WHITE PAPER

Proposed Emergency Preparedness Regulations and Guidance for Small Modular Reactor Facilities

July 2015

ACKNOWLEDGEMENTS

This document was prepared by the NEI Small Modular Reactor Working Group.

NOTICE

Table of Contents

1. Background 7
2. Applicability to Various SMR Designs 8
3. Assumptions and Considerations 9
4. Recommended Regulation and Guidance Changes 10
5. Related Topics 10
6. Future Steps for Developing an SMR EP Framework 12

Attachment 1 - Proposed Change to 10 CFR 50.33, *Contents of applications; general information* 15

Attachment 2 - Comparison of Current Wording in 10 CFR 50.47 to Proposed New 10 CFR 50.XXX, *Emergency plans for small modular reactor facilities* 17

Attachment 3 - Comparison of Current Wording in 10 CFR 50, Appendix E, to Proposed New 10 CFR 50, Appendix TBD, *Emergency Planning and Preparedness for Small Modular Reactor Facilities* 30

Attachment 4 – Proposed Change to 10 CFR 50.72 43

Attachment 5 – Proposed Changes to 44 CFR 350 44

Attachment 6 – Proposed Changes to 44 CFR 353 48

Attachment 7 – Proposed Change to 44 CFR 354 49

Attachment 8 – Proposed Changes to EP-Related Guidance Documents 50

1. Background

The Nuclear Energy Institute (NEI) and the nuclear power industry agree with the NRC staff's recent recommendation to the Commissioners to revise emergency preparedness (EP) regulations and guidance for Small Modular Reactor (SMR) facilities. This white paper was developed by the NEI SMR Working Group to support the attainment of that goal by addressing two "broad issues" identified in Option 1 of SECY-15-0077, *Options for Emergency Preparedness for Small Modular Reactors and Other New Technologies*:

- Evaluating the applicability of the planning standards set forth in 10 CFR 50.47 and regulations in Appendix E to 10 CFR Part 50.
- Providing associated guidance documents to support the EP rulemaking.

The industry believes that the approaches and recommendations discussed herein can constructively inform the staff's deliberations concerning the development of an SMR EP framework, and serve as a basis for future public meeting engagement. A simplified overview of an EP Framework for SMRs which depicts how the material in this white paper relates to other framework elements is presented in Figure 1.

The existing EP framework for commercial power reactors is based on the technology of large light water reactors (LWRs) that were, for the most part, designed and built prior to 1990 (sometimes referred to as Generation II designs). That framework mandates a plume exposure pathway Emergency Planning Zone (EPZ) of about 10 miles and an ingestion exposure pathway EPZ of about 50 miles around each nuclear power plant facility.[1] Other emergency planning requirements were also established to support implementation of offsite emergency response measures within these EPZs.

When considering SMRs, the NRC staff has suggested that EP requirements could be scaled to be commensurate with the accident source term, fission product release, and associated dose characteristics for such designs.[2] This approach is feasible because SMR designs have a significantly reduced potential for accident-related offsite releases. Therefore, the consequences from an accident involving an SMR facility are expected to have a limited impact on public health and safety, and thus form the basis for smaller EPZs. The staff also concluded that all existing NRC-licensed nuclear facilities use a dose/distance approach to establish the boundary of their EPZ (or other planning area) based on the Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs)[3], and that a similar technology-neutral dose/distance rationale would be appropriate for SMR facilities.

In a previous submittal to the staff, NEI provided a proposed dose/distance-based rationale for developing a variable-distance (also referred to as scalable) plume exposure pathway EPZ

---

[1] NUREG-0396, *Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants*, (December 1978)

[2] SECY-11-0152, *Development of an Emergency Planning and Preparedness Framework for Small Modular Reactors*, (October 28, 2011)

[3] EPA 400-R-92-001, *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*.

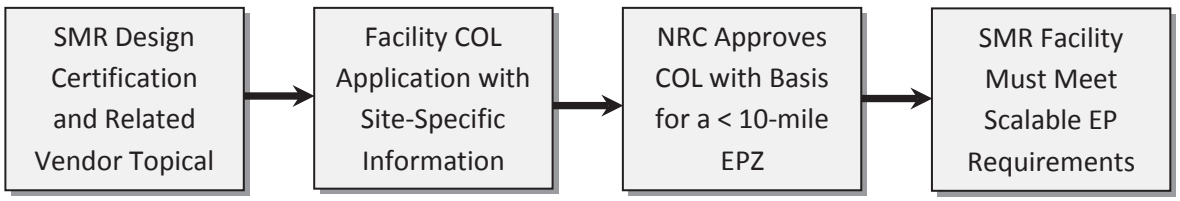
applicable to one type of SMR, the light water, integral pressurized water reactor (iPWR).[4] The material in this white paper complements the NEI SMR EPZ white paper by identifying proposed new regulations and changes to existing guidance that would create scalable EP requirements within SMR EPZs. The proposed new regulations would include a 10 CFR § 50.XXX, *Emergency plans for small modular reactor facilities*, and a 10 CFR 50, Appendix TBD, *Emergency Planning and Preparedness for Small Modular Reactor Facilities*. The industry's approach maintains consistency with the safety philosophy applied to large LWRs, i.e., a framework that is technology-neutral, dose-based and consequence-oriented. It also reflects the suitability of many current EP-related requirements to SMR facilities and results in one set of regulations that can be applied to all potential EPZ sizes.

Implementing guidance for the proposed new regulations would also need to be developed. This could be accomplished by updating an existing guidance document or creating a new one. The industry would like to engage the staff on this topic to help determine the best path forward for each guidance area.

2. Applicability to Various SMR Designs

In SECY-11-0152, *Development of an Emergency Planning and Preparedness Framework for Small Modular Reactors*, the staff stated that the development of an EP framework for SMR facilities should take into account the various SMR technologies (i.e., be technology-neutral). The staff identified three primary technology groups that represent the anticipated future SMR work for the NRC: high temperature gas-cooled reactors, iPWRs and sodium-cooled fast reactors. The industry's proposed approach to SMR EP regulations and guidance is technology-neutral and could be readily applied to all SMR technologies.

The industry proposes that EP requirements be scalable and commensurate with the size of a facility's plume exposure pathway EPZ, which will be established by a technical basis developed in accordance with a staff-approved methodology and which considers potential accident source terms, fission product releases, and associated dose characteristics. An SMR facility would be subject to the scalable EP requirements if the applicant can provide an adequate technical basis for a plume exposure pathway EPZ radius of less than 10 miles.[5] The applicant's proposed technical basis would need to be approved by the NRC before the scalable EP requirements could be implemented.



[4] NEI White Paper, *Proposed Methodology and Criteria for Establishing the Technical Basis for Small Modular Reactor Emergency Planning Zone*, dated December 23, 2013

[5] Such a technical basis could entail a site-specific methodology or submittal of information necessary to demonstrate compliance with a generic technical basis. Either approach would address the accident analyses that support the technical basis, including accident identification, source term, fission-product release, and dose characteristics.

It is recommended that regulations or guidance documents other than those associated with emergency preparedness specify the criteria for determining if a reactor design is considered to be an SMR technology for licensing purposes. This approach is reflected in the proposed regulation wording shown in the attachments.

3. Assumptions and Considerations

The proposed regulation and guidance changes were developed with the following assumptions and considerations in mind:

- For a given SMR facility, the technology design and site-specific characteristics can justify a reduction in the size of the plume exposure pathway EPZ and, by doing so, support application of scalable EP requirements. [6] These anticipated characteristics will need to be confirmed as part of the design certification and facility licensing processes. The EP regulations proposed by the industry would require that the boundary of a plume exposure pathway EPZ for an SMR facility be determined using a dose/distance approach based on appropriate protective action guidelines established by Federal agencies, and that considers the consequences from a spectrum of accidents.

- Each SMR facility must have a plume exposure pathway EPZ; however, the size of the zone would be scalable and determined in accordance with a staff-approved methodology. It is expected that the EPZ boundary distance will be less than the 10 miles currently required for large LWRs, potentially down to the site boundary. Therefore, the plume exposure pathway EPZ for an SMR facility may or may not include offsite areas. Offsite EP requirements with scalable aspects would applicable from the boundary of the Owner Controlled Area out to the boundary of the facility's plume exposure pathway EPZ. This means that some requirements would be contingent upon whether or not the plume exposure pathway EPZ includes any offsite areas (e.g., the requirement for an Emergency Operations Facility).

- An SMR facility with a plume exposure pathway EPZ beyond the site boundary (i.e., encompassing offsite areas) must have an ingestion exposure pathway EPZ; however, the size of that zone would be scalable and determined in accordance with a staff-approved methodology. For example, if an applicant provides an acceptable technical basis for a 2-mile plume exposure pathway EPZ, it is expected that the boundary distance for the ingestion exposure pathway EPZ will be less than the 50 miles currently required for large LWRs. An ingestion exposure pathway EPZ would not be required for a facility that has justified a plume exposure pathway EPZ that aligns with the site boundary.

- Within the context of SMR facility licensing, EP-related regulations and guidance should clearly differentiate between requirements associated with an offsite radiological emergency response plan, and those for a State or local emergency operations plan (also referred to as comprehensive emergency management plan or all-hazards plan).

---

[6] As noted above, an applicant would need to provide a technical basis sufficient to justify a reduction in the size of the plume exposure pathway EPZ.

- An SMR EP framework must continue to reflect the important role EP plays in providing defense-in-depth for the protection of public health and safety. A framework with scalable EP requirements would maintain adequate defense-in-depth considering the enhanced safety and protection features inherent in SMR designs. Although a detailed discussion of defense-in-depth for SMRs is beyond the scope of this paper, the key idea is that a smaller reactor core fission product inventory coupled with increases in the capability to prevent, control and mitigate accidents, including severe accidents, significantly reduces potential offsite accident consequences and necessitates offsite emergency planning requirements that are commensurate with these reduced consequences. As is the case for existing large LWR EPZs, the emergency plan for an SMR facility EPZ would provide a substantial base for expanding emergency response actions beyond the established EPZ boundary if needed.

- An SMR facility licensee should maintain an onsite emergency plan with capabilities that are functionally equivalent to those in place at currently operating plants. Such capabilities include timely emergency classification and notification to offsite authorities (using the existing 15-minute criterion for both), an onsite Technical Support Center (TSC) and Operational Support Center (OSC), and a method for projection of onsite and offsite doses from a radiological release.

4. Recommended Regulation and Guidance Changes

Attachments 1 through 8 of this white paper provide a listing of the recommended regulation and guidance changes identified by the industry.

5. Related Topics

The staff and industry have identified several additional topics that would need to be addressed during the development of an SMR EP framework; these topics are discussed below.

Modularity: It is anticipated that SMR facility designs will preclude credible accident sequences having the potential to cause significant offsite releases from more than one module.[7] In the extremely unlikely event that an SMR facility experiences a beyond-design-basis (BDB) accident or event affecting multiple modules, the operator will have the capability to implement strategies and guidelines for maintaining or restoring the core cooling, containment, and spent fuel pool cooling safety functions for all onsite modules (as appropriate to the specific facility design). This capability could be employed in response to a natural event, such as flooding or seismic activity, or a security-related event. Additional strategies and guidelines will be available to manage the consequences of a postulated severe accident (i.e., one involving fuel damage).[8]

SMR facilities will also maintain the capability to perform multi-source dose assessment (i.e., assess a release from all onsite reactor core and spent fuel pool sources), and equipment to

[7] Applicants seeking design certification for an SMR will address the multi-module risk criteria discussed in NUREG-0800, Chapter 19.

[8] These BDB event response capabilities will be required by the Mitigation of Beyond Design Basis Events Rule currently anticipated to become effective in 2017; see SECY-15-0065.

enable onsite and offsite communications during an event involving a loss of all onsite AC electric power and damage to the local area infrastructure.[9]

The topic of modularity was considered during the development of the proposed EP planning standards, and emergency planning and preparedness requirements, listed in the attachments. Similar to the approach used for the current operating fleet of power reactors, the proposed EP regulations could be applied to any site independent of the number of on-site modules (e.g., a single module or a "12-pack" of modules), and should support a finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. The topic of modularity will require a separate assessment in the context of defining a methodology for developing a technical basis for an SMR facility EPZ, a topic beyond the scope of this white paper.

Co-location with other industrial facilities: Some SMRs may be co-located with industrial facilities (e.g., supporting operation of a desalination plant). The emergency plan for a co-located SMR facility would need to address response coordination with the associated industrial facility, including an assessment of potential inter-facility impacts. In these cases, it will be incumbent upon the applicant to clearly define the boundary between the "nuclear facility," which will be under the regulatory jurisdiction of the NRC, and the interface points with the end-user "industrial facility." The emergency plan should also discuss jurisdictional response boundaries related to Federal, State, local and tribal agencies.

This version of the industry's proposed EP regulations and guidance does not explicitly address co-location requirements. A recommended approach will be proposed following future engagement with the staff on this topic.

Reliance upon an Offsite Emergency Operations Plan: In SECY-11-0152, the staff suggests that the NRC could issue a license condition for a facility that has justified a plume exposure pathway EPZ at the site boundary which would "require the licensee to ensure that a certified offsite all-hazards plan exists." The commonly-used term for such a plan is "emergency operations plan" and, as stated in the SECY, such plans do provide a "basic framework for responding to a wide variety of disasters." The industry expects to have a dialogue with the staff regarding this type of license condition followed by submittal of a recommended approach.

Ingestion Exposure Pathway EPZ:

The EP regulations proposed by the industry would require that the boundary of the ingestion exposure pathway EPZ for an SMR facility be determined using a dose/distance approach based on appropriate protective action guidelines established by Federal agencies, and that considers the consequences from a spectrum of accidents. Again, the industry would like to discuss this topic with the staff prior to submitting recommended criteria and associated implementing guidance.

[9] *Id*.

6. Future Steps for Developing an SMR EP Framework

It is currently anticipated that the NRC staff will receive the first application associated with an SMR facility in early 2016. The applicant is expected to seek an Early Site Permit (ESP). In support of its request, the applicant will likely include two proposed emergency plans for staff review – one with a plume exposure pathway EPZ boundary at 2 miles and the other with a plume exposure pathway EPZ encompassing only the Owner Controlled Area (i.e., a site-boundary EPZ). The applicant is working closely with NEI to ensure alignment between its exemption requests and this white paper. As noted in SECY-15-0077, the ESP application will likely request exemptions from current EP requirements, since a rulemaking would not be completed prior to the anticipated submission date.

In addition to the ESP application, it is expected that the first vendor application for certification of an SMR design will be submitted in late 2016 and followed by the first Combined License Application (COLA) for an SMR facility in late 2017.

Below are some key actions necessary for establishing an EP framework that would support a stable, clear and predictable licensing process for SMR facilities. The industry would like to discuss these actions in a public meeting(s), and advocate a path forward and schedule for their completion.

A. Establish a timeframe for an SMR EP rulemaking package to address regulation and guidance changes. Some of these discussions should include representatives from other Federal agencies (e.g., the Federal Emergency Management Agency).

B. The NRC staff should provide their assessment of the NEI White Paper, *Proposed Methodology and Criteria for Establishing the Technical Basis for Small Modular Reactor Emergency Planning Zone*, which was submitted in December of 2013, and for which responses to NRC questions were provided in November of 2014. NRC feedback on the reasonableness of the proposed approach is needed in 2015 in order to support development of SMR applications and specific calculation methodologies.

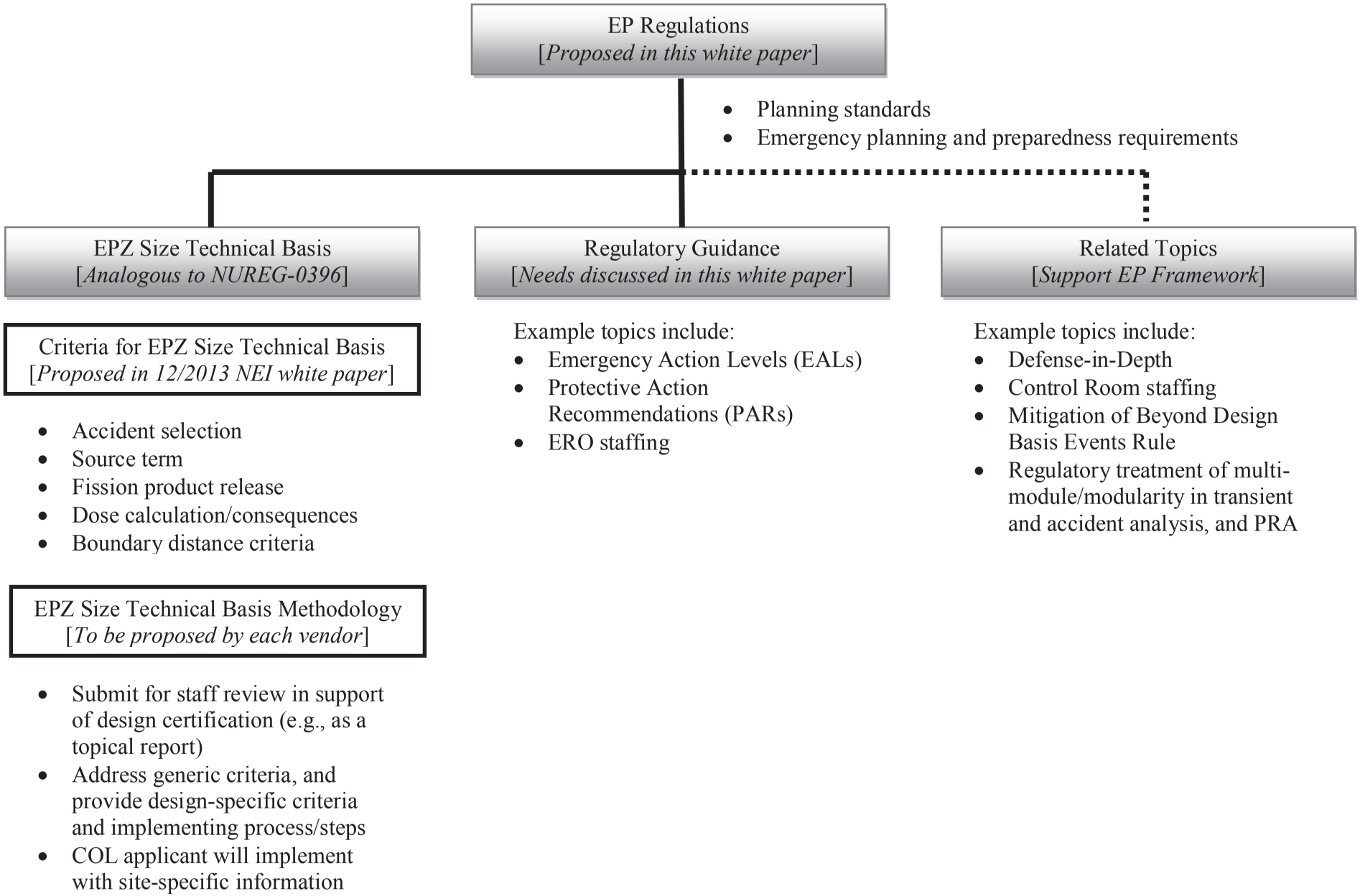
C. Revise the guidance in NUREG-0654, Supplement 3, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants - Guidance for Protective Action Strategies*, to make it generically applicable to nuclear power facilities with a plume exposure pathway EPZ boundary less than 10 miles from the reactor.

D. Create Emergency Action Level (EAL) development guidance for SMR facilities; it is expected that initial work will address EALs for iPWR facilities.

E. Create guidance for the staffing of an Emergency Response Organization (ERO) for an SMR facility (both on-shift and augmented); it is expected that initial work will address ERO staffing for iPWR facilities.

F. The industry will submit recommended approaches for addressing Co-location with Other Industrial Facilities, Reliance upon an Offsite Emergency Operations Plan and the Ingestion Exposure Pathway EPZ.

Figure 1
SMR Emergency Preparedness (EP) Framework



Attachment 1 - Proposed Change to 10 CFR 50.33, *Contents of applications; general information*

Section	Current Wording	Recommended Wording Change
10 CFR 50.33(g)	If the application is for an operating license or combined license for a nuclear power reactor, or if the application is for an early site permit and contains plans for coping with emergencies under § 52.17(b)(2)(ii) of this chapter, the applicant shall submit radiological emergency response plans of State and local governmental entities in the United States that are wholly or partially within the plume exposure pathway emergency planning zone (EPZ),[4] as well as the plans of State governments wholly or partially within the ingestion pathway EPZ.[5] If the application is for an early site permit that, under 10 CFR 52.17(b)(2)(i), proposes major features of the emergency plans describing the EPZs, then the descriptions of the EPZs must meet the requirements of this paragraph. Generally, the plume exposure pathway EPZ for nuclear power reactors shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to the local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gas-cooled reactors and for reactors with an authorized power level less than 250 MW thermal. The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway.	If the application is for an operating license or combined license for a nuclear power reactor, or if the application is for an early site permit and contains plans for coping with emergencies under § 52.17(b)(2)(ii) of this chapter, the applicant shall submit radiological emergency response plans of the State and local governmental entities in the United States that are wholly or partially within the plume exposure pathway emergency planning zone (EPZ), as well as the plans of State governments wholly or partially within the ingestion pathway EPZ.[4] If the application is for an early site permit that, under 10 CFR 52.17(b)(2)(i), proposes major features of the emergency plans describing the EPZs, then the descriptions of the EPZs must meet the requirements of this paragraph. ~~Generally, the plume exposure pathway EPZ for nuclear power reactors shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to the local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gas-cooled reactors and for reactors with an authorized power level less than 250 MW thermal. The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway.~~ The plume and ingestion exposure pathway EPZs for nuclear power reactors shall meet the requirements of 10 CFR 50.47(c)(2) or 10 CFR 50.XXX(c)(2).

Section	Current Wording	Recommended Wording Change
		[**Basis –** the proposed deleted text is already stated in 10 CFR 50.47(c)(2) and as a footnote in 10 CFR 50, Appendix E. The industry proposes that EPZ requirements for SMRs be stated in 10 CFR 50.XXX(c)(2) and as a footnote in 10 CFR 50 Appendix TBD. Recommend text deletion here to avoid unnecessary duplication of EPZ requirements. Included proposed text here to reference 10 CFR 50.47(c)(2) and 10 CFR 50.XXX(c)(2).]
10 CFR 50.33(g) Current Footnote 4	[4] Emergency planning zones (EPZs) are discussed in NUREG–0396, EPA 520/1–78–016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light-Water Nuclear Power Plants," December 1978.	[4] ~~Emergency planning zones (EPZs) are discussed in NUREG–0396, EPA 520/1–78–016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light-Water Nuclear Power Plants," December 1978~~. [**Basis –** in support of recommended change above, relocate this footnote to 10 CFR 50.47(c)(2) since it will not be applicable to 10 CFR 50.XXX for SMRs.]
10 CFR 50.33(g) Current Footnote 5	[5] If the State and local emergency response plans have been previously provided to the NRC for inclusion in the facility docket, the applicant need only provide the appropriate reference to meet this requirement.	[4] If the State and local emergency response plans have been previously provided to the NRC for inclusion in the facility docket, the applicant need only provide the appropriate reference to meet this requirement. [**Basis –** No text change; change the footnote number to "4" to align with the proposed change above.]

Attachment 2 - Comparison of Current Wording in 10 CFR 50.47 to Proposed New 10 CFR 50.XXX,
Emergency plans for small modular reactor facilities

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(a)(1)(i)	Except as provided in paragraph (d) of this section, no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. No finding under this section is necessary for issuance of a renewed nuclear power reactor operating license.	Same
10 CFR 50.47(a)(1)(ii)	No initial combined license under part 52 of this chapter will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. No finding under this section is necessary for issuance of a renewed combined license.	Same
10 CFR 50.47(a)(1)(iii)	If an application for an early site permit under subpart A of part 52 of this chapter includes complete and integrated emergency plans under 10 CFR 52.17(b)(2)(ii), no early site permit will be issued unless a finding is made by the NRC that the emergency plans provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.	Same
10 CFR 50.47(a)(1)(iv)	If an application for an early site permit proposes major features of the emergency plans under 10 CFR 52.17(b)(2)(i), no early site permit will be issued unless a finding is made by the NRC that the major features are acceptable in accordance with the applicable standards of 10 CFR 50.47 and 10 CFR part 50, appendix E, within the scope of emergency preparedness matters addressed in the major features.	Same

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(a)(2)	The NRC will base its finding on a review of the Federal Emergency Management Agency (FEMA) findings and determinations as to whether State and local emergency plans are adequate and whether there is reasonable assurance that they can be implemented, and on the NRC assessment as to whether the applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented. A FEMA finding will primarily be based on a review of the plans. Any other information already available to FEMA may be considered in assessing whether there is reasonable assurance that the plans can be implemented. In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on questions of adequacy and implementation capability.	The NRC will base its finding on a review of the Federal Emergency Management Agency (FEMA) findings and determinations as to whether State and local radiological emergency response plans are adequate and whether there is reasonable assurance that they can be implemented, and on the NRC assessment as to whether the applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented. A FEMA finding will primarily be based on a review of the plans. Any other information already available to FEMA may be considered in assessing whether there is reasonable assurance that the plans can be implemented. In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on questions of adequacy and implementation capability. [**Basis –** the proposed change is intended to make clear that FEMA findings and determinations are associated with offsite radiological emergency response plans designed to meet FEMA REP Program requirements and not to other plans that may be part of an SMR license condition or implemented in response to an accident at an SMR facility, such as a State or local emergency operations plan (also referred to as comprehensive emergency management plan or all-hazards plan).]

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(b) 10 CFR 50.47(b) Proposed Footnote 1	The onsite and, except as provided in paragraph (d) of this section, offsite emergency response plans for nuclear power reactors must meet the following standards:	The onsite and, except as provided in paragraph (d) of this section, offsite radiological emergency response plans for nuclear power reactors must meet the following standards:[1] [1] Offsite radiological emergency response plans are plans designed to meet the requirements of 44 CFR 350 and required for offsite areas within the emergency planning zones for a nuclear power reactor. [**Basis –** the proposed change is intended to make clear that these NRC requirements apply to offsite radiological emergency response plans designed to meet FEMA REP Program requirements and not to other plans that may be part of an SMR license condition or implemented in response to an accident at an SMR facility, such as a State or local emergency operations plan.]
10 CFR 50.47(b)(1)	Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.	Same
10 CFR 50.47(b)(2)	On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.	Same

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(b)(3)	Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.	Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility[2] have been made, and other organizations capable of augmenting the planned response have been identified.
10 CFR 50.47(b)(3) Proposed Footnote 2	N/A	[2] An Emergency Operations Facility is not required if the licensee's plume exposure pathway Emergency Planning Zone boundary does not include any offsite area. [**Basis –** An SMR licensee may justify a plume exposure pathway EPZ that does not include any offsite area if it can be demonstrated that the EPA PAGs will not be exceeded beyond the site boundary for a spectrum of accident sequences. Due to the very low probability of any credible event leading to the exceedance of EPA PAG limits offsite, and the expected available time for event mitigation, licensee coordination with offsite authorities could be accomplished through a State or local emergency operations plan. The licensee's control room and technical support center can provide for the communication and coordination with offsite organizations for the level of support needed to implement offsite actions. Other functions typically performed at an emergency operations facility can be effectively performed at the licensee's technical support center.]

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(b)(4)	A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local offsite radiological emergency response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures. [**Basis –** the proposed change is intended to make clear that these NRC requirements apply to offsite radiological emergency response plans designed to meet FEMA REP Program requirements and not to other plans that may be part of an SMR license condition or implemented in response to an accident at an SMR facility, such as a State or local emergency operations plan.]
10 CFR 50.47(b)(5)	Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.	Same
10 CFR 50.47(b)(6)	Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.	Provisions exist for prompt communications among principal response organizations to emergency personnel, and to the public within the plume exposure pathway Emergency Planning Zone. [**Basis –** the proposed change clarifies "the public" of interest for this planning standard; same text as used in 50.47(b)(5) and (b)(10).]

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(b)(7)	Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.	Information is made available to the public <u>within the plume exposure pathway Emergency Planning Zone</u> on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established. [**Basis –** the proposed change clarifies "the public" of interest for this planning standard; same text as used in 50.47(b)(5) and (b)(10). Also better aligns this wording that used in 10 CFR 50, Appendix E, section IV.D.2.]
10 CFR 50.47(b)(8)	Adequate emergency facilities and equipment to support the emergency response are provided and maintained.	Same

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(b)(9) 10 CFR 50.47(b)(9) Proposed Footnote 3	Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use. N/A	Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.[3] [3] The capability for offsite monitoring is not required if the licensee's plume exposure pathway Emergency Planning Zone boundary does not include any offsite area. [**Basis –** An SMR licensee may justify a plume exposure pathway EPZ that does not include any offsite area if it can be demonstrated that the EPA PAGs will not be exceeded beyond the site boundary for a spectrum of accident sequences. Due to the very low probability of any credible event leading to the exceedance of EPA PAG limits offsite, and the expected available time for event mitigation, offsite monitoring, if necessary, could be accomplished through a State or local emergency operations plan.]
10 CFR 50.47(b)(10)	A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.	A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees for offsite areas within the plume exposure pathway EPZ. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed. [**Basis –** An SMR applicant and licensee may justify a plume exposure pathway EPZ that does not include any offsite area if it can be demonstrated that the EPA PAGs will not be exceeded beyond the site boundary for a spectrum of accident sequences. This demonstration

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
		will obviate the need to develop pre-planned, prompt protective actions for members of the public in offsite areas; therefore, evacuation planning will be limited to the licensee's Owner Controlled Area (OCA). An evacuation time estimate (typical of that performed to meet this requirement) is not necessary to support evacuation planning for an OCA.]
10 CFR 50.47(b)(11)	Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.	Same
10 CFR 50.47(b)(12)	Arrangements are made for medical services for contaminated injured individuals.	Same
10 CFR 50.47(b)(13)	General plans for recovery and reentry are developed.	Same
10 CFR 50.47(b)(14)	Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.	Same
10 CFR 50.47(b)(15)	Radiological emergency response training is provided to those who may be called on to assist in an emergency.	Same
10 CFR 50.47(b)(16)	Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.	Same

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(c)(1)	Failure to meet the applicable standards set forth in paragraph (b) of this section may result in the Commission declining to issue an operating license; however, the applicant will have an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the plans are not significant for the plant in question, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operations. Where an applicant for an operating license asserts that its inability to demonstrate compliance with the requirements of paragraph (b) of this section results wholly or substantially from the decision of state and/or local governments not to participate further in emergency planning, an operating license may be issued if the applicant demonstrates to the Commission's satisfaction that:	Same
10 CFR 50.47(c)(1)(i)	The applicant's inability to comply with the requirements of paragraph (b) of this section is wholly or substantially the result of the non-participation of state and/or local governments.	Same
10 CFR 50.47(c)(1)(ii)	The applicant has made a sustained, good faith effort to secure and retain the participation of the pertinent state and/or local governmental authorities, including the furnishing of copies of its emergency plan.	Same

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(c)(1)(iii)	The applicant's emergency plan provides reasonable assurance that public health and safety is not endangered by operation of the facility concerned. To make that finding, the applicant must demonstrate that, as outlined below, adequate protective measures can and will be taken in the event of an emergency. A utility plan will be evaluated against the same planning standards applicable to a state or local plan, as listed in paragraph (b) of this section, with due allowance made both for— (A) Those elements for which state and/or local non-participation makes compliance infeasible and (B) The utility's measures designed to compensate for any deficiencies resulting from state and/or local non-participation. In making its determination on the adequacy of a utility plan, the NRC will recognize the reality that in an actual emergency, state and local government officials will exercise their best efforts to protect the health and safety of the public. The NRC will determine the adequacy of that expected response, in combination with the utility's compensating measures, on a case-by-case basis, subject to the following guidance. In addressing the circumstance where applicant's inability to comply with the requirements of paragraph (b) of this section is wholly or substantially the result of non-participation of state and/or local governments, it may be presumed that in the event of an actual radiological emergency state and local officials would generally follow the utility plan. However, this presumption may be rebutted by, for example, a good faith and timely proffer of an adequate and feasible state and/or local radiological emergency plan that would in fact be relied upon in a radiological emergency.	Same

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(c)(2)	Generally, the plume exposure pathway EPZ for nuclear power reactors shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius.[4] The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gas-cooled nuclear reactors and for reactors with an authorized power level less than 250 MW thermal. The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway.	The boundary of the plume exposure pathway and the ingestion exposure pathway EPZs for a small modular reactor facility shall be determined using a dose/distance approach based on appropriate protective action guidelines established by Federal agencies, and that considers the consequences from a spectrum of accidents. The exact size and configuration of EPZs encompassing offsite areas shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway. [**Basis –** the proposed change would support applicant use of a staff-approved methodology to determine the appropriate EPZ sizes for an SMR facility without the need to request regulatory exemptions/deviations from the current 10 and 50-mile requirements intended for large light water reactors. This wording will allow the definition of acceptable SMR technologies, for licensing purposes, to be placed in other, more appropriate regulations or in guidance documents (e.g., in a NUREG).]
10 CFR 50.47(c)(2) Proposed Footnote 4	[4] Emergency planning zones (EPZs) are discussed in NUREG–0396, EPA 520/1–78–016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light-Water Nuclear Power Plants," December 1978. [**Basis –** relocated this text from 10 CFR 33(g)]	

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(d)	Notwithstanding the requirements of paragraphs (a) and (b) of this section, and except as specified by this paragraph, no NRC or FEMA review, findings, or determinations concerning the state of offsite emergency preparedness or the adequacy of and capability to implement State and local or utility offsite emergency plans are required prior to issuance of an operating license authorizing only fuel loading or low power testing and training (up to 5 percent of the rated thermal power). Insofar as emergency planning and preparedness requirements are concerned, a license authorizing fuel loading and/or low power testing and training may be issued after a finding is made by the NRC that the state of onsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. The NRC will base this finding on its assessment of the applicant's onsite emergency plans against the pertinent standards in paragraph (b) of this section and appendix E. Review of applicant's emergency plans will include the following standards with offsite aspects:	Same
10 CFR 50.47(d)(1)	Arrangements for requesting and effectively using offsite assistance on site have been made, arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility have been made, and other organizations capable of augmenting the planned onsite response have been identified.	Same
10 CFR 50.47(d)(2)	Procedures have been established for licensee communications with State and local response organizations, including initial notification of the declaration of emergency and periodic provision of plant and response status reports.	Same
10 CFR 50.47(d)(3)	Provisions exist for prompt communications among principal response organizations to offsite emergency personnel who would be responding onsite.	Same
10 CFR 50.47(d)(4)	Adequate emergency facilities and equipment to support the emergency response onsite are provided and maintained.	Same

Current Section	Current Wording in 10 CFR 50.47	Proposed Wording in New 10 CFR 50.XXX
10 CFR 50.47(d)(5)	Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use onsite.	Same
10 CFR 50.47(d)(6)	Arrangements are made for medical services for contaminated and injured onsite individuals.	Same
10 CFR 50.47(d)(7)	Radiological emergency response training has been made available to those offsite who may be called to assist in an emergency onsite.	Same
10 CFR 50.47(e)	Notwithstanding the requirements of paragraph (b) of this section and the provisions of § 52.103 of this chapter, a holder of a combined license under part 52 of this chapter may not load fuel or operate except as provided in accordance with appendix E to part 50 and § 50.54(gg).	Same

Attachment 3 - Comparison of Current Wording in 10 CFR 50, Appendix E, to Proposed New 10 CFR 50, Appendix TBD, *Emergency Planning and Preparedness for Small Modular Reactor Facilities*

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section I, Introduction	As stated in 10 CFR 50, App. E.	Same
App. E Proposed change to Footnote 1	[1] EPZs for power reactors are discussed in NUREG–0396; EPA 520/1–78–016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," December 1978. The size of the EPZs for a nuclear power plant shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gascooled nuclear reactors and for reactors with an authorized power level less than 250 MW thermal. Generally, the plume exposure pathway EPZ for nuclear power plants with an authorized power level greater than 250 MW thermal shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius.	[1] The boundary of the plume exposure pathway and the ingestion exposure pathway EPZs for a small modular reactor facility shall be determined using a dose/distance approach based on appropriate protective action guidelines established by Federal agencies, and that considers the consequences from a spectrum of accidents. The exact size and configuration of EPZs encompassing offsite areas shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway. [**Basis –** the proposed change would support applicant use of a staff-approved methodology to determine the appropriate EPZ sizes for an SMR facility without the need to request regulatory exemptions/deviations from the current 10 and 50-mile requirements intended for large light water reactors. This wording will allow the definition of acceptable SMR technologies, for licensing purposes, to be placed in other, more appropriate regulations or in guidance documents (e.g., in a NUREG).]
App. E, Section II, The Preliminary Safety Analysis Report	As stated in 10 CFR 50, App. E.	Same
App. E, Section III, The Final Safety Analysis Report; Site Safety Analysis Report	As stated in 10 CFR 50, App. E.	Same

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV, Content of Emergency Plans – 1	The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiological emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, recovery, and onsite protective actions during hostile action. In addition, the emergency response plans submitted by an applicant for a nuclear power reactor operating license under this part, or for an early site permit (as applicable) or combined license under 10 CFR part 52, shall contain information needed to demonstrate compliance with the standards described in § 50.47(b), and they will be evaluated against those standards.	Same
App. E, Section IV, Content of Emergency Plans – 2	This nuclear power reactor license applicant shall also provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the date the applicant submits its application to the NRC.	This nuclear power reactor license applicant shall also provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the date the applicant submits its application to the NRC.[3]
Proposed new Footnote 3	N/A	[3] An evacuation time analysis is not required if the applicant has provided a sufficient technical basis for a plume exposure pathway Emergency Planning Zone boundary that does not include any offsite area. [**Basis –** An SMR licensee may justify a plume exposure pathway EPZ that does not include any offsite area if it can be demonstrated that the EPA PAGs will not be exceeded beyond the site boundary for a spectrum of accident sequences. This demonstration will obviate the need to develop pre-planned, prompt protective actions for members of the public in offsite areas; therefore, evacuation planning will be limited to the licensee's Owner Controlled Area (OCA). A detailed time analysis (typical of that performed to meet this requirement) is not necessary to support evacuation planning for an OCA.]

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV, Content of Emergency Plans – 3 through 7	As stated in 10 CFR 50, App. E.	Same
App. E, Section IV.A, Organization	As stated in 10 CFR 50, App. E.	Same

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV.B, Assessment Actions, 1	The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant. The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.	The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring.[4] By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant. The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.
Proposed new Footnote 4	N/A	[4] Emergency action levels based on offsite monitoring are not required if the licensee's plume exposure Emergency Planning Zone boundary does not include any offsite area. [**Basis –** An SMR licensee may justify a plume exposure pathway EPZ that does not include any offsite area if it can be demonstrated that the EPA PAGs will not be exceeded beyond the site boundary for a spectrum of accident sequences. Due to the very low probability of any credible event leading to the exceedance of EPA PAG limits offsite, and the expected available time for event mitigation, offsite monitoring, if necessary, could be accomplished through a State or local emergency operations plan.]

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV.B, Assessment Actions, 2	A licensee desiring to change its entire emergency action level scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change. Licensees shall follow the change process in § 50.54(q) for all other emergency action level changes.	Same

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV.C, Activation of Emergency Organization, 1	The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) Notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency. These classes are further discussed in NUREG–0654/FEMA–REP–1.	The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of operationally significant sensors that indicate a potential emergency~~, such as the pressure in containment and the response of the Emergency Core Cooling System)~~ for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) Notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency.[5] These classes are further discussed in NUREG–0654/FEMA–REP–1. [**Basis –** the sensors that indicate a potential emergency for SMRs will be different than those for current large reactors; the proposed text is intended to accommodate these differences while still maintaining the requirement to use the appropriate technology and design-specific indications.]
Proposed new Footnote 5	N/A	[5] An emergency plan need not address the emergency class of general emergency if the licensee's plume exposure Emergency Planning Zone boundary does not include any offsite area. [**Basis –** a general emergency is defined as events resulting in releases that can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area. If the licensee has justified a plume exposure pathway EPZ that includes no offsite areas (i.e., the PAGs will not be exceeded offsite), then this general emergency class criterion will not be met and thus this emergency classification level is unnecessary.]

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV.C, Activation of Emergency Organization, 2	By June 20, 2012, nuclear power reactor licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.	Same
App. E, Section IV.D, Notification Procedures, 1	Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.	Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public <u>within the plume exposure pathway EPZ</u> and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs. [**Basis –** the proposed change clarifies "the public" of interest for this requirement; same text as used in 50.47(b)(5) and (b)(10). Also aligns with the use of this phrase in other requirements contained in Section D.]

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV.D, Notification Procedures, 2	Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.	Same
App. E, Section IV.D, Notification Procedures, 3	A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The licensee shall demonstrate that the appropriate governmental authorities have the capability to make a public alerting and notification decision promptly on being informed by the licensee of an emergency condition. Prior to initial operation greater than 5 percent of rated thermal power of the first reactor at a site, each nuclear power reactor licensee shall demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ. The design objective of the prompt public alert and notification system shall be to have the capability to essentially complete the initial alerting and initiate notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this alerting and notification capability will range from immediate alerting and notification of the public (within 15 minutes of the time that State and local officials are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the appropriate governmental authorities to make a judgment whether or not to activate the public alert and notification system. The alerting and notification capability shall additionally include administrative and physical means for a backup method of public alerting and notification capable of being used in the event the primary method of alerting and notification is	A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The licensee shall demonstrate that the appropriate governmental authorities have the capability to make a public alerting and notification decision promptly on being informed by the licensee of an emergency condition.[6] Prior to initial operation greater than 5 percent of rated thermal power of the first reactor at a site, each nuclear power reactor licensee shall demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ. The design objective of the prompt public alert and notification system shall be to have the capability to essentially complete the initial alerting and initiate notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this alerting and notification capability will range from immediate alerting and notification of the public (within 15 minutes of the time that State and local officials are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the appropriate governmental authorities to make a judgment whether or not to activate the public alert and notification system. The alerting and notification capability shall additionally include administrative and physical means for a backup method of public alerting and notification capable of being used in the event the primary method of alerting and notification is

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
	unavailable during an emergency to alert or notify all or portions of the plume exposure pathway EPZ population. The backup method shall have the capability to alert and notify the public within the plume exposure pathway EPZ, but does not need to meet the 15-minute design objective for the primary prompt public alert and notification system. When there is a decision to activate the alert and notification system, the appropriate governmental authorities will determine whether to activate the entire alert and notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public alert and notification system shall remain with the appropriate governmental authorities.	unavailable during an emergency to alert or notify all or portions of the plume exposure pathway EPZ population. The backup method shall have the capability to alert and notify the public within the plume exposure pathway EPZ, but does not need to meet the 15-minute design objective for the primary prompt public alert and notification system. When there is a decision to activate the alert and notification system, the appropriate governmental authorities will determine whether to activate the entire alert and notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public alert and notification system shall remain with the appropriate governmental authorities. [6] The public alert and notification requirements of this appendix are applicable to offsite areas within a plume exposure pathway EPZ. [**Basis –** An SMR licensee may justify a plume exposure pathway EPZ that does not include any offsite area if it can be demonstrated that the EPA PAGs will not be exceeded beyond the site boundary for a spectrum of accident sequences. This demonstration will obviate the need to develop pre-planned, prompt protective actions for members of the public in offsite areas; therefore, an associated prompt alerting and notification process/system will not be necessary. The licensee is responsible establishing the capability for timely alerting and notification of the public within the Owner Controlled Area.]
App. E, Section IV.D, Notification Procedures, 4	If FEMA has approved a nuclear power reactor site's alert and notification design report, including the backup alert and notification capability, as of December 23, 2011, then the backup alert and notification capability requirements in Section IV.D.3 must be implemented by December 24, 2012. If the alert and notification design report does not include a backup alert and notification capability or needs revision to ensure adequate backup alert and notification capability, then a revision of the alert and notification design report must be submitted to FEMA for review by June 24, 2013, and the FEMA-approved backup alert	Same

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
	and notification means must be implemented within 365 days after FEMA approval. However, the total time period to implement a FEMA-approved backup alert and notification means must not exceed June 22, 2015.	
App. E, Section IV.E, Emergency Facilities and Equipment, 1 through 7,	As stated in 10 CFR 50, App. E.	Same
App. E, Section IV.E, Emergency Facilities and Equipment, 8.a.(i) Proposed new Footnote 6	A licensee onsite technical support center and an emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency; N/A	A licensee onsite technical support center and an emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency[7]; [7] If the licensee's plume exposure pathway Emergency Planning Zone boundary does not include any offsite area, then an emergency operations facility is not required. [**Basis –**an SMR licensee may justify a plume exposure pathway EPZ that does not include any offsite areas if it can be demonstrated that the EPA PAGs will not be exceeded beyond the site boundary for a spectrum of accident sequences. Due to the very low probability of any credible event leading to the exceedance of EPA PAG limits offsite, and the expected available time for event mitigation, licensee coordination with offsite authorities could be accomplished through a State or local emergency operations plan. The licensee's control room and technical support center can provide for the communication and coordination with offsite organizations for the level of support needed to implement offsite actions. Other functions typically performed at an emergency operations facility can be effectively performed at the licensee's technical support center.]
App. E, Section IV.E, Emergency Facilities and Equipment, all remaining sections	As stated in 10 CFR 50, App. E.	Same
App. E, Section IV.F, Training, 1	As stated in 10 CFR 50, App. E.	Same

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV.F, Training, 2	The plan shall describe provisions for the conduct of emergency preparedness exercises as follows: Exercises shall test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public alert and notification system, and ensure that emergency organization personnel are familiar with their duties.[3]	Same; however, the footnote here will need to be renumbered from 3 to 8 to reflect new footnotes added in earlier sections.
App. E, Section IV.F, Training, 2.a	A full participation[4] exercise which tests as much of the licensee, State, and local emergency plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located. Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in a full participation exercise required by this paragraph 2.a.	A full participation[9] exercise which tests as much of the licensee, State, and local radiological emergency response plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located. Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in a full participation exercise required by this paragraph 2.a. [**Basis –** the proposed change is intended to make clear that these NRC requirements apply to offsite radiological emergency response plans designed to meet FEMA REP Program requirements and not to other plans that may be part of an SMR license condition or implemented in response to an accident at an SMR facility, such as a State or local emergency operations plan.] [**Basis –** the footnote here was renumbered from 4 to 9 to reflect new footnotes added in earlier sections.]
App. E, Section IV.F, Training, 2.a.(i) through 2.i	As stated in 10 CFR 50, App. E.	Same; however, footnotes 5 an 6 will need to be renumbered to 10 and 11, respectively, to reflect new footnotes added in earlier sections.
App. E, Section IV.F, Training, 2.j	The exercises conducted under paragraph 2 of this section by nuclear power reactor licensees must provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to implement the principal functional areas of emergency response identified in paragraph 2.b of this section. Each exercise must provide the opportunity for the ERO to demonstrate key skills specific to emergency response duties in the control room, TSC, OSC, EOF, and joint information center. Additionally, in each eight calendar year exercise cycle, nuclear power reactor licensees	The exercises conducted under paragraph 2 of this section by nuclear power reactor licensees must provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to implement the principal functional areas of emergency response identified in paragraph 2.b of this section. Each exercise must provide the opportunity for the ERO to demonstrate key skills specific to emergency response duties in the control room, TSC, OSC, EOF, and joint information center.[12] Additionally, in each eight calendar year exercise cycle, nuclear power reactor

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
	shall vary the content of scenarios during exercises conducted under paragraph 2 of this section to provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to respond to the following scenario elements: hostile action directed at the plant site, no radiological release or an unplanned minimal radiological release that does not require public protective actions, an initial classification of or rapid escalation to a Site Area Emergency or General Emergency, implementation of strategies, procedures, and guidance developed under § 50.54(hh)(2), and integration of offsite resources with onsite response. The licensee shall maintain a record of exercises conducted during each eight year exercise cycle that documents the content of scenarios used to comply with the requirements of this paragraph. Each licensee shall conduct a hostile action exercise for each of its sites no later than December 31, 2015. The first eight-year exercise cycle for a site will begin in the calendar year in which the first hostile action exercise is conducted. For a site licensed under Part 52, the first eight-year exercise cycle begins in the calendar year of the initial exercise required by Section IV.F.2.a.	licensees shall vary the content of scenarios during exercises conducted under paragraph 2 of this section to provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to respond to the following scenario elements: hostile action directed at the plant site, no radiological release or an unplanned minimal radiological release that does not require public protective actions, an initial classification of or rapid escalation to a Site Area Emergency or General Emergency, implementation of strategies, procedures, and guidance developed under § 50.54(hh)(2), and integration of offsite resources with onsite response.[13] The licensee shall maintain a record of exercises conducted during each eight year exercise cycle that documents the content of scenarios used to comply with the requirements of this paragraph. Each licensee shall conduct a hostile action exercise for each of its sites no later than December 31, 2015. The first eight-year exercise cycle for a site will begin in the calendar year in which the first hostile action exercise is conducted. For a site licensed under Part 52, the first eight-year exercise cycle begins in the calendar year of the initial exercise required by Section IV.F.2.a.
App. E, Section IV.F, Training, 2.j Proposed new Footnote 11	N/A	[12] A joint information center is not required if the licensee's plume exposure Emergency Planning Zone boundary does not include any offsite area. [**Basis –** An SMR licensee may justify a plume exposure pathway EPZ that does not include any offsite areas if it can be demonstrated that the EPA PAGs will not be exceeded beyond the site boundary for a spectrum of accident sequences. Due to the very low probability of any credible event leading to the exceedance of EPA PAG limits offsite, and the expected available time for event mitigation, the communication of emergency-related information (e.g., offsite protective measures) to the media and public could be accomplished through a State or local emergency operations plan. In accordance with FEMA guidance, these plans address methods for formulating and communicating emergency public information, including the use of a non-RERP joint information center. The SMR licensee's control room and technical support

Current Section	Current Wording in 10 CFR 50, App. E	Proposed Wording in New 10 CFR 50, App. TBD
App. E, Section IV.F, Training, 2.j Proposed new Footnote 12	N/A	center can provide for the communication and coordination necessary to support the public information functions of offsite response organizations.] [13] An initial classification of or rapid escalation to a General Emergency must be exercised if the licensee's emergency classification scheme contains this emergency classification level. [**Basis –**a General Emergency is defined as events resulting in releases that can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area. If the licensee has justified a plume exposure pathway EPZ that includes no offsite areas (i.e., the PAGs will not be exceeded offsite), then this criterion will not be met and their emergency classification scheme will not contain a General Emergency.]
App. E, Section IV.G, Maintaining Emergency Preparedness	As stated in 10 CFR 50, App. E.	Same
App. E, Section IV.H, Recovery	As stated in 10 CFR 50, App. E.	Same
App. E, Section IV.I, Onsite Protective Actions During Hostile Action	As stated in 10 CFR 50, App. E.	Same
App. E, Section V, Implementing Procedures	As stated in 10 CFR 50, App. E.	Same
App. E, Section VI, Emergency Response Data System	As stated in 10 CFR 50, App. E.	Same; however, the staff will need to determine the necessary "data points" for SMRs and create a new section VI.2.a.(iii). Also need to renumber the remaining footnotes to accommodate earlier additions.

Section	Current Wording	Recommended Wording Change
All	As stated in 10 CFR 50.72.	None Note – this review focused solely on the EP-related aspects of 10 CFR 50.72. Changes to reporting requirements in other areas may be necessary.

Section	Current Wording	Recommended Wording Change
44 CFR 350.2(g)	*Emergency Planning Zone (EPZ)* is a generic area around a commercial nuclear facility used to assist in offsite emergency planning and the development of a significant response base. For commercial nuclear power plants, EPZs of about 10 and 50 miles are delineated for the plume and ingestion exposure pathways respectively.	*Emergency Planning Zone (EPZ)* is ~~a generic~~ the area around a commercial nuclear facility used to assist in offsite emergency planning and the development of a significant response base~~. For commercial nuclear power plants, EPZs of about 10 and 50 miles are delineated for the plume and ingestion exposure pathways respectively.~~ [**Basis –** the proposed change would facilitate application of this regulation to SMR facilities by obviating the need for regulatory exemptions/deviations from the current 10-mile plume exposure pathway and 50-mile ingestion exposure pathway EPZ requirements intended for large light water reactors. This change would not alter the EPZ requirements for currently licensed large light water reactor facilities. The sizing requirement EPZs is stated in 44 CFR 350.7(b).]

Section	Current Wording	Recommended Wording Change
44 CFR 350.7(b)	Generally, the plume exposure pathway EPZ for nuclear power facilities shall consist of an area about 10 miles (16 Km) in radius and the ingestion exposure pathway EPZ shall consist of an area about 50 miles (80 Km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power facility shall be determined by State and local governments in consultation with FEMA and NRC taking into account such local conditions as demography, topography, land characteristics, access routes and local jurisdiction boundaries. The size of the EPZs may be determined by NRC in consultation with FEMA on a case-by-case basis for gas cooled reactors and for reactors with an authorized power level less than 250 Mw thermal. The plans for the ingestion exposure pathway shall focus on such actions as are appropriate to protect the public from ingesting contaminated food and water.	Generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) in radius and the ingestion exposure pathway EPZ shall consist of an area about 50 miles (80 km) in radius. <u>The boundary of the plume exposure pathway and the ingestion exposure pathway EPZs for a small modular reactor facility shall be determined using a dose/distance approach based on appropriate protective action guidelines established by Federal agencies, and that considers the consequences from a spectrum of accidents</u>. The exact size and configuration of the EPZs ~~surrounding a particular nuclear power facility~~ <u>encompassing offsite areas</u> shall be determined by State and local governments in consultation with FEMA and NRC taking into account such local conditions as demography, topography, land characteristics, access routes and local jurisdiction boundaries. The size of the EPZs may be determined by NRC in consultation with FEMA on a case-by-case basis for gas-cooled reactors and for reactors with an authorized power level less than 250 MW thermal. The plans for the ingestion exposure pathway shall focus on such actions as are appropriate to protect the public from ingesting contaminated food and water. [**Basis –** the proposed change would support applicant use of a staff-approved methodology to determine the appropriate EPZ sizes for an SMR facility without the need to request regulatory exemptions/deviations from the current 10 and 50-mile requirements intended for large light water reactors. This wording will allow the definition of acceptable SMR technologies, for licensing purposes, to be placed in other, more appropriate regulations or in guidance documents (e.g., in a NUREG).]

Section	Current Wording	Recommended Wording Change
44 CFR 350.9(c)(1)	Each State which has a commercial nuclear power site within its boundaries or is within the 10-mile plume exposure pathway Emergency Planning Zone of such site shall fully participate in an exercise jointly with the nuclear power plant licensee and appropriate local governments at least every two years.	Each State which has a commercial nuclear power site within its boundaries or is within ~~the 10-mile~~ a plume exposure pathway Emergency Planning Zone of such site shall fully participate in an exercise jointly with the nuclear power plant licensee and appropriate local governments at least every two years. State participation in an exercise is not required if the site's plume exposure pathway Emergency Planning Zone does not include any offsite areas. [**Basis –** the proposed change would facilitate application of this regulation to SMR facilities by obviating the need for regulatory exemptions/deviations from the current 10-mile plume exposure pathway EPZ requirement intended for large light water reactors. The change would not alter this requirement for currently licensed large light water reactor facilities.]
44 CFR 350.9(c)(3)	Each appropriate local government which has a site within its boundaries or is within the 10-mile emergency planning zone shall fully participate in a joint exercise with the licensee and the State at least every two years. For those local governments that have planning and preparedness responsibilities for more than one facility, the Regional Director may seek an exemption from this requirement by recommending alternative arrangements for approval by the Associate Director.	Each appropriate local government which has a site within its boundaries or is within ~~the 10-mile~~ a plume exposure emergency planning zone shall fully participate in a joint exercise with the licensee and the State at least every two years. For those local governments that have planning and preparedness responsibilities for more than one facility, the Regional Director may seek an exemption from this requirement by recommending alternative arrangements for approval by the Associate Director. Local government participation in an exercise is not required if the site's plume exposure pathway Emergency Planning Zone does not include any offsite areas. [**Basis –** the proposed change would facilitate application of this regulation to SMR facilities by obviating the need for regulatory exemptions/deviations from the current 10-mile plume exposure pathway EPZ requirement intended for large light water reactors. The change would not alter this requirement for currently licensed large light water reactor facilities.]

Section	Current Wording	Recommended Wording Change
44 CFR 350.9(c)(4)	States within the 50-mile emergency planning zone of a site shall exercise their plans and preparedness related to ingestion exposure pathway measures at least once every five years in conjunction with a plume exposure pathway exercise for that site.	States within the ~~50-mile~~ ingestion exposure pathway emergency planning zone of a site shall exercise their plans and preparedness related to ingestion exposure pathway measures at least once every five years in conjunction with a plume exposure pathway exercise for that site. [**Basis –** the proposed change would facilitate application of this regulation to SMR facilities by obviating the need for regulatory exemptions/deviations from the current requirement intended for large light water reactors. The change would not alter this requirement for currently licensed large light water reactor facilities.]

Section	Current Wording	Recommended Wording Change
44 CFR 353, App A, III, Section I	Recovery from Disasters Affecting Offsite Emergency Preparedness Disasters that destroy roads, buildings, communications, transportation resources or other offsite infrastructure in the vicinity of a nuclear power plant can degrade the capabilities of offsite response organizations in the 10-mile plume emergency planning zone. Examples of events that could cause such devastation are hurricanes, tornadoes, earthquakes, tsunamis, volcanic eruptions, major fires, large explosions, and riots.	Recovery from Disasters Affecting Offsite Emergency Preparedness Disasters that destroy roads, buildings, communications, transportation resources or other offsite infrastructure in the vicinity of a nuclear power plant can degrade the capabilities of offsite response organizations in the ~~10-mile~~ plume exposure pathway emergency planning zone. Examples of events that could cause such devastation are hurricanes, tornadoes, earthquakes, tsunamis, volcanic eruptions, major fires, large explosions, and riots. [**Basis –** the proposed change would facilitate application of this regulation to SMR facilities by obviating the need for regulatory exemptions/deviations from the current requirement intended for large light water reactors. The change would not alter this requirement for currently licensed large light water reactor facilities.]
44 CFR 353, App A, III, Section I	The disaster-initiated review is performed to reaffirm the radiological emergency preparedness capabilities of affected offsite jurisdictions located in the 10-mile emergency planning zone and is not intended to be a comprehensive review of offsite plans and preparedness.	The disaster-initiated review is performed to reaffirm the radiological emergency preparedness capabilities of affected offsite jurisdictions located in the ~~10-mile~~ plume exposure pathway emergency planning zone and is not intended to be a comprehensive review of offsite plans and preparedness. [**Basis –** the proposed change would facilitate application of this regulation to SMR facilities by obviating the need for regulatory exemptions/deviations from the current requirement intended for large light water reactors. The change would not alter this requirement for currently licensed large light water reactor facilities.]

Section	Current Wording	Recommended Wording Change
44 CFR 354.3	*Plume pathway EPZ* means for planning purposes, the area within approximately a 10-mile radius of a nuclear plant site.	*Plume exposure pathway EPZ* means for planning purposes, the area ~~within approximately a 10-mile radius of~~ around a nuclear plant site for which preplanned response actions have been developed to achieve a reduction of the dose to the public in the event of an accident. [**Basis –** the proposed change would facilitate application of this regulation to SMR facilities by obviating the need for regulatory exemptions/deviations from the current 10-mile plume exposure pathway EPZ requirement intended for large light water reactors. This change would not alter the EPZ requirement for currently licensed large light water reactor facilities.]

Attachment 8 – Proposed Changes to EP-Related Guidance Documents

Guidance Document	Proposed Changes
1. Regulatory Guide 1.101, Rev. 4 & Rev. 5, "Emergency Planning and Preparedness for Nuclear Power Reactors," describes acceptable methods for implementing the regulations	Revision 5 references a 10-mile EPZ; update to reflect the final wording from 10 CFR 50.XXX(c)(2) (i.e., the size of the EPZ for a SMR facility may be less than 10 miles). With respect to Revision 4, the staff may need to prepare a regulatory and technical analysis for the endorsement of industry-submitted EAL development guidance applicable to SMRs (see #25 below).
2. Regulatory Guide 1.219, "Guidance on Making Changes to Emergency Response Plans for Nuclear Power Plants"	No changes anticipated.
3. NUREG-0396, EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants"	At the appropriate time, the staff may need to prepare (or endorse) a document describing the technical basis for the development of emergency response plans that support SMR facilities. Recommend that this document be separate from NUREG-0396 (i.e., not a revision of NUREG-0396).
4. NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"	At the appropriate time, the NRC and FEMA staff should initiate a detailed review of this document to align the contents with final NRC and FEMA emergency preparedness requirements for SMR facilities (e.g., recognition of scalable EP requirements, ERO staffing, etc.).
5. NUREG-0654/FEMA-REP-1, Rev. 1, Supp. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants - Criteria for Utility Offsite Planning and Preparedness"	This document should be updated consistent with the changes made to NUREG-0654 R2.
6. NUREG-0654/FEMA-REP-1, Rev. 1, Supp. 2, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants - Criteria for Emergency Planning in an Early Site Permit Application"	References a 10-mile EPZ; update to reflect the final wording from 10 CFR 50.XXX(c)(2) (i.e., the size of the EPZ for a SMR facility may be less than 10 miles). Should also discuss NRC and FEMA staff expectations for offsite emergency operations plans that may be employed during an emergency at an SMR facility (e.g., the distances or areas for which such plans may be needed, etc.). Planning standard criterion H.2 references an EOF; update to state that an EOF is not required if the licensee has justified a plume exposure pathway Emergency Planning Zone boundary that does not include any offsite area.

Guidance Document	Proposed Changes
7. NUREG-0654/FEMA-REP-1, Rev. 1, Supp. 3, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants - Guidance for Protective Action Strategies"	References a 10-mile EPZ; update to reflect the final wording from 10 CFR 50.XXX(c)(2) (i.e., the size of the EPZ for a SMR facility may be less than 10 miles). Also need to evaluate content changes related to "rapidly progressing scenarios" and "Rapidly progressing severe accident" (e.g., "a significant radioactive release in about 1 hour" may not be a credible scenario for SMRs). The Attachment, *Protective Action Strategy Development Tool*, should be updated to provide clear expectations on application to a < 10-mile EPZ (e.g., EPZ radius at any distance from the site boundary out to 5 miles).
8. NUREG-0696, "Functional Criteria for Emergency Response Facilities"	No changes anticipated; material will be subsumed within NUREG-0654 R2 and new NRC EP Manual.
9. NUREG-0737, Supp. 1, "Clarification of TMI Action Plan Requirements - Requirements for Emergency Response Capability"	No changes anticipated.
10. NUREG-0814, "Methodology for Evaluation of Emergency Response Facilities"	No changes anticipated. [*Note - Remains in "Draft Report for Comment" form; material is dated, and has been superseded by subsequent NRC requirements and guidance.*]
11. NUREG-1022, Rev. 3, Event Reporting Guidelines 10 CFR 50.72 and 50.73: Final Report	No changes anticipated.
12. NUREG-1791, "Guidance for Assessing Exemption Requests from the Nuclear Power Plant Licensed Operator Staffing Requirements Specified in 10 CFR 50.54(m)"	No changes anticipated.
13. NUREG/CR-4831, "State of the Art in Evacuation Time Estimate Studies for Nuclear Power Plants"	No changes anticipated.
14. NUREG/CR-6863, "Development of Evacuation Time Estimate Studies for Nuclear Power Plants"	No changes anticipated.
15. NUREG/CR-6864, "Identification and Analysis of Factors Affecting Emergency Evacuations"	No changes anticipated.
16. NUREG/CR-6953, Vol. 1, "Review of NUREG-0654, Supplement 3, 'Criteria for Protective Action Recommendations for Severe Accidents'"	No changes anticipated.
17. NUREG/CR-6953, Vol. 2, "Review of NUREG-0654, Supplement 3, 'Criteria for Protective Action Recommendations for Severe Accidents' - Focus Groups and Telephone Survey"	No changes anticipated.
18. NUREG/CR-6981, "Assessment of Emergency Response Planning and Implementation for Large Scale Evacuations"	No changes anticipated.

Guidance Document	Proposed Changes
19. NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies"	References a 10-mile EPZ; update to reflect the final wording from 10 CFR 50.XXX(c)(2) (i.e., the size of the EPZ for a SMR facility may be less than 10 miles). Assess if changes are needed to accommodate a <10 mile EPZ (e.g., some cases may not need a "keyhole" approach for pre-planned protective actions).
20. NUREG/CR-7032, "Developing an Emergency Risk Communication (ERC)/Joint Information Center (JIC) Plan for a Radiological Emergency"	References a 10-mile EPZ; update to reflect the final wording from 10 CFR 50.XXX(c)(2) (i.e., the size of the EPZ for a SMR facility may be less than 10 miles). Clarify that a JIC is not required if the licensee has justified a plume exposure EPZ boundary that does not include any offsite area.
21. NUREG/CR-7033, "Guidance on Developing Effective Radiological Risk Communication Messages: Effective Message Mapping and Risk Communication with the Public in Nuclear Plant Emergency Planning Zones"	References a 10-mile EPZ; update to reflect the final wording from 10 CFR 50.XXX(c)(2) (i.e., the size of the EPZ for a SMR facility may be less than 10 miles). Clarify that a JIC is not required if the licensee has justified a plume exposure EPZ boundary that does not include any offsite area.
22. NSIR/DPR-ISG-01, "Interim Staff Guidance Emergency Planning for Nuclear Power Plants"	No changes anticipated; material will be subsumed within NUREG-0654 R2 and new NRC EP Manual.
23. FEMA Radiological Emergency Preparedness (REP) Program Manual	At the appropriate time, the FEMA staff should initiate a detailed review of this document to align the contents with final NRC emergency preparedness requirements and guidance for SMRs (e.g., recognition of scalable EP requirements).
24. NEI 06-04, Rev. 2, Appendix A, "Drill and Exercise Objectives"	No changes anticipated.
25. NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels" / NEI 99-01, Rev. 4, Rev. 5, & Rev. 6, "Methodology for Development of Emergency Action Levels" / NEI-07-01, Rev. 0, "Methodology for Development of Emergency Action Levels Advanced Passive Light Water Reactors"	No changes anticipated to these documents; however, the industry will need to prepare a new EAL development guidance document applicable to SMRs and submit for staff endorsement.
26. NEI 10-05, Rev. 0, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities"	May need to update based on NRC-approved on-shift staffing levels, and other emergency preparedness and response requirements for SMRs.
27. NEI 12-01, Rev. 0, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities"	May need to update based on NRC-approved on-shift staffing levels, and other emergency preparedness and response requirements for SMRs.
28. NEI 13-01, Rev. 0, "Reportable Action Levels for Loss of Emergency Preparedness Capabilities"	No changes anticipated.