CARBON FREE
POWER PROJECT
155 North 400 West, Suite 480
Salt Lake City, UT 84103

February 23, 2023

Docket No. 99902052

U.S. Nuclear Regulatory Commission
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SUBJECT: NuScale Power, LLC Submittal on Behalf of CFPP LLC Carbon Free Power Project (CFPP) Combined License Application (COLA) Entitled "Carbon Free Power Project (CFPP) Combined License Application (COLA) Presentation, Decommissioning Funding," PM-135498-NP, Revision 0

REFERENCE: LO-129873, NuScale Power, LLC Submittal on Behalf of Carbon Free Power Project, LLC (CFPP), "CFPP Decommissioning Cost Estimate Methodology" White Paper WP-129872, Revision 0 (ML22318A293)

On November 14, 2022, NuScale Power, LLC (NuScale) on behalf of CFPP provided to the NRC a white paper outlining the planned approach to determine the initial decommissioning funding certification amount (Reference). NuScale has requested a meeting with the NRC technical staff on February 28, 2023, to discuss this white paper, address staff questions, and receive feedback on the proposed methodology.

The purpose of this submittal is to provide presentation materials to the NRC for use during this meeting.

Enclosure 1 is the nonproprietary presentation entitled "Carbon Free Power Project (CFPP) Combined License Application (COLA) Presentation, Decommissioning Funding," PM-135498-NP, Revision 0.

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

If you have any questions, please contact Susan Baughn at 541-452-7319 or at sbaughn@nuscalepower.com.

Sincerely,

John Volkoff
Manager, Combined License Applications
NuScale Power, LLC
COLA Support on behalf of CFPP LLC

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Enclosure 1: "Carbon Free Power Project (CFPP) Combined License Application (COLA) Presentation, Decommissioning Funding," PM-135498-NP, Revision 0

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Enclosure 1:

"Carbon Free Power Project (CFPP) Combined License Application (COLA) Presentation, Decommissioning Funding," PM-135498-NP, Revision 0

Carbon Free Power Project (CFPP) Combined License Application (COLA) Presentation

Decommissioning Funding

February 28, 2023

CFPP Team

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Agenda

- Purpose/Objective
- Background
- CFPP Facility
- Proposed Approach to Decommissioning Funding
- Staff Questions on White Paper Submittal
  - Adequacy of Certification Amount
  - Alignment with 10 CFR 20 and 10 CFR 50.75
  - Prioritization of Safety
  - Greater Than Class C Material
- Conclusions

Purpose / Objective

- Provide the NRC with an overview of the proposed CFPP strategy for the initial Decommissioning Funding Assurance (DFA) certification amount
  - CFPP submitted “CFPP Decommissioning Cost Estimate Methodology” white paper on November 14, 2022 (ML22318A293)

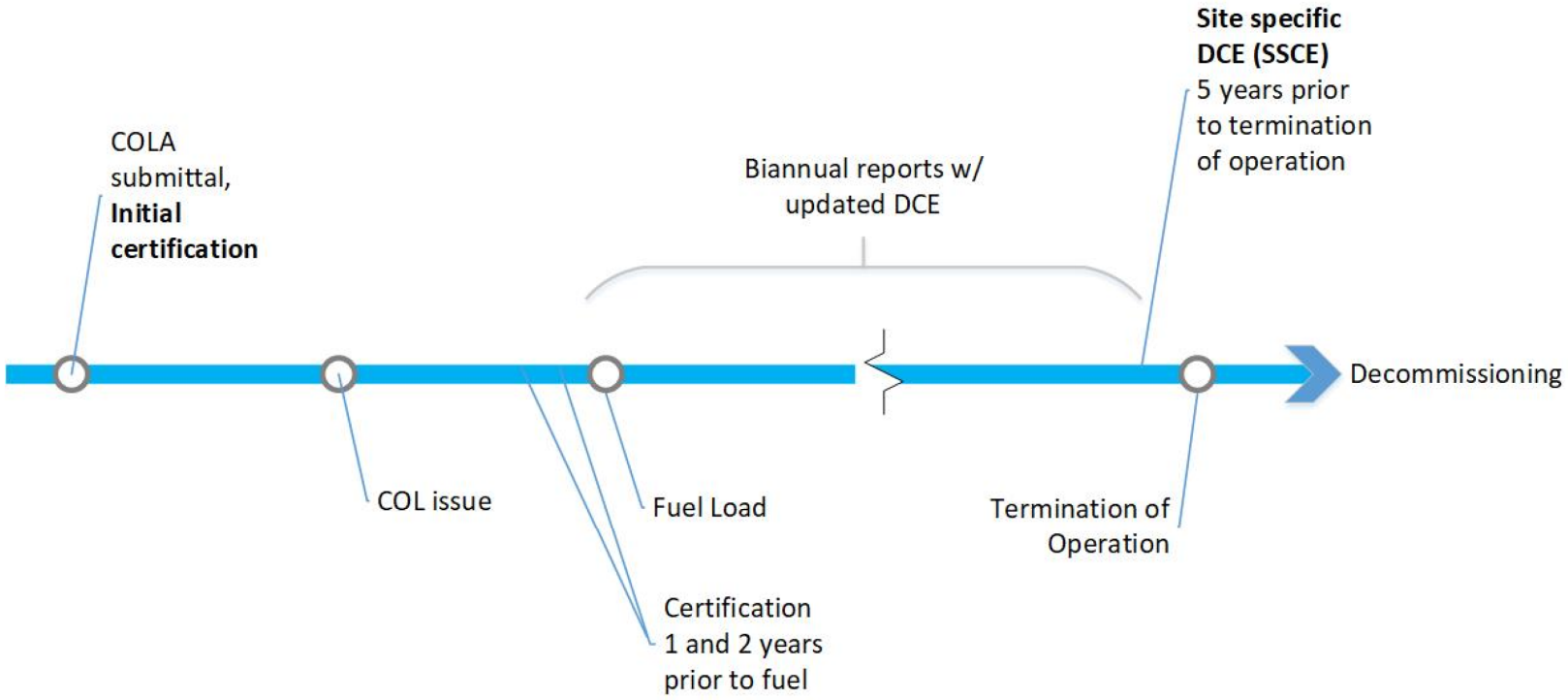
- Address Staff questions, support NRC response to the white paper, and allow Staff to provide feedback for the methodology

Background

- 10 CFR 50.75 imposes requirements for reasonable assurance that funds will be available for decommissioning
- 10 CFR 50.75(b) – traditional Pressurized Water Reactors (PWRs) allowed to base initial DFA certification amount on:
  - Minimum prescriptive amount per 10 CFR 50.75(c), or
  - Plant-specific Decommissioning Cost Estimate (DCE) greater than the minimum
- Regulations do not provide formulas specific to Small Modular Reactor (SMR) power levels

Background

- DFA Process Steps with Combined License Application (COLA)



Background

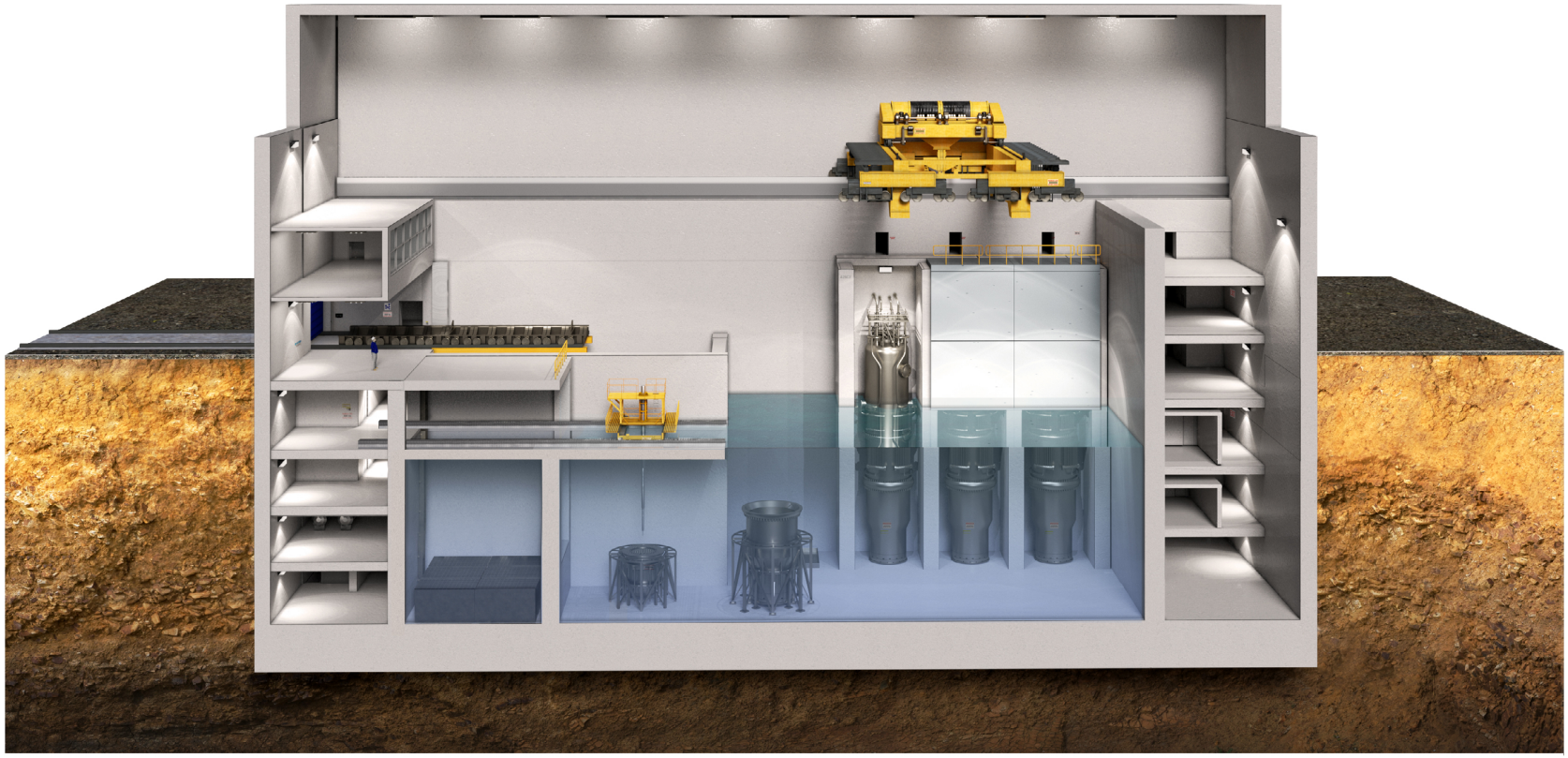
- 10 CFR 50.75(c)(1) – prescriptive minimum
  - Based on reactor type (PWR or BWR) and thermal power level
    - ≥ 3400 MWt – fixed
    - Between 1200 and 3400 MWt – formula based on power
    - ≤ 1200 MWt – fixed
- SECY 11-0181
  - Response to industry concerns the 10 CFR 50.75(c)(1) formula may be inappropriate for SMR designs
  - Staff recognized differences in size and design features for SMRs expected to yield differences in decommissioning cost
  - Allow SMR applicants in near term to deviate from the 10 CFR 50.75 minimum amount using an exemption and “fully justified and supported” site-specific DCE

CFPP Facility

- Six NuScale Power Modules (NPMs)
  - Each NPM rated at 250 MWt
  - Plant rated at 1500 MWt cumulative thermal power
- Reduced size and quantity of components
  - Less complexity and modular construction
    - No coolant pumps or large bore reactor coolant piping
    - Pressurizer and steam generator integrated into pressure vessel
  - Share major features (e.g., reactor building and radioactive waste building)

CFPP Facility

- Reactor Building Layout



CFPP Proposed Approach

- Use the 10 CFR 50.75(c)(1) formula with the cumulative thermal capacity of the plant (1500 MWt)
  - Rather than a site-specific estimate less than the 1200 MWt per reactor and an exemption, per SECY 11-0181
- Approach compatible with 10 CFR 50.75
  - 10 CFR 50.75(b)(1) – Applicant's DFA certification amount must be equal to or more than the amount stated in (c)(1)
    - Provision applies to license applicant or holder in general, not an individual reactor
  - Table in 10 CFR 50.75(c)(1) prescribes minimum amounts "by reactor type and power level" for a "PWR"
    - Language does not preclude interpretation that CFPP plant is a "PWR" reactor type

Staff Questions – Adequacy

How does the minimum formula amount for a 1500 MWt PWR provide adequate DFA for a 6-module plant given the formula was developed for large light-water reactors (LLWRs)?

- Use of the formula fulfills intent of initial certification

  "The amount listed as the prescribed amount (formula) does not represent the actual cost of decommissioning for specific reactors but rather is a reference level established to assure that licensees demonstrate adequate financial responsibility that the bulk of the funds necessary for a safe decommissioning are being considered and planned for early in facility life, thus providing adequate assurance at that time that the facility would not become a risk to public health and safety when it is decommissioned." (53 FR 24030, June 27, 1988)

Staff Questions – Adequacy

- Internal study with preliminary design-specific estimate
  - Used recognized methods for a Class 5 estimate
  - Yielded a value comparable but less than the proposed 10 CFR 50.75(c) method
- A study conducted by Argonne and Idaho National Lab staff estimated the NuScale Power Plant (NPP) decommissioning waste volume at 89% of a traditional PWR, when normalized for energy
- The SSCE is prepared 5 years before termination of operations. Per SECY 13-0066:

  "The intent of the SSCE is to provide an up-to-date assessment and a more accurate radiological decommissioning cost figure"

Staff Questions –10 CFR 50.75 Alignment

How does this DFA approach fit within the intent and objective of 10 CFR 50.75(b)-(c)?

- The formula amount is an appropriate "reference level" for the CFPP plant and provides reasonable assurance that the bulk of the funds necessary for decommissioning are being planned for early in facility life
- Proposal includes timelines, annual adjustment rates, and financial methods discussed in 10 CFR 50.75(b)

Staff Questions –10 CFR 20 Alignment

Discuss requirements relative to 10 CFR 20.1406 (Regulatory Guide 4.22) and 10 CFR 20.1501

- 10 CFR 20.1406
  - Applicant to describe facility design and procedures to facilitate eventual decommissioning
  - Compliance independent from certification amount
  - CFPP COLA will address
  - Regulatory Guide 4.22 discusses licensee obligations to adjust the DCE when warranted by radiological site surveys. This is not a factor in the initial amount
- 10 CFR 20.1501
  - Records from radiological surveys kept with records important for decommissioning
  - Compliance independent from certification amount

Staff Questions – Prioritization of Safety

Clarify how this approach considers decommissioning in a safe manner

- Safety is ensured by compliance with regulations defining criteria for termination of license
  - For example, 10 CFR 20.1402 definition for unrestricted use
- If the DFA was found to be insufficient, it would not justify disregard of safety
- Decommissioning Plan and SSCE prior to termination of operations refines amount

Staff Questions – Greater than Class C

How much Greater than Class C (GTCC) material will be generated?

- NUREG-1307 provides escalation factors for waste burial/disposition component of the decommissioning funding formula
  - Postulates placing material in a low level waste disposal facility
  - Disposal costs may be significantly overestimated compared with high-density packaging and geologic repository disposal
- No anticipated GTCC material generated during normal operation
  - Some reactor internals may qualify as GTCC immediately following shutdown
  - Quantity at disassembly can be minimized with opportunity to decay
  - Site-specific decommissioning plan and SSCE will address GTCC

Conclusions

- CFPP COLA will include an initial DFA certification amount calculated per 10 CFR 50.75(c)
  - Use cumulative thermal power of the six-module NuScale Power Plant (NPP) as the input power level
  - Supported by preliminary design-specific estimates
- Approach is consistent with modular, shared feature design of the CFPP
- Existing 10 CFR 50.75 provides sufficient flexibility to implement cumulative power level approach without an exemption

Questions?

Acronyms

BWR	Boiling Water Reactor
COL	Combined License
COLA	Combined License Application
DCE	Decommissioning Cost Estimate
DFA	Decommissioning Funding Assurance
GTCC	Greater Than Class C
LLWR	Large Light Water Reactor
NPM	NuScale Power Module
NPP	NuScale Power Plant
PWR	Pressurized Water Reactor
SMR	Small Modular Reactor
SSCE	Site Specific [decommissioning] Cost Estimate