to identify, assess, and mitigate regulatory risks associated with the COLA. 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. NuScale will engage in frequent open and closed meetings with NRC staff until application submittal. These meetings 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 will work with NRC staff to coordinate an appropriate schedule of meetings taking into consideration the multiple time zones of attendees.

4.1 Identification of Topics

Table 4-1 below includes topics that have been identified as important to address in pre-application engagements. It should be noted that as the project progresses other topical reports and topics for pre-application engagement may be identified and added to the table below. The NRC will be promptly notified in the event additional topical reports are needed for planning and budget purposes. Timely pre-application engagement for each identified topic will be important to keep the NRC informed and aligned on schedule. Some of the pre-application engagements are currently estimated by quarter based on current information and subject to change as the project progresses.

Table 4-1. Topics for pre-application engagement

TOPIC	DESCRIPTION	PLANNED ENGAGEMENT
Volcanic Hazards Assessment (VHA)	{{ }} ^{2(c)}	11/18/2021 (actual) {{ }} ^{2(c)}
Cold License Plan	{{ }} ^{2(c)}	{{ }} ^{2(c)}
Cybersecurity*	{{ }} ^{2(c)}	{{ }} ^{2(c)}
License Structure*	{{ }} ^{2(c)}	{{ }} ^{2(c)}
Regulatory Exemptions	{{ }} ^{2(c)}	{{ }} ^{2(c)}
Emergency Planning Zone (EPZ)	{{ }} ^{2(c)}	{{ }} ^{2(c)}
Proposed Schedule Review	{{ }} ^{2(c)}	{{ }} ^{2(c)}
Physical Security/Security Plan	{{ }} ^{2(c)}	{{ }} ^{2(c)}
Site-Specific Characteristics	{{ }} ^{2(c)}	{{ }} ^{2(c)}

*Denotes topics that potentially require a topical report

4.2 Types and Frequency of Interactions

Interactions with the NRC are managed within NuScale Regulatory Affairs by the manager, Combined License Applications and coordinated with the CFPP COLA Project Team. These interactions may include phone calls, teleconferences, meetings to solicit feedback on proposed technical approaches, and audits/inspections of engineering information and testing facilities that support the COLA development.

NuScale is proposing the following meetings with NRC staff:

- {{ }}^{2(c)} meetings with NRC project managers
- quarterly status reports to docket that NuScale met its goals and objectives for pre-application
- planning meetings and drop-ins, as needed

4.3 NRC Feedback

An electronic reading room “eRR” on the Certrec Licensing Review Platform (CLRP) will allow NuScale and the NRC to track meeting summaries, feedback, and action items.

Correspondence with the NRC will include: project status information, presentations, topical reports, white papers, and RAI responses on submitted documents.

4.4 Schedule Considerations

Pre-application engagements will establish a schedule of meetings and submittals, and the timing/duration of NRC staff reviews. Additionally, the expectations for communicating changes to the schedule and/or scope will also be established.

4.5 Relation to Other Proceedings/Reviews

The COLA and SDAA preparation efforts currently are ongoing in parallel, with the SDAA scheduled to be completed and submitted for NRC review prior to the scheduled submittal of the COLA. This will require robust configuration management and standardized work processes to ensure successful project completion.

4.6 Pre-application Site Visits, Audits, and Inspections

Audits and inspections will be coordinated with the NRC-designated project manager and subject matter experts.

5.0 Application Process

5.1 Readiness Assessment Audit

The CFPP will request the NRC staff conduct a readiness assessment audit of the COLA prior to submittal for NRC review. This review is comprehensive and will help identify and resolve issues that may hinder acceptance of the COLA for docketing and

review. The audit must occur with sufficient time to resolve identified issues before scheduled submittal to avoid schedule and cost impacts to the COLA project. This process will take place in accordance with NRC Office of New Reactors (NRO) Office Instructions (OI) NRO-REG-104, Pre-application Readiness Assessment, and NRO-REG-100, Acceptance Review Process for Early Site Permit, Design Certification, and Combined License Applications (References 10.14 and 10.15).

5.2 Application Submittal

The COLA and SDAA preparation efforts currently are ongoing in parallel, with the SDAA scheduled to be completed and submitted for NRC review prior to the scheduled submittal of the COLA. The COLA will incorporate the SDA by reference so the COL cannot be issued until after the SDA is formally approved.

5.3 Acceptance Review and Docketing

After COLA submittal, the NRC will acknowledge receipt of the application and conduct an acceptance review (Reference 10.15). During the acceptance review process, NuScale is proposing that {{ }}^{2(c)} meetings with the NRC project managers continue to ensure alignment with NRC staff.

5.4 NRC Processes

The CFPP will communicate the anticipated submittal date of the COL application so that the NRC can initiate various actions required prior to submittal. After COL application acceptance, the NRC staff will develop a review schedule, which can be found on the NRC staff website.

6.0 Post-application Engagement

6.1 Technical Meetings

Technical meetings will be coordinated with the NRC-designated project manager and will typically be open to the public. The NRC will provide notice 10 working days in advance, and will include whether the meeting is open or closed to the public.

6.2 Audits and Inspections

Post-application audits and inspections will be coordinated with the NRC-designated project manager and subject matter experts.

6.3 Submittal of Additional Information

6.3.1 Supplemental Information

During the NRC approval process, information in the application may require an update. Notification of pending supplemental information and the associated schedule will be communicated to the NRC during routine interactions.

6.3.2 Requests for Additional Information

When issues or questions arise during the approval process, the CFPP prefers to utilize the NRC's eRAI process to clarify the request and identify proprietary information that should be withheld from the formal RAI.

Any impacts to the content of the application will be identified as part of the RAI response. A description of the impact and markups of affected application text will be included in the response.

6.3.3 Application Revisions/Updates

A COLA final safety analysis report (FSAR) must be updated annually while the application is under review in accordance with 10 CFR 50.71(e)(3)(iii) (Reference 10.16).

6.4 Frequency of Interactions

This section will be updated as plans evolve. A routine interaction schedule will be proposed to ensure alignment between the CFPP and the NRC during COLA review.

6.5 Review Phases and Schedule

Refer to Section 3.9.2 for discussion about the proposed four-phase process that will support a condensed COLA review schedule.

6.6 Relation to other Proceedings/Reviews

As stated in Section 4.5, the SDA approval process will be happening simultaneously with the COL approval process. This needs to be taken into consideration during the RAI response process as certain COL RAIs may need to be deferred pending resolution of issues identified during the SDA review.

7.0 Withheld Information

NuScale will comply with the Code of Federal Regulations and use existing NuScale procedures and processes as they relate to withheld information.

8.0 Partnerships and Industry Participation

8.1 Design-Centered Work Group (DCWG)

A DCWG will be utilized to ensure configuration control over the standard information gets implemented uniformly across all stakeholders. The DCWG will be led by NuScale and will include all CFPP stakeholders.

8.2 Nuclear Energy Institute (NEI)

NEI has published guidance documents to assist applicants in addressing various topics. NEI 18-06, “Guidelines for Development of a Regulatory Engagement Plan” was used to develop this document (Reference 10.6). Other relevant NEI documents will be utilized during the COL application process.

8.3 Standard Development Organizations

This section is not currently used.

8.4 Department of Energy

The U.S. Department of Energy (DOE) approved a cost share award to CFPP, LLC that could provide up to \$1.4 billion to commercialize a NuScale power plant at INL. Fluor was contracted by CFPP, LLC under a cooperative agreement between CFPP, LLC and DOE. DOE requirements will need to be met and milestones satisfied as this project progresses.

8.5 Other Organizations

This section is not currently used.

8.6 International Considerations

This section is not currently used.

9.0 Other Topics

9.1 Schedule

A detailed resource loaded schedule has been developed to support the project.

9.2 Budget

Budgeting considerations are an important consideration in establishing and maintaining the 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.

10.0 References

- 10.1 CFPP, LLC letter to NRC, “Licensing Lead for Carbon Free Power Project, LLC,” October 12, 2021, Docket Number: 99902052.
- 10.2 *U.S. Code of Federal Regulations*, “Combined Licenses,” Subpart C, Part 52, Chapter I, Title 10, “Energy,” (10 CFR 52 Subpart C).

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- 10.3 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.)
 - 10.4 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.
 - 10.5 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.
 - 10.6 Nuclear Energy Institute, "Guidelines for Development of a Regulatory Engagement Plan," NEI 18-06, Rev. 0, June 2018.
 - 10.7 *U.S. Code of Federal Regulations*, "Relationship to other Subparts," Section 52.73, Part 52, Chapter I Title 10, "Energy" (10 CFR 52.73).
 - 10.8 *U.S. Code of Federal Regulations*, "Relationship to Other Subparts," Section 52.133, Part 52, Chapter I, Title 10, "Energy" (10 CFR 52.133).
 - 10.9 *U.S. Code of Federal Regulations*, "Environmental report—construction permit, early site permit, or combined license stage," Section 51.50, Part 51, Chapter 1, Title 10, "Energy" (10 CFR 51.50).
 - 10.10 U.S. Nuclear Regulatory Commission, "Applications for Nuclear Power Plants," Regulatory Guide 1.206, Rev. 1, October 2018.
 - 10.11 U.S. Nuclear Regulatory Commission, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition (SRP)," NUREG-0800.
 - 10.12 U.S. Nuclear Regulatory Commission, "Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews," SECY-11-0024, March 4, 2011, Agencywide Documents Access and Management System (ADAMS) Accession No. ML110110688.
 - 10.13 U.S. Nuclear Regulatory Commission, "DRAFT Pre-application Engagement to Optimize Advanced Reactor Application Reviews," May 2021.
 - 10.14 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.
 - 10.15 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.

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- 10.16 U.S. Code of Federal Regulations, “Maintenance of records, making of reports,” Section 50.71, Part 50, Chapter 1, Title 10, “Energy” (10 CFR 50.71).
- 10.17 U.S. Nuclear Regulatory Commission, “Volcanic Hazards Assessment for Proposed Nuclear Power Reactor Sites,” Regulatory Guide 4.26, Rev. 0, June 2021.



Enclosure 3:

Affidavit of John Volkoff, AF-112497

NuScale Power, LLC

AFFIDAVIT of John Volkoff

I, John Volkoff, state as follows:

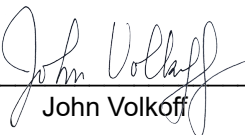
- (1) I am the Manager, Combined License Applications of NuScale Power, LLC (NuScale), and as such, I have been specifically delegated the function of reviewing the information described in this Affidavit that NuScale seeks to have withheld from public disclosure, and am authorized to apply for its withholding 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 report reveals distinguishing confidential, preliminary and/or pre-decisional aspects of NuScale's licensing strategy.

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

- (4) The information sought to be withheld is in the enclosed report entitled "Carbon Free Power Project (CFFP) Regulatory Engagement Plan." 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 January 28, 2022.



John Volkoff