

## Rulemaking1CEm Resource

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**From:** RulemakingComments Resource  
**Sent:** Monday, March 21, 2016 6:30 PM  
**To:** Rulemaking1CEm Resource  
**Subject:** FW: (Docket ID NRC-2015-0070) NuScale Power, LLC Comments on the Advanced Notice of Proposed Rulemaking  
**Attachments:** LO-0316-48097 -NuScale Comments on Rulemaking Decomissioning Power Reactors.pdf

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**TITLE:** Regulatory Improvements for Decommissioning Power Reactors

**COMMENT#:** 098

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**From:** Gurr, Amee [mailto:agurr@nuscalepower.com]  
**Sent:** Friday, March 18, 2016 11:11 AM  
**To:** RulemakingComments Resource <RulemakingComments.Resource@nrc.gov>  
**Cc:** Gurr, Amee <agurr@nuscalepower.com>; Mirsky, Steven <smirsky@nuscalepower.com>  
**Subject:** [External\_Sender] (Docket ID NRC-2015-0070) NuScale Power, LLC Comments on the Advanced Notice of Proposed Rulemaking

Please see attached response to Federal Registry inquiry.

Thank You,

Amee Gurr | NuScale Power | Licensing Coordinator | Main Office: 541-360-0500 | Direct: 541-360-0729 | [WEBSITE](#) | [NEWSLETTER](#) |  
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March 18, 2016

Secretary, U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001  
ATTN: Rulemakings and Adjudications Staff

**SUBJECT:** NuScale Power, LLC Comments on the Advanced Notice of Proposed Rulemaking for Regulatory Improvements for Decommissioning Power Reactors (Docket ID NRC-2015-0070)

This letter is being submitted in response to the U.S. Nuclear Regulatory Commission (NRC) request for comments on the Advanced Notice of Proposed Rulemaking for Regulatory Improvements for Decommissioning Power Reactors (Docket ID NRC-2015-0070).

NuScale Power appreciates the opportunity to provide comments to the NRC on emergency preparedness (EP) requirements for decommissioning power reactor licensees. The comments below have been prepared by NuScale in response to the eight NRC EP questions in the decommissioning plant Advanced Notice of Proposed Rulemaking (ANPR) for Docket ID NRC-2105-0070 and one of the security questions. While the comments are in response to this decommissioning ANPR, NuScale intends that these comments are applicable to Small Modular Reactor (SMR) EP where the Emergency Planning Zone (EPZ) is at the site boundary and the licensee would no longer be responsible to maintain formal offsite emergency preparedness.

The proposed regulatory basis for NRC modification of decommissioning plant EP requirements, in which the EPZ would be at the site boundary and the licensee would no longer be responsible to maintain formal offsite EP (offsite EP actions would be taken by offsite authorities in accordance with comprehensive emergency management plans aka all hazards plans), is based on the following factors:

1. All design basis accidents (DBAs) result in a site boundary dose less than the U.S. Environmental Protection Agency's (EPA) early phase protective action guidelines (PAG) of 1 rem total effective dose equivalent (TEDE);
2. The risk of spent fuel zirconium fire in the spent fuel pool (SFP) beyond-design-basis-accident (BDDBA) is very low and would not occur for many hours; and
3. A reliable and robust mitigation capability, including regulatory actions implemented in response to the Fukushima Dai-ichi accident, is in place to address any degrading conditions in the SFP.

NuScale agrees that this is an appropriate regulatory basis for changes to decommissioning plant EP requirements. NuScale intends to provide to NRC justification for approval of a similar, modified EP program with site boundary EPZ for NuScale designed plants using a comparable technical basis adapted for operating SMRs.

Emergency plans for the proposed decommissioning plant rulemaking, as well as future SMR EP exemptions and potential rulemaking, should take advantage of existing state and local emergency plans. Accordingly, in these comments frequent reference is made to the National Response Framework (NRF) and the Federal Emergency Management Agency (FEMA) Comprehensive Preparedness Guide (CPG) 101 which provides emergency managers and other emergency services personnel with recommendations on how to address the entire planning process. CPG-101 also

encourages emergency managers to follow a process that addresses all of the hazards that threaten their jurisdictions through a suite of plans connected to a single, integrated emergency operations plan (i.e., an all-hazards plan). An all-hazards plan for decommissioning power reactors and SMRs would include an offsite emergency plan developed as a nuclear/radiological annex (NRIA) to the NRF offsite plan if such an annex does not already exist for another radiological hazard associated with a given site.

NuScale is aware of the desirability of an additional layer of defense-in-depth that follows from provision of a base for expansion of response in the unlikely event this is necessary. The onsite emergency plan, as modified by our comments and the interface of this onsite plan with the all-hazards offsite plan provides this base for expansion of response.

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

Please feel free to contact Steven Mirsky at 301-770-0472 or at [smirsky@nuscalepower.com](mailto:smirsky@nuscalepower.com) if you have any questions.

Sincerely,



Steven Mirsky  
Manager, Regulatory Affairs  
NuScale Power, LLC

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Attachment: NuScale Comments on the Advanced Notice of Proposed Rulemaking for Regulatory Improvements for Decommissioning Power Reactors



**NuScale Power Comments on Decommissioning ANPR with Applicability to SMR EP**

**EP-1 (a) – What specific EP requirements in 50.47 and Appendix E to 10 CFR Part 50 should be evaluated for modification, including any EP requirements not addressed in previously approved exemption requests for licensees with decommissioning reactors?**

50.47(b) contains 16 nuclear power plant emergency response plan planning standards. While the number and extent of changes may be limited since the majority of 50.47(b) addresses the onsite plan, much of which is still applicable, all 16 planning standards in 50.47(b) should be evaluated in light of the elimination of the need for a licensee to maintain formal offsite emergency preparedness such as that being considered in the ANPR. A similar approach is appropriate for SMR offsite EP where the EPZ is at the site boundary. Table 1 delineates which of these standards should be modified for a site boundary EPZ and the proposed nature of these modifications.

**Table 1. 10 CFR 50.47(b) Planning Standard Modifications for Site Boundary EPZ**

10 CFR 50.47 (b) standards	Site Boundary EPZ Modification
1. Licensee, state, and local responsibilities	Retain Standard 1 requirements regarding licensee primary and support responsibilities assigned, and adequate licensee staffing available. Assignment of offsite response organization (ORO) responsibilities and ORO staffing can be eliminated from Standard 1 and addressed in the NRF required, comprehensive emergency management (all-hazard approach) to protecting public health and safety.
2. Facility on-shift licensee responsibilities	Retain Standard 2. Note that in the implementation of Standard 2, as noted in Table 1 below, regulatory guidance will need to be modified to reflect reductions in required staffing and reductions in the number of onsite and offsite interfaces
3. Requesting assistance and emergency operations facility state/local staff	Retain Standard 3 requirement for arrangements to use assistance resources (though the number and extent of the arrangements, and need for immediacy associated with these resources is expected to be greatly reduced). Eliminate the need for an offsite emergency operations facility (EOF) since the number and role of OROs would be significantly reduced, and a separate facility would not be necessary.
4. Emergency classification and action levels (EALs)	Retain Standard 4 requirement for emergency classification and EALs. Modify the Standard 4 requirement for offsite plans to rely on this information, and move this requirement to the NRF all-hazard plan.
5. Procedures to notify state and local government and population in EPZ	Retain Standard 5 requirement for the licensee to establish notification procedures. Move the requirements for ORO to establish notification procedures and to establish means to provide early notification and clear instruction to the populace to the all-hazards plan. The timing of notification and periodic updates should account for slow progression of any accidents that could result in a radiological release. Evaluate eliminating the requirement on message content.
6. Communication to	Maintain emergency onsite personnel communication. Clarify Standard 6



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emergency personnel and public	to eliminate requirements for prompt communications to ORO and the public. Cover this in the all-hazards NRF.
7. Information dissemination to the public	Eliminate the requirement in Standard 7 for the licensee to disseminate information to the public and have the OROs carry this function out per the NRF all-hazards plan.
8. Adequate emergency facilities and equipment	No change to the standard, but it should be implemented to reflect what is considered “adequate emergency facilities and equipment” for a site boundary EPZ where the licensee is no longer responsible for maintaining formal offsite EP. A risk-informed, performance-based approach to developing SMR EP regulations and guidance would support this determination of adequacy.
9. Adequate systems for assessing and monitoring potential offsite consequences	No change to the standard, but implementation of the standard should be based on what is considered “adequate methods, systems, and equipment for assessing and monitoring” for a site boundary EPZ where the licensee is no longer responsible for maintaining formal offsite EP. A risk-informed, performance-based approach to developing SMR EP regulations and guidance would support this determination of adequacy.
10. Plume exposure pathway protective actions for workers and the public	Standard 10 should be evaluated for modification under a site boundary EPZ where the licensee is no longer responsible for maintaining formal offsite EP. For example, the same range of protective actions are no longer appropriate. Moreover, the development and updating of evacuation time estimates should be deleted. A risk-informed, performance-based approach to developing SMR EP regulations and guidance would support this evaluation.
11. Controlling emergency worker radiological exposure	No change
12. Medical services for contaminated injured individuals	No change
13. Recovery and reentry plans	No change
14. Periodic exercises	Retain this standard though the implementation (i.e., frequency and scope of drills and exercises) should be reduced given that the licensee would no longer be responsible for maintaining formal offsite emergency preparedness. A risk-informed, performance-based approach to developing SMR EP regulations and guidance would support this evaluation.
15. Radiological emergency response training	Retain this standard for radiological emergency response training of onsite personnel. Radiological emergency response training for OROs should be an NRF all-hazards plan function.
16. Plan development, review, and distribution	Retain this standard’s requirement for onsite emergency plan development, review, and distribution. Responsibility for offsite



responsibilities and training	emergency plan development, review, and distribution should be an NRF all-hazards plan function.)
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With regard to 10 CFR 50 Appendix E, the following comments are provided:

1. Sections I, II, and III reference to offsite organizations, state and local government notification, evacuation time estimates, and the emergency operation facility should be re-examined for potential deletion or modification in light of a site boundary EPZ and the licensee no longer being responsible to maintain formal offsite EP, with actions to be taken by offsite authorities in accordance with comprehensive emergency management plans (i.e., all hazards plans),
2. Section IV, Paragraphs 2 through 7 address licensee requirements for evacuation time estimates (ETEs), EPZ population estimates, use of these estimates in formulating PARs, and updates to these estimates. The need for these requirements in the context of a site boundary EPZ and slower, smaller accidents should be reevaluated for potential deletion.
3. A number of specific requirements within the nine areas addressed in Section IV paragraphs A through I should be evaluated for applicability to site boundary EPZ with slower, smaller accidents. Examples of requirements that should be evaluated for applicability include:
  - a. The “within 15 minutes” requirement associated with the capability to assess, classify, and declare an emergency condition after exceeding an EAL
  - b. The level of detail on provisions for yearly dissemination to the public within the plume exposure pathway EPZ of emergency planning information
  - c. A 15-minute design objective for the primary prompt public alert and notification system
  - d. A backup method of public alerting and notification
  - e. The need for separate, dedicated facilities for licensee onsite technical support center and an emergency operations facility
  - f. The specificity on the location for such facilities (e.g., a primary facility either “located between 10 miles and 25 miles of the nuclear power reactor site(s), or a primary facility located less than 10 miles from the nuclear power reactor site(s) and a backup facility located between 10 miles and 25 miles of the nuclear power reactor site(s)”)
  - g. Monthly testing of communications with contiguous State/local governments
4. Section VI addresses Emergency Response Data System requirements. The ERDS should be retained, but the requirements will need to be modified. For example, not all of the plant parameters delineates in paragraph VI.2.a.i for pressurized water reactors (PWRs) are applicable to decommissioned nuclear power plants or to the NuScale SMR.
5. Reference to offsite protective action strategies should be moved from the EP to the NRF comprehensive emergency management plan.
6. The Joint Information Center should be deleted and replaced by the plant media department.

**EP-1 (b) – What existing NRC EP-related guidance and other documents should be revised to address implementation of changes to the EP requirements?**

In the case of both decommissioning nuclear power plants and the NuScale SMR design, unique aspects of the facility (e.g., reduced probability of accidents, no dependence on ac power for safety) and the

characteristics of accidents, should one occur (slow, significant time to perform mitigating actions, small releases), should be used as the basis to simplify or reduce the specificity of regulatory guidance associated with some of the 50.47(b) standards. Table 2 provides some examples of where such simplifications could be made.

**Table 2. Examples of Planning Standard Guidance Potentially Impacted for ANPR and NuScale EP**

Reason for Impact	Examples of Planning Standards Potentially Impacted
Differences (unique aspects) of design	2 – Onsite Emergency Organization (e.g., reductions in required staffing; less of a need to specify interfaces among various onsite response activities and offsite support and response activities (since there will not be the same need for offsite support and response}) 4 – Emergency Classification System (e.g., EALs)
Simplification Due to Reduced EPZ Size and/or Slower, Smaller Accidents	2 – Onsite Emergency Organization (e.g., reductions in required staffing) 3 – Emergency Response Support and Resources (e.g., reductions in resources to support Federal response) 4 – Notification Methods and Procedures (e.g., simpler procedures for notifying and providing prompt instructions to the public) 7 – Public Education and Information (i.e., less complexity in the programs and means for dissemination of information) 8 – Emergency Facilities and Equipment (i.e., less complexity in the facilities and equipment) 10– Protective Response (i.e., less complexity in the range of protective actions for emergency workers and the public) 14 – Exercises and Drills (i.e., reduced scope and frequency of exercises and drills) 16 – Development, Periodic Review, and Distribution of Emergency Plans (i.e., simplification of overall plan and supporting plan scopes)

**EP-1 (c) – What new guidance would be necessary to support the implementation of changes to the EP requirements?**

1. New guidance should be promulgated that takes advantage of and applies modern technology to improve communications among responders, provides real time dissemination of dose measurements, and improves notification methods for the public (e.g., internet, cellular networks in lieu of sirens) in the event of a need to expand the base of response.
2. Guidance on the use of risk-informed, performance-based methods in development and oversight of the modified EP regulations and guidance.

**EP-2 – (a) What tiers and associated EP requirements would be appropriate to consider for this approach? (b) What factors should be considered in establishing each tier? (c) What type of basis could be established to support each tier or factor? (d) Should the NRC consider an**



**alternative to a tiered approach for modifying EP requirements? If so, provide a description of a propose alternative.**

A tiered approach is appropriate in the case of decommissioned nuclear power plants or SMRs due to:

- the fact that accidents are highly unlikely to occur,
- the (long) time to the beginning of any radiological release, and
- the (small) release magnitude.

A risk-informed, performance-based approach, such as the projected population-dose idea in NUREG/CR-7160, should be utilized in the evaluation of EP requirements. SECY-14-0038 expressed the reservation that while such an approach appears feasible, it is not recommended for application to operating plants since it would require commitment of resources that would be better used to resolve higher priority issues. However, this reservation would not apply to decommissioning plants and SMRs. The SECY stated, with regard to risk-informed, performance-based studies, “it may be possible to apply the regulatory insights gained from these studies to the development of EP regulations for small modular reactors.” NuScale supports this idea and intends to pursue it as stated in its December 2015 EPZ sizing methodology presentation to NRC.

For a NuScale plant at a given site, the population-dose difference between a more rapid emergency response based on existing, prescriptive emergency planning requirements and a slower emergency response based on an NRF all-hazards plan would be non-existent or insignificant.

**EP-3 (a) – What aspects of onsite EP should be retained if formal offsite EP is discontinued?**

The onsite EP aspects listed in the ANPR (classify and declare an emergency, assess releases, notify licensee personal and OROs, take mitigative actions, and request offsite assistance if needed) should be retained. There will be, however, other offsite EP aspects that should be eliminated or simplified. For example, the requirement to notify local state and county of a declared emergency within 15 minutes of declaration so that the offsite authorities could implement their portion of the emergency plan should be deleted. Notification of the NRC would still apply but the time to notify may be revised. More details on the aspects of EP that should be retained are provided in the EP-1(a) comments.

**EP-3 (b) – Should licensees maintain agreements with offsite authorities for law enforcement, fire, and medical services?**

Licensees should maintain agreements to use offsite authority assistance resources within the context of the NRF all-hazards plan. However, the number and level of detail of the agreements and the need for immediacy associated with these resources is expected to be greatly reduced for facilities where the licensee is no longer responsible for maintaining formal offsite emergency preparedness.

**EP-3 (c) – What changes to regulations 50.54(s)(2)(ii) and (s)(3) governing FEMA offsite EP findings should be made?**

FEMA’s jurisdiction for offsite EP should be through the regulations addressing NRF and the FEMA CPG-101 role.

**EP-4 (a) – Should 50.54(q) be modified so that licensees would no longer have to meet all standards and requirements in 50.47(b) and Appendix E?**

50.54(q) should be modified so that licensees should still have to meet the changed version of 50.47(b) and Appendix E for facilities where the licensee is no longer responsible for maintaining formal offsite emergency preparedness.

**EP-4 (b) – Should licensees be allowed to make changes to the emergency plan based on 50.59?**

Changes based on 50.59 should be considered for parts of the onsite plan where the slower, smaller accidents make certain parts of the plan less risk significant. Use of a risk-informed, performance-based approach to developing SMR EP regulations and guidance would support this.

**EP-5 – Should 50.54(t) which requires licensee annual review of all EP program elements be modified?**

Modification should be considered along the same lines as the response to EP- 4 (b). A risk-informed, performance-based approach to developing EP regulations and guidance would support this. Annual review of the EP program would be limited to the onsite EP plan.

**EP-6 – Are all of the ERDS requirements still necessary?**

ERDS requirements should be retained, but changes are necessary per response to question EP-1 (a).

**EP-7 – Should there be changes to requirement 50.72(a)(1)(i) for licensees to make an “immediate” notification to NRC of declaration of any emergency class?**

The slower accidents in decommissioned plants and SMRs coupled with longer time periods for mitigative actions makes it unnecessary to require “immediate” notification. An appropriate time for such notification will be developed by NuScale for its SMR design.

**EP-8 – Should there be changes to requirement 50.72(b)(3)(xiii) for licensees to make an 8-hour report to NRC of occurrence of any event resulting in a major loss of onsite or offsite response capability?**

No changes should be made for onsite capability. Since the licensee would have no offsite EP, the requirement involving offsite response capability should be deleted. Any requirement for a report on major loss of offsite response capability should be covered in the NRF all-hazards plan. Reportability requirements should be updated to remove offsite release criteria that are not applicable.

**PSR-4 – What clarifications should the NRC make to target sets in 10 CFR 73.55(f) that addresses permanently shut down and defueled reactors?**

Target sets are based on credible scenarios involving fuel damage and significant radiological releases to the public. If there are no such credible scenarios for decommissioning power reactors, the number of target sets, security force plans, and security personnel should be reduced.