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Proposed Emergency Preparedness for
Small Modular Reactor and Other New
Technologies (EP for SMR & ONT) Rulemaking

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UNITED STATES NUCLEAR REGULATORY COMMISSION

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NRC STAFF PRESENTATION RE: PROPOSED EMERGENCY
PREPAREDNESS FOR SMALL MODULAR REACTOR AND OTHER NEW
TECHNOLOGIES (EP for SMR & ONT) RULEMAKING

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CATEGORY 3 PUBLIC MEETING

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WEDNESDAY

JUNE 24, 2020

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The Category 3 Meeting convened via
teleconference, at 1:06 p.m., Joan Olmstead,
facilitating.

NRC PRESENT

JOAN OLMSTEAD, NMSS, Facilitator

ROBERT BEALL, NMSS

KATHRYN BROCK, NMSS

ARLON COSTA, NRR

MICHELLE HART, NRR

CHRIS HOWELLS, NMSS

BOB KAHLER, NSIR

ERIC SCHRADER, NSIR

JOHN SEGALA, NRR

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ALSO PRESENT

JUAN CAJIGAS, Applied Analysis Corporation

SARAH FIELDS, Public Participant

LEIGH FORD, Snake River Alliance

PAUL GUNTER, Beyond Nuclear

EDWIN LYMAN, Union of Concerned Scientists

DON SAFER, Tennessee Environmental Council

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P-R-O-C-E-E-D-I-N-G-S

(1:06 p.m.)

MS. OLMSTEAD: Good afternoon, everyone. I want to welcome everyone and thank you for participating in today's meeting to discuss the proposed rule regarding emergency preparedness for small modular reactors and other new technologies.

My name is Joan Olmstead from the NRC's Office of Nuclear Materials Safeguards and Security. I'll be serving as your facilitator for today's meeting. My role is to help ensure that today's meeting is informative and productive.

This is a Category 3 public meeting to encourage active participation and information exchange with the public to help facilitate the development with public comment on the proposed rule.

The feedback that NRC receives today is not considered formal public comment. So, your comments need to be submitted through the methods discussed later during this meeting.

Slide 3, please.

The agenda for today includes NRC staff presentations about the proposed rule. Questions from the public and further discussion will be allowed after the presentation. We'll include one break after

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the NRC presentations during this meeting.

Slide 4, please.

I would now like to introduce Kathryn Brock, Director of the Division of Preparedness and Response in the Office of Nuclear Security and Incident Response. Kathryn will give the opening remarks for today's meeting.

Kathryn.

MS. BROCK: Thanks, Joan. Thanks to everyone for your attendance at today's meeting.

The proposed rule was published in the Federal Register on May 12th of a 75-day public comment period. This public meeting is being held roughly in the middle of that public comment period in order to give the public and all stakeholders time to review the information such that you can have maximum participation during this public meeting.

So, this is really complex rule. And the NRC appreciates the support and the attention you are all giving, giving to it by participating in the meeting.

In an effort to become a modern, risk-informed regulator, the NRC is applying risk-smart approaches in all of our regulatory activities. And this proposed rule is a good example of how we're

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applying those risk-smart concepts through the incorporation of a technology neutral approach.

Current emergency preparedness regulations are primarily focused on regulating large light water reactors but they don't sufficiently address the advances in design, safety, research, and their applications to small modular reactors or other new technologies, which is the subject of this rule.

But, it's important to note that this proposed rule is not changing the current regulatory requirements for the operating fleet, and it's only applicable to the small modular reactors and other new technologies under 1,000 megawatts thermal, which is about 300 megawatts electric. And as a basis for comparison, current operating large light water reactors range from about 1,600 megawatts thermal to about 4,400 megawatts thermal, which is about 520 to 1,400 megawatts electric, respectively.

So, with that short introduction and a little bit of context, I hope you enjoy the staff's presentations. They're going to provide some rules and background and other information about this proposed rule. And I very much appreciate your participation in the meeting.

Joan.

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MS. OLMSTEAD: Thank you, Kathryn.

I would now like to introduce the NRC staff who will be making presentations during today's meeting:

Bob Beall, NMSS, Rulemaking Project Manager; Arlon Costa, NRR, Business Line Lead; Chris Howells, NMSS, Cost Analysis; and Eric Schrader, NSIR, Technical Lead.

Slide 5, please.

This slide provides some ground rules for today's meeting. The last slide in the PowerPoint presentation, slide 42, also contains acronyms and abbreviations that may be used during today's presentation.

Because of the number of attendees, we may need to limit the time for an individual question or discussion to make sure everyone has a chance to participate. After everyone has a chance to ask their question we can circle back and allow people to ask additional questions as we have time.

We may also use the parking lot to capture ideas that may need further discussion after everyone has a chance to ask questions.

If you are not on the WebEx and you would like to view the presentation slides, they are located

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in the NRC's ADAMS document database. The accession number for today's slides is ML20154K432.

This meeting is being transcribed, so in order to get a clean transcript and to minimize distractions during the meeting, we ask the panelists to turn off or mute their phones when they are not speaking. For the attendees on the phone, you will be on a listen only mode until the discussion portion of this meeting. If you would like to speak, please contact the operator by pressing star one, and she will put you in a queue and announce when it is your turn.

We will not be using the WebEx chat feature to take written questions. All questions have to go through the operator.

Finally, we're always looking for ways to improve our meetings, and your feedback is important to us. At the end of the meeting, please go to the NRC public meeting webpage, click on the recently held meetings button and look for this meeting. The meeting feedback form will be at the bottom of the meetings announcement.

And with that, I'll turn this over to Bob Beall for our first presentation.

MR. BEALL: Thanks, Joan. Good afternoon,

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everyone.

The purpose of today's meeting is to answer questions and discuss the proposed emergency preparedness for small modular reactors and other new technologies rulemaking. This is a Category 3 public meeting, which means that public participation is actively sought and we will discuss the regulatory issues.

Like Joan said, a transcript of today's meeting will be generated and will be included in the meeting summary. The meeting summary will be publicly available on or before July 24th, 2020.

Finally, this meeting is not designed nor intended to solicit or receive comments on topics other than this rulemaking activity. Also, no regulatory decisions will be made at today's meeting.

Slide 7, please.

On May 12th, 2020, the proposed emergency preparedness for small modular reactors and other new technology rule was published in the Federal Register.

The comment period for this proposed rule is 75 days.

On May 29th, 2020, the NRC published a correction to the May 12th Federal Register notice. This correction to the Federal Register notice corrected an error in the definition of the term "non-

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power production or utilization facility," which is located in Section 50.2 of the rule text.

The ML number listed on this slide and on the website regulations.gov contains the updated and corrected Federal Register notice. Public comments on the proposed rule are due by July 27th, 2020.

I will be going over the process to submit comments at the end of today's meeting.

Slide 8, please.

The proposed emergency preparedness for small modular reactors and other new technologies rule has four major provisions.

Provision No. 1 is new alternative performance-based EP framework.

No. 2, hazard analysis of any NRC licensed or non-licensed facilities.

No. 3, scalable approach to determining the plume exposure pathway for emergency planning zone size.

And, lastly, requirement to describe ingestion response planning.

During today's presentation the NRC staff will provide an overview at each of these areas and will answer questions from the public during the discussion period.

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To start the overview, Arlon Costa from the Office of Nuclear Reactor Regulations will go over each of these provisions.

Arlon.

MR. COSTA: Thanks, Bob. I am Arlon Costa, a nuclear engineer and senior project manager in the Office of Nuclear Reactor Regulations in the Division of Advanced Reactors and Non-Power Production and Utilization Facilities, which is the business line lead supporting this proposed rule as part of NRC's overall plans to optimize non-light water reactor regulatory regimens.

These major provisions are being highlighted in our presentation because we allow for a broad or detailed discussion of the proposed emergency preparedness rulemaking. Each of these provisions and other subjects will be presented in the next slide, aiming to provide additional background for our questions and answers at the completion of the staff's presentation. But first I will go over a few definitions.

SMRs, or small modular reactors, are power reactors that generate up to 1,000 megawatts of thermal power, which is approximately 300 megawatts electric. As Kathryn mentioned, as a basis of

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comparison, currently operating large light water reactors range from about 1,600 megawatts thermal to about 4,400 megawatts thermal, which is about 520 to 1,400 megawatts electric respectively.

ONTs, or other new technologies, could be non-light water reactors or non-power reactors such as research and test reactors, which usually produce up to 20 megawatts of thermal power.

Another example of a new technology could be medical radioisotope production facilities that would use ion beams accelerated to a low enriched uranium target to produce radioisotopes.

Regarding this major provision in the proposed rule, performance-based is not a new approach to regulation, but it is new as an alternative EP framework for SMRs and ONTs as compared to the existing deterministic approach.

Hazard analysis of any NRC licensed or non-licensed facility is integral to the emergency plan in order to consider hazards that would adversely impact the emergency plan's implementation.

The scalable approach for determining the size of the plume exposure pathway EPZ, and the requirement to describe ingestion response planning in the emergency plan would apply the same dose standards

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for predetermined protection actions to SMRs or ONTs as is required by the current operating large light water reactors. In other words, by maintaining consistency the regulation described in the proposed rule would provide the same public health and safety levels of protection as the current regulatory framework.

Slide 9, please.

I now will refer to this emergency preparedness framework through a diagram. This proposed rule would allow for SMR and ONT license applicants to have alternatives to address the EP framework.

To the left, the current EP regulatory path, which is mostly deterministic, or to the right, the SMR and ONTs only path which is performance based.

Specifically, the conforming changes in 10 CFR 50.33(g) would require that one of the alternative paths in the EP framework is selected. This is an applicant's decision based on what aligns best with the technical case for their SMR and ONT design.

To the left of the diagram, the proposed paragraph 50.33(g)(1) takes the applicant to the path of current regulations. Power reactors have emergency preparedness requirements in paragraph 50.47 in

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Appendix E. For example, this path leads to the 16 planning standards, the 10 miles plume exposure emergency planning zone, the 50 miles ingestion pathway zone, and the case by case exemption criteria.

Non-power production or utilization facilities have a different path under Appendix E. Appendix E endorses regulatory guide 2.6 to address emergency planning for research and test reactors. This is different for power reactors. Nevertheless, this current emergency preparedness regulatory framework remains unchanged in the proposed rule.

Whereas to the right of the flow diagram, the proposed paragraph 50.33(g)(2) takes the applicant to the path of the new paragraph 50.160, Emergency Preparedness for Small Modular Reactors, Non-Light Water Reactors, and Non-Power Production or Utilization Facilities.

Specifically, paragraph 50.160(b) establishes the requirement for emergency plan compliance, which includes the following:

A performance-based framework in subsection (b)(1);

A hazard analysis in subsection (b)(2);

An emergency planning zone in subsection (b)(3);

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And an ingestion response planning in subsection (b) (4).

Each of these major provisions will be discussed in the next slide.

Keeping in mind the NRC's proposed performance-based framework, inspection, and performance program, and design-specific review process would provide reasonable assurance that protective actions can and will be taken in the event of an emergency at an SMR or ONT facility.

Note on the last flow chart bubble that a reasonable assurance finding for the emergency preparedness framework is required by either path taken: the current determination or the proposed performance-based alternative.

Slide 10, please.

The proposed performance-based framework in the specified regulatory requirement in 10 CFR 50.160(b)(1) provides flexibility for applicants or licensees regarding the information or approach needed to satisfy requirements in four areas: maintenance of performance, performance objective, emergency response performance, and planning activity.

This performance-based regimen would focus on results and abilities rather than on means.

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Licensee efforts would be on actual performance competencies rather than the control of emergency plans and procedures.

Additionally, regulatory oversight will focus on licensee performance instead of processes and procedures. Applicants and licensees would demonstrate how they meet an emergency preparedness performance-based framework based on their design and site-specific considerations through implementation of a performance objective team and the conduct of growth and exercises.

The alternative to submit for NRC approval a performance-based emergency preparedness program includes licensee-defined performance objectives in metric scale. For example, Draft Guide DG-1350, which will be discussed in more details later, provides flexibility in the method used to develop performance objectives and metrics, as follows:

A ratio between the number of correct opportunity by the number of opportunities as a percentage. These types of performance metrics are required to be in the emergency plan, which must be approved and subsequently inspected by the NRC.

It is noteworthy that the technology for certain SMR or -- and ONT design is still evolving or

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maturing. The requirements in paragraph 50.160 contain technology-inclusive instead of technology-specific language. In this sense, a performance-based approach could allow for innovation and more regulatory flexibility corresponding to these future - - to those future designs.

It could provide a basis for appropriate emergency preparedness through review of SMR and ONT design and site-specific accident scenarios. Furthermore, it could minimize the need for exemption requests that would otherwise be anticipated under a prescriptive emergency preparedness regulatory framework.

Slide 11, please.

The small modular reactor or other new technology applicants conduct the hazard analysis. The hazard analysis assesses credible hazards and their adverse impact on the implementation of SMR and ONT emergency plans. And, the hazard analysis must consider the adverse impact on SMRs and ONTs of any contiguous or nearby facility. Examples of such facilities are industrial, military, and transportation facilities.

Facilities examples include when a nuclear power facility could be sited contiguous or nearby to

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an industrial facility to supply processed heat or electrical power; or an SMR that could be used to power a desalination facility located on the same site.

The hazard of a non-licensed facility must be factored into emergency preparedness programs of the nuclear facility. That is to ensure the protection of public health and safety and the environment.

Hazard analysis of nearby, adjacent, or contiguous facilities are described in the Draft Guide 1350. The guidance describes what should be in the analysis and what should be in the emergency plan.

The emergency plan should describe the results of a hazard analysis and the planning activities for emergency response functions that would address any credible hazards that would adversely impact implementation of emergency plans.

The analysis should identify and characterize the site-specific hazards posed by multi-modular and nuclear units, nearby, adjacent, or contiguous facilities that could complicate the SMR, non-LWR, or NPUFs' emergency response. That is the nature of the challenge in terms of planning, severity, and persistence.

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The analysis should evaluate the impact of the identified hazards. That is realistic response timeline, functional stress caused by the hazards, strategies needed to address the hazards. And, the analysis should describe the planning activities for emergency response functions that will mitigate the impact of identified hazards.

Slide 12, please.

The new alternative emergency preparedness requirements and guidance would adopt a scalable plume exposure pathway emergency planning zone approach based on the 1 rem over 96 hours dose consequence criterion evaluated from the release of a spectrum of credible accidents for your facility.

Applicants are required to submit the analysis for NRC review to justify the technical basis for their proposed plume exposure pathway emergency planning zone area size and must consider the 1 rem criterion and dose consequences from the spectrum of credible accidents.

The staff reviewed the dose assessment methodologies that informed the EPZ size determinations, NUREG-0396, and concluded that the 1 rem total effective dose equivalent over 96-hour criterion could be used for SMRs and ONTs.

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The staff assessment was also used to develop the methodology in DG-1350, specifically Appendix A of the Draft Guide DG-1350, general methodology for establishing plume exposure pathway EPZ size, which describes an acceptable approach for determining a plume exposure EPZ size.

This methodology is based on determining the area within which public dose is projected to exceed this 1 rem TEDE over 96-hour criterion.

And Part 20 defines public dosage, public dose to mean the dose received by a member of the public from exposure to radiation or to radioactive material released by a licensee or any other source of radiation under the control of a licensee.

Note that the scalable size determination of a plume exposure pathway can be applied to all SMRs and ONT designs, is also based on factors such as accident source terms, fission product release, and associated dose characteristics of these designs.

Slide 13, please.

This diagram is a cutoff from Slide 9. It focuses on displaying the discussion of the proposed emergency preparedness regulatory framework for SMRs and ONTs. Note that the alternative path to performance-based regulations is provided with the

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amended regulations in paragraph 50.33(g)(2), per the previously-discussed 1 rem TEDE over 96-hour criterion is introduced.

After considering all factors, the scalable plume exposure pathway EPZ falls within either of two cases of the performance-based framework in 50.160(b)(1), which is delineated by the site boundary. In Case A, the analysis must provide for the scalable plume exposure pathway EPZ area to be up to or within the site boundary.

In this Case A, planning activities and prompt protection actions are required on site and within the plume exposure pathway EPZ area. Offsite radiological emergency response planning protection actions are not necessary.

In Case B, the analysis would provide for the scalable plume exposure pathway EPZ to be somewhere beyond the site boundary. In this Case B, prompt protection actions are required onsite and offsite within the plume exposure protective area EPZ -- plume exposure pathway EPZ area.

The emergency plan must describe 11 additional requirements to Case A associated with planning activities beyond the site boundary outlined in 50.160(b)(1)(iv)(b)(1) to (11).

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For this offsite case, FEMA findings and determinations regarding reasonable assurance under proposed 50.54(s) (3) are needed. Note that both the site boundary Case A and the beyond site boundary Case B require similar ingestion response planning, which will be discussed in the next slide.

The NRC's proposed performance-based framework inspection and enforcement program, and the site-specific review process would provide reasonable assurance that protective actions can and will be taken in the event of an emergency at an SMR or ONT facility.

Slide 14, please.

The requirements for the proposed ingestion response planning in paragraph 50.160(b) (4) is to describe or reference in the emergency plan the capability to provide action to protect contaminated food and water from entering into the ingestion pathway. Whether the plume exposure pathway EPZ is within or at the site boundary, as discussed in Case A, or beyond the site boundary, as discussed in Case B, the emergency planning must describe those capabilities for the response to an accident involving the release of radioactive material.

The licensee or applicant should

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demonstrate that federal, state, local, tribal, or licensee capability exists to support immediate and long-term monitoring, analysis, and interdiction or embargoes when warranted for the products identified as part of the local site food and water ingestion pathway.

For Case A and B, the licensee must act as described in the emergency plan to protect contaminated food and water from entering the ingestion pathway for the entire site boundary, even in cases where the facility's plume exposure pathway EPZ is bounded by the site boundary. The applicant or licensee would reference capabilities of federal, tribal, state, and local authorities.

For Case B, which is beyond the site boundary, ingestion responses are implemented by federal, tribal, state, and local authorities. These federal, tribal, and state resources have been developed since the 1970s, and are available for the intermediate and late stage of the response, whether or not actions are preplanned in a specific area. Therefore, SMRs, non-light water reactors, and NPUFs that choose to comply with 10 CFR 50.160 do not need an ingestion planning zone because there are different -- there are identified resources available and a

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process and timing for identifying and removing contaminated goods from food chains.

Note that the proposed rule does not provide for a specific ingestion pathway planning zone. And even without a predetermined zone, ingestion response capabilities are not changed for licensees and offsite authorities when compared with the current emergency preparedness framework.

Slide 15, please.

As a reminder, NRC's guidance is not a regulatory requirement. An applicant and licensees may use alternative approaches to comply with the requirements in the proposed paragraph 50.160. A draft guidance is one way to meet the proposed rule, and it contains information on each subsection of paragraph 50.160.

The methodologies in Appendix A of Draft Guidance DG-1350 would be established generically without SMR or ONT design or site-specific information regarding source term, fission product, or projected offsite dose.

Appendix A provides information and consequence assessment for determining the plume exposure pathway EPZ size based on the NRC staff's evaluation of a spectrum of credible accidents and the

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criterion in proposed paragraph 50.33(g)(2).

The generalized methodology describes source term, meteorological input, atmospheric transport modeling, exposure parameters, dose estimation for pathway contributors, and probabilistic dose aggregation.

Appendix D provides for the development of information and source terms. Information is also provided if the applicants intend to use probabilistic risk assessment to evaluate likelihood of exceeding the 1 rem total effective dose equivalent criterion previously described -- discussed.

Slide 16, please.

Now I will turn the time over to Chris Howells to continue with the presentation.

MR. HOWELLS: Thank you, Arlon.

Good afternoon. My name is Chris Howells, and I am the top analyst for this rulemaking. And the next three slides I'm going to be talking about the regulatory analysis which discusses the costs and cost savings due to the proposed rule,

So, overall we expect that this proposed rule would result in a net cost savings or net benefit that ranges between \$5.89 million and \$9.71 million. And these net cost savings would be realized over a

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40-year operating period of a small modular reactors.

Slide 17, please.

So, in the cost savings, those would be due, the cost savings would be due to the averted exemption and license amendment requests. And also, we would expect that the new regulatory framework we would expect the license application process to be more efficient, and that less time would be spent by licensees on preparing license applications.

And we expect that most of the cost savings is going to be due to averted license amendment requests.

And these cost savings that you see here are due to the industry and the NRC.

Next, Slide 18, please.

So, one feature of this proposed rule is that this proposed rule will allow license applicants to use a probabilistic risk assessment to select the short-term and the EPZ boundary. And, so they could use a PRA analysis, or they can use a deterministic approach.

But under the probabilistic risk assessment for the PRA they -- we think that this might result in additional licensee costs. And these costs have not yet been quantified in the regulatory

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analysis. And one question that we will be asking the public and industry is if there are additional licensee costs, what would these costs be, and what would it be attributed to for doing the PRA assessment?

So, this concludes the regulatory analysis portion. And I will turn it over to Bob Beall to discuss backfitting.

Slide 19, please.

MR. BEALL: Thanks, Chris. All right, Slide 19.

NRC's backfitting provisions in Part 50 for power reactors are found at 50.109. And issue finality provisions are located in Part 52.

This proposed rule contains new alternative requirements for small modular reactors and other new technology applicants and licensees. Because these alternative requirements and the implementing guidance may not be imposed upon applicants and licensees and would not prohibit applicants and licensees from following the existing requirements, the proposed rule and guidance would not constitute backfitting or affect issue finality of any Part 52 approval.

Slide 20, please.

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The NRC prepared an environmental assessment to determine environmental impact of the proposed rulemaking and to update the NRC's regulations related to emergency preparedness requirements in small modular reactors and other new technologies.

Revisions in the proposed rule are administrative or procedural in nature, and would not have any significant environmental impact because under the existing emergency preparedness and other proposed alternatives in emergency preparedness requirements, the dose criteria under which predetermined protective actions would be taken would be similar and, therefore, any consequence to the public would be similar.

The proposed ingesting response timing requirement under the proposed Section 50.160(b)(4), while not requiring small modular reactors and other new technology applicants and licensees to establish an emergency pathway zone, would require the same capabilities available to identify, interdict contaminated food and water in the event of a radiological emergency, as required under existing emergency preparedness regulations.

The environmental effects of the proposed

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ingestion response timing requirement are similar to that of the existing emergency preparedness requirement.

Based on this environmental assessment, the NRC concludes that the proposed emergency planning zone requirement under Section 50.33(g) and the ingestion response timing requirement under Section 50.160(b)(4) would not have a significant impact on the human environment. Accordingly, the NRC has determined that a finding of no significant impact is appropriate.

Slide 21. Oh, excuse me.

The information collection statements outlined in the proposed rule outline the proposed new or amended information collecting requirements in the proposed rule. The information collection requirements were sent to the Office of Management and Budget in May 2020 for review and approval.

The public is requested to comment on the staff's proposed changes in the recordkeeping and recording, reporting burdens related to the existing regulation.

In Section 4 of the Federal Register notice, the NRC is asking a series of specific questions about the proposed emergency preparedness

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for small modular reactors and other new technologies rule the staff would like to have public feedback on.

Eric Schrader from the Office of Nuclear Security and Incident Response will now discuss these questions.

Eric.

MR. SCHRADER: Thanks, Bob. Again, my name is Eric Schrader. I'm an EP Specialist in the Office of Nuclear Security and Incident Response. And I'll be going over the eight topics described in the specific requests for comments section, Section 4, of the FRN.

NRC is seeking these, is seeking comments and supporting rationale from the public on these eight topics. If you have any questions on some of these eight topics, please refer to your question by the topic number and then the question, such as Topic 1, Question 1. And please provide a basis for your question, answer, or comment, as provided in the basis of your response.

Slide 22, please.

This proposed rule continues the practice of SECY-11-0152, Development of an Emergency Planning and Preparedness Framework for Small Module Reactors, of describing an alternative framework for EP as

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technology-neutral, dose-based, and consequence oriented.

The NRC recognizes, however, that the overarching term "risk-informed," as defined by the Commission, staff requirements, SECY-98-144, White Paper on Risk-Informed and Performance-Based Regulations, includes consideration of both the likelihood of a spectrum of events and their consequences.

In the context of EP, the consequence of concern would be dose. The NRC is, therefore, concerned in aligning the discussion of the EP framework and this rule with its other risk-informed, performance-based regulations and considering eliminating the use of the descriptors dose-based and consequence-oriented, but intends no change to the meaning of the proposed regulation.

Would such a change impact the clarify and predictability of the regulations?

Please provide the basis for your comment, or question and answer.

Slide 23, please.

The proposed rule contains non-light water reactor, non-power production or utilization facility, and small modular reactors reactor facility type

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definitions.

Are these four facility types sufficient to implement the proposed rule for existing or anticipated technologies?

Please provide the basis for your comment or your answer.

Slide 24.

Have any unintended consequences been created by including these terms "non-light water reactor," "non-power production or utilization facility," and "small modular reactor" facility types in the scope of the proposed rule?

Please provide a basis for your response.

Slide 25.

Should the NRC consider a future performance-based consequence of an EP rulemaking for entities such as large light water reactors, fuel cycle facilities, and currently operating non-power utilization facilities?

Please provide a basis for your response.

Slide 26.

Continuing with the scope of the proposed rule, if a performance-based, consequence-oriented EP rulemaking was to be considered for these power entities, what should the require criteria be?

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Please provide basis for your response.

Slide 27.

If a performance-based, consequence-oriented approach to EP for entities other than small modular reactors and other new technologies is not considered, should there be a new process offered, other than the exemption request process, to request approval to use the EP framework proposed in this rulemaking? Is so, what would the new process be?

Please provide a basis for your response.

Performance-based requirements. The proposed rule request applicants and licensees to demonstrate eight emergency response functions described in 50.160(b)(1)(iii) through use of drills, exercises, and performance objectives.

Are there additional emergency response functions that should be considered in the proposed rulemaking?

Please provide a basis for your answer.

Slide 29.

Drills or exercises. Under the proposed rule, applicants and licensees would need to develop a drill and exercise program to demonstrate compliance with the performance-based requirements.

Current EP regulations provide light water

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reactors require an 8-year exercise cycle.

Would an 8-year exercise cycle be appropriate for small modular reactors or other new technologies choosing to comply with the performance-based approach?

If not, would an alternative cycle length be appropriate?

Please provide the basis for your answer.

Slide 30.

Discussing planning activities. Planning activities are the EP-related activities not readily observable or effectively measured to drill and exercise performance, or described in 50.160(b)(1)(iv)(A) applicable to all applicants and licensees choosing the performance-based approach to EP. The additional planning activities described in 50.160(b)(1)(iv)(B) are applicable only to applicants and licensees with an EPZ extending beyond the site boundary.

Are there any planning activities that should be added or removed from this proposed list?

Please provide a basis for your answer.

Slide 31.

Hazard analysis for contiguous or nearby facilities. 10 CFR 100.20 requires, in part, an

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evaluation of the nature and proximity of manmade hazards such as airports, dams, transportation, military, and chemical facilities to establish site characteristics for use in determining whether a plant design can accommodate commonly-occurring hazards and whether the risk of other hazards is very low.

Under the proposed rule 50.160(b)(2), as discussed earlier, applicants and licensees will be required to submit a hazard analysis of any contiguous or nearby facilities, such as industrial, military, and transportation facilities, and include any credible hazards into the licensee's emergency preparedness program that would adversely impact the implementation of the plan, emergency plans.

To what extent should this analysis be harmonized with or rely upon the analysis conducted under 10 CFR 100.20?

Please provide a basis for your answer.

Slide 32.

The proposed rule describes the hazard analysis as an analysis of contiguous or nearby facilities such as other reactors, industrial, military, or transportation facilities.

What other kinds of facilities might be located contiguous or nearby an SMR or ONT?

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Please provide the basis for your answer.

Slide 33.

The proposed rule describes the scope of the required hazard analysis as needing to assess any credible hazard that would adversely impact the implementation of the emergency plan, and identify any site-specific credible hazards from other facilities that would require the applicant's or licensee's emergency plan to include specific arrangements.

Should the NRC change the scope of the hazard analysis? If so, how should the scope of the hazard analysis change?

Please provide the basis for your answer.

Slide 34.

The NRC is proposing to require applicants and licensees choosing to comply with the proposed 50.160 to submit an analysis to establish the site-specific plume exposure pathway size, submit a proposed EPZ size analysis which will be reviewed on a case-specific basis by the NRC to ensure that design and site-specific accident scenarios are appropriately incorporated, and that reasonable assurance is maintained with the proposed EPZ size.

The plume exposure pathway size will be required to encompass the area within which the work

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dose is projected to exceed 10 mSv, or 1 rem, total effective dose equivalent over 96 hours from a release of radioactive materials resulting from the spectrum of credible accidents for the facility.

Is the proposed 10 mSv, or 1 rem, criterion appropriate? Are there particular factors and technical considerations that need to be included in an EPZ size analysis?

Please provide the basis for your answer.

Slide 35.

If the EPZ analysis adequately demonstrates that the area within which the public dose is projected to exceed 1 mSv, or 1 rem, total effective dose equivalent over 96 hours from a release of radioactive materials resulting from the spectrum of credible accidents for the facility, is within the facility's site boundary, is there a need for a formal offsite radiological emergency program?

Please provide a basis for your answer.

Slide 36.

This proposed rule does not provide a specific ingestion pathway planning zone. Instead, it requires applicants and licensees to describe in their emergency plan the licensee, federal, tribal, state, and local resources available to sample, discuss, and

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implement a quarantine or embargo of food and water to protect against the contaminated food or water potential in an ingestion pathway.

If the applicant or licensee provides an adequate description of the existing licensee, federal, tribal, state, and local capabilities to interdict contaminated food and water, is there any need for an EPZ, an ingestion pathway zone?

Please provide the basis for your answer.

Slide 37.

The NRC recognizes that high power reactors and applicants develop probable risk assessment PRAs to meet existing requirements and support development of the application. Applicants have the option to further use the PRA modeling to support the risk-informed approach for the development and source terms.

NRC is seeking information on the incremental cost increases -- increased estimates for any additional PRA modeling necessary to generate the credible accident sequences and source terms used in determining a site-specific EPZ.

Please provide a basis for the answer.

That concludes the specific areas, the specific requests for comment area. And I'll turn it

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back over to Joan.

MS. OLMSTEAD: Thank you, Eric.

We're a little bit ahead of schedule and we'll take a 15-minute break now. I recommend that you just mute your phone and stay connected to the WebEx during the break so you'll not have to log back into the system.

We'll start the discussion part of our meeting at approximately 2:15.

Thank you very much.

(Whereupon, the above-entitled matter went off the record at 2:00 p.m. and resumed at 2:17 p.m.)

MS. OLMSTEAD: All right, welcome back, everyone. We would now like to start the discussion part of the meeting.

If you'd like to speak, please contact the operator by pressing Star-1 and she will put you in a queue and announce when it is your turn. We will not be using the WebEx chat features to take certain questions.

All questions have to go through the operator. If you have questions about one of the specific topics or questions that Eric discussed earlier, please try to refer to the appropriate slide numbers or topic and question numbers when you are

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speaking.

I will now ask the operator to introduce her first person.

OPERATOR: Once again, if you would like submit a question or a comment, please press Star-1 on your phone, record your name, and your line will be open. That is Star, then 1.

Thank you. Our first question comes from Edwin Lyman. Your line is now open.

MR. LYMAN: Hello, this is Edwin Lyman. I am a concerned scientist. Can you hear me?

OPERATOR: Yes, we can.

MR. LYMAN: My questions are focused on the EPZ size determination. So, my first question, the standard the rule proposes, the analysis would be based on a spectrum of credible accidents, is that correct?

My first question is where in NRC regulations or guidance does that term actually appear? And if it doesn't appear, then you are creating a new concept which is not defined? Is that correct?

MR. SCHRADER: This is Eric Schrader. The idea of credible accidents is contained in FSAR Chapter 16 and 19 and the guidance that goes along

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with it. So, that would be at least in NUREG-0800.

It's also discussed in 10 CFR 50.

MR. LYMAN: Where is spectrum of credible accidents defined? I don't see it.

So, the guidance document, DG 1350, does not define it? Where in DG 1350 does it reference these other sources that you're talking about?

MR. SCHRADER: Are you looking for a specific listing on what these --

(Simultaneous speaking.)

MR. LYMAN: I'm looking for a definition of spectrum credible accidents because that is not a concept that is currently defined in the regulations or the guidance.

If it is, it's certainly not referenced in this draft rule.

MR. SCHRADER: Well, it certainly is in all our EP basis documents, regulations, guidance. EP is based on a spectrum of credible accidents.

Those accidents are determined on a case-by-case basis based on design.

MR. LYMAN: So, where in the 396 does the term spectrum of credible accidents appear in that document as the planning basis for the EPZ size?

MR. SCHRADER: It talks about a spectrum

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of accidents.

MR. LYMAN: It's not in there.

So, you're defining a concept and it's not -- you're introducing a concept that is ill-defined and that is undermining the logical basis for this very poorly written rule.

My next question, spectrum of credible accidents, does that include a spent fuel pool fire for a reactor that has on-site spent fuel storage?

MS. OLMSTEAD: If someone is responding, I don't think we can hear you.

MR. LYMAN: You can't hear me? Is a spent fuel pool fire the spectrum of credible accidents that we would be considering for this determination?

MR. SCHRADER: It certainly could be if the design has a spent fuel pool. Not all the designs have a spent fuel pool.

(Simultaneous speaking.)

MR. LYMAN: Right, but obviously if it were. What about a radiological sabotage attack? Would that be in the spectrum of credible accidents or is it excluded?

MS. OLMSTEAD: This is Joan.

These are all good comments and questions and I also want to encourage you to send these public

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comments through the formal comment process.

MR. LYMAN: Yes, I will do that, I'm just trying to clarify whether the scope already includes them or not, and if so, what's the basis.

My next question is related to source term determinations. So, in DG 1350, you refer to some guidance for the development of source terms, you talk about a MELCOR map calculation. My question is what are the standards the staff would use to assess what they consider the realism of source terms. And in particular, how are you going to validate those codes?

What standard of experimental data for validation are you going to require in order to accept this analysis?

And where is it in the guidance or in any documentation related to this draft rule as it's laid out?

MS. HART: This is Michelle Hart, I'm in the Office of Nuclear Regulatory Regulation.

As far as the source term determination, this is something that, of course, as you know, needs to be done for the site analysis in the first place, and so the PRA analysis also.

So, we would review that in a similar manner as we would for the study analysis, the safety

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analysis, and also the PRA.

We do not have specific guidance for any specific non-lightwater-reactor design but you can use the information that we have in Reg Guide 1.183 and the PRA standards as a starting point for what we would use to evaluate.

And I think that's a good comment that you could make on our guidance if you have some issues with how we talk about that.

OPERATOR: Okay, our next question comes from Sarah Fields.

Your line is now open.

MR. KAHLER: This is Bob Kahler from the Office of Nuclear Security and Incident Response.

With regards to credible access, emergency preparedness doesn't define what they are because they are part of the design application that comes in.

So, emergency preparedness is utilizing what is provided to us. We are not the determining factor for what is a credible accident.

And the source term that is provided by the applicant is something that is used within the EP scope.

So, this rule in the guidance documents will not be part of the determination of what is a

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credible accident or the defining of what the source term is. That would come as part of the other portions of the application.

This is strictly looking at the emergency preparedness aspects of it.

MS. FIELDS: This is Sarah Fields, I guess I was on mute and then I guess an NRC Staff person was talking.

In your introduction to the proposed rule, you talk about advances in design and safety research for SMRs and other new reactor designs. But you're talking about specific kind of designs with no operational history.

So, I'm particularly concerned about the proposed NuScale SMR. That design is not complete, there are still issues regarding the safety of the design, issues regarding the probabilistic risk assessment.

And yet you've created this new regulatory regime under the assumption that they are these wonderful advances in designs.

And yet I don't really see an analysis of these specific designs, how they're advances, how they're more safe than other nuclear reactors, and how you can justify changing your regulations for reactors

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that have no operational history, that are the first of their kind.

So, that's more of a statement than a question but I do want to know where can I find out about these so-called advances in design and safety research that seems to provide the basis for this rulemaking.

MR. COSTA: This is Arlon Costa.

One item that I can provide for you that is related to emergency preparedness is the focus that this proposed rule has, it has on the protective actions and measures that have to be taken in order to protect the public.

So, that's why in some of our discussions that we had in the presentation, that is the insurance that we can provide that we're going to review when the technical information comes to us or their requests for their emergency preparedness program.

But as far as defense of emergency preparedness, the public will still remain safe, as you could have seen in our presentation.

We still are watching for the 1 rem criteria which is close to the effective actions from EPA and all of the other considerations that we're having for emergency preparedness is included in this

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proposed rule.

Now, as far as the designs of these new reactors that may come into the future, they too have to go through a process where they have to be receiving either -- we receive an application and we look into the systems, we look into everything else that they provide to us.

And the burden is on them to provide to us evidence that their designs will be safe. And we'll be evaluating that and, as I said, the emergency preparedness will be the fifth kind of defense in that that we will provide that will have to be providing that assurance to the public that it will be safe.

It's still based on those protective actions and all the presentation we gave to you today to make sure the public will be safe in the environment.

MS. FIELDS: However, if you determine that the EPZ is the same as the site boundary, then there will be little or no planning, offsite response planning.

And I wonder if the NRC would be taking into consideration the risk associated with the failure to plan for accidents, the impact of accidents, beyond the site boundary.

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If you limit the EPZ to the site boundary, this would mean that there would be no state and local planning to protect the citizens beyond the EPZ.

So, that in itself is a hazard that needs to be evaluated.

MR. KAHLER: Again, this is Bob Kahler from the Office of Nuclear Security and Incident Response, Branch Chief for the technical portion.

The technology that we're describing is for a small modular reactor and the new technologies.

The current framework is based upon the 0396 credible accident scenarios that establish the ten-mile emergency planning zone.

What the NRC has done with this proposed rule and framework is recognizing that future applications and designs that we have either received or will be receiving have capabilities built into them such that the source terms and the dose to distance needs to be considered now with these new designs and the safety functions that are added.

Now, when you mentioned about the site boundary, the site boundary EPZ is established as a result of the design itself.

So, we would receive the design for what reactor is being placed on the site, an analysis would

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be given as to when that 1 rem per 96 hours would be exceeded. Which is in line with how the ten mile planning zone is highly established for the current fleet of large light-water reactors that are out there.

So, it is not that we are creating a rule or a site boundary EPZ, we're creating a rule that recognizes that scalable emergency planning zones are possible, even the new designs that would be submitted.

So, the emergency preparedness framework will recognize that, such that if the designs don't exceed that 1 rem per 96 hours beyond the site boundary, then the requirement to provide for a formal radiological emergency preparedness response program offsite would not be necessary.

Because there would be no prompt to protective actions needing to be taken beyond the site boundary by the analysis that we received.

MS. FIELDS: Right, and that's all on paper not as the facility continues to operate. I have one other question.

I wondered how this rulemaking will affect any NRC proposals for changes to the Price-Anderson Act, which is expected by December 2021.

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What about proposed changes or a determination that there will be no proposed changes in the Price-Anderson Act as it relates to small modular reactors, specifically multimodule small module reactors?

MR. SEGALA: This is John Segala from the Office of Nuclear Reactor Regulation. I'm the Chief of the Advanced Reactor and Policy Branch.

We're coordinating with other groups to look at the required response to Congress regarding any changes needed to the Price-Anderson Act for advanced reactors and small modular reactors.

We're currently drafting a report to Congress and a Commission paper looking at any needed changes that might need to be made in regard to the Price-Anderson Act. And that's due the end of 2021.

And as of right now, we're still assessing it but we're not looking at making any changes as a result of the fact that it's expected that small modular reactors and non-light-water reactors will be at least as safe as the current operating fleet.

In regards to Ed Lyman's comments earlier, I just wanted to say from a non-light-water reactor perspective, we recently issued Regulatory Guide 1.233 and Ed is well aware of that, endorsing the NEI 18-04

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document on the licensing modernization project.

Which lays out a frequency consequence curve with different frequency categories looking at event sequences from anticipated operational currencies, design basis accidents, all the way to beyond design basis accidents.

And a non-light-water reactor applicant that would be applying for this EP rule, we would expect that if they adopted the licensing modernization project as part of their licensing basis of their design and their facility, that would establish the set of credible events that they would consider for this EP rule.

And then in terms of source term, when we presented the licensing modernization project as well as the EP rule to our Advisory Committee on Reactor Safeguards, they wrote us a letter and said that we need to develop some more specific guidance on source term.

In addition, in January when the Nuclear Energy Innovation and Modernization Act, or NEIMA, was issued, it requires us to develop guidance on source term.

And so we're in the process, we have a contract with one of the national labs and we're

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developing that guidance. And so that's something that we're working on in parallel to the proposed EP rule.

(Simultaneous speaking.)

MS. HART: I'm sorry, this is Michelle Hart from NRR again.

Just to add to the point that Ed had raised about the terminology spectrum of credible accidents, it is true that we don't have a regulatory definition called spectrum of credible accidents.

However, if you do look at NUREG 0396, which was the basis for the emergency preparedness, EPZ size, it does refer variously either to a spectrum of accidents or a spectrum of postulated accidents, just to clarify that point.

MS. OLMSTEAD: Thank you very much. I'd like to have the operator have our next caller come in.

OPERATOR: Thank you. Paul Gunter, your line is now open.

MR. GUNTER: Good afternoon, this is Paul Gunter with Beyond Nuclear in Takoma Park, Maryland.

A couple of questions, first of all, in developing this concept of SMRs and multiple modular units, is the NRC contemplating an upper limit of how

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many SMRs could be contiguously located and operated from a single control room?

MS. OLMSTEAD: Were you able to hear that question? He was asking how many SMRs could be operated from a single control room?

MR. KAHLER: Yes, that's far beyond the scope of this rulemaking.

MR. GUNTER: No, it's not. Because I guess my concern is that the current rule does not really consider multiple units involved in an accident.

This sort of defies the evidence of what occurred at Fukushima Daiichi. And it also dictates what a potential source term from an accident could be.

So, if you can't answer that first question, would you be able to just address that to justify how the rule does not account for the possibility of the accident affecting more than 1 SMR unit?

MR. KAHLER: This is Bob Kahler again from the Office of Nuclear Security and Incident Response.

It seems like your question morphed a bit over when you first asked it and the second question.

But the rule does recognize the

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possibility of accidents from contiguous facilities and recognizes that the accidents that need to be considered would be those that would impact what the applicant has provided to us.

So, if there were to be contained within the suite of credible accident scenarios that we're talking about, about multiple accidents at the site, that would be all part of the accident analysis.

So, this is where when you're discussing it, it does not address it. Emergency preparedness would be utilizing what comes out of the design analysis and the source term that would be provided, and what the EPZ size was being provided to us for the application and what it was based upon.

So, that's why we're seeing, first of all, how the operating of the reactor would occur is not contained within the emergency preparedness scope.

The acting conditions would be something that is from what was provided to us.

MR. GUNTER: So, if I could just follow up, what you're saying is that multiple accidents would be defined by what's considered credible.

So, that would be --

MR. KAHLER: You keep going back to credible. It's by the analysis that is already

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provided to us, and emergency preparedness does not make that determination as to what a credible accident is.

So, again, what we're discussing here is beyond the scope of what it is that the emergency preparedness rule is required to occur. We're not defining what that credible accident suite is.

We would utilize what it is when it is provided to us whenever the design is accepted by the other entities.

And then the source term, whatever comes out of it, we take a look at what that source term is and if it was utilized correctly in determining the EPZ side.

Emergency preparedness does not determine the source term, nor does it determine the suite of credible accidents.

MR. GUNTER: Right, well, just in conclusion, my comment is that it appears that the Agency is putting the cart before the horse in determining emergency planning, the scope of emergency planning, prior to having approved designs.

MR. KAHLER: But that's what the emergency partialness rule is based upon, it's technology-inclusive, such that it is not dependent upon what the

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design is.

It's dependent upon what the source term is that determines the emergency planning zone spot, such that regardless of what that is, how that determination is made for the source term.

The regulatory framework for emergency preparedness utilizes it such that it defines what is needed in the middle which declares that emergency planning needs to occur only to the site boundary or needs to occur beyond the site boundary. And that's the EPZ size.

Now, to what distance is now determined by the 1 rem per 96 hours, the scalable EPZ. We're writing the rule based upon that determination that whatever the design is, regardless of the technology, at 1 rem per 96 hours the impact upon public health and safety is where emergency preparedness lies.

MR. GUNTER: Is the concern that you're developing this rule based solely on probabilities that -- again, it appears more as a mirage than a viable protection to the public?

MR. SEGALA: This is John Segala again from NRR.

I would just like to add that the Commission's advanced reactor policy statement, which

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would cover non-light-water reactors and SMRs, has an expectation that these advanced reactors would have enhanced margins of safety and use passive, simplified, and inherent safety features.

So, we establish the EP framework categories that, but when it comes to down to it, the specific developer-licensee applicant is going to have to demonstrate what is the enhanced safety or what is the safety of the facility.

And then as Bob was saying, depending on what source term, what consequences come out of the accident analysis, it'll determine what happened in terms of EP.

We're just setting up a framework and it's up to the developers to demonstrate that they really are safer.

MS. OLMSTEAD: All right, well, thank you very much, John.

Operator, do you have the next speaker, please?

OPERATOR: Yes, our next question comes from Juan Cajigas. Your line is now open.

MR. CAJIGAS: Yes, this is Juan Cajigas from Applied Analysis Corporation.

I have two simple questions and a

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follow-up to the last question. The first one is more of a statement. Where are we going to be able to get a copy of the presentation?

MR. BEALL: Juan, this is Bob Beall from the Rulemaking Branch.

You can get a copy but the slides themselves are linked on the NRC public website, and there's a link in the public meeting notice.

You can get it there and also I will be posting the slides on regulations.gov within a couple days after this meeting also.

MR. CAJIGAS: Are the slides there right now in the ADAMS?

MR. BEALL: Yes, the slides are there in ADAMS already.

MR. CAJIGAS: Thank you. My second question, I forget who made this statement that you have a parallel effort associated with the source term for advanced reactors and source term guidance.

My question is where and how can we follow that effort?

MR. SEGALA: This is John Segala again from NRR, Advanced Reactor policy Branch.

So, we have periodic public stakeholder meetings every six to eight weeks with a combination

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of developers, Department of Energy, NEI, NIC, a whole set of stakeholders.

And Ed Lyman calls in sometimes to those stakeholder meetings as well. So, those dates are posted on our public website. If you search on NRC Advanced Reactors you'll find it and you scroll down to the bottom, it lists all those.

We also on that advanced reactor website we post all of our reports that the contractors are developing for us on the website.

So, right now we're still developing the source term report but once that is finalized, we will be posting that on the public website and we'll also be discussing it at a future stakeholder meeting.

MR. CAJIGAS: Do you have an expected date for that report?

MR. SEGALA: So, we posted also just recently on our Advanced Reactor website an integrated schedule, which you can take a look at that. I'm trying to look up right now.

The report is due to be finalized in January but we're shooting for an earlier date than that. I think we're looking for like end of June, beginning of July timeframe.

MR. CAJIGAS: Okay.

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MR. SEGALA: Our next stakeholder meeting is listed as August 6th but that date might be changing based on availability of Staff. So, we're still working on that but we will update the website with the new date and post that to the public meeting list.

MR. CAJIGAS: Okay, last question is associated with the 300 or 1000 megawatt thermal limit in the proposed design guide.

What was the basis for coming up with the 1000 megawatts thermal?

MR. SCHRADER: The basis for the 1000 megawatt thermal largely came from staying in lockstep with other regulatory requirements, and specifically, the fee billing section of the regulations where it talks to the size of the reactor.

And based on the size of the reactor and its power output is how much the fee should be charged.

And they had a term in there called small modular reactor and that was defined as 300 megawatts electrical or roughly 1000 megawatts thermal.

MR. CAJIGAS: Okay, and an associated question to that is small modular reactors by their name mean that you have multiple modules. So, going

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back to the issue of, let's say, design basis accidents, I gather that in most cases as long as it's defended by the design, it would not be necessary to analyze multiple modules in most of the accidents, if not all?

If you follow what I'm trying to say.

MR. SCHRADER: As Bob had brought up earlier, Bob Kahler, that's a specific scenario that would be addressed with a specific design that comes in.

It's not something we would be concerned about with EP as far as whether they do or do not represent a credible hazard.

MR. CAJIGAS: Okay.

MR. SCHRADER: But they would be a part of the FSAR and Chapter 16 and 19 that talks about credible accidents and beyond design basis accidents.

MR. CAJIGAS: I follow. Thank you.

MR. SCHRADER: Yes.

MS. OLMSTEAD: All right, thank you very much. Operator, can we have our next speaker, please?

OPERATOR: Yes, this call comes from Leigh Ford. Your line is now open.

MS. FORD: Hi, My name is Leigh Ford, I'm calling on behalf of Snake River Alliance in Idaho.

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Can you hear me okay?

MS. OLMSTEAD: Yes, we can.

MS. FORD: Okay, great. I have more of a statement, just on behalf of our supporter staff and board, Snake River Alliance.

The Snake River Alliance asked the NRC to provide a six-month extension on the rulemaking process. Like states across the country, those of us in Idaho are experiencing some of the worst increases in COVID-19 cases since the inception of the pandemic.

This is not a time to ask for communities and emergency response leaders and disaster readiness personnel to be commenting on a proposed rule.

On behalf of our supporters across Idaho, the Snake River Alliance asks the NRC to provide a six-month extension to allow for a transparent and robust public comment process. Thank you.

MR. BEALL: Ms. Ford, this is Robert Beall from the Rulemaking Branch.

If you would like to have an extension to the comment period, please submit that in writing to us and we will take that into consideration.

MS. FORD: Okay, thank you.

MR. BEALL: Yes, that's the best way to do that. Thank you very much for your comment.

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MS. OLMSTEAD: All right, thank you. Operator, do we have another speaker?

OPERATOR: We do. Our next question comes from Edwin Lyman, your line is now open.

MR. LYMAN: Hi, it's Ed Lyman again. I just wanted to introduce and clear up some things for the record here.

So, in response to John Segala, I just checked Regulatory Guide 1.233 and the only place the word credible appears is actually in a reference to DG 1350. So, it's circular.

So, again, I think you are creating a mess on your hands unless you come up with cleaner criteria for these concepts.

Also, for the record, it is not true that this proposal is consistent with NUREG-0396 planning basis and I'd just like to read this into the record.

This is Appendix 1 from NUREG-0396.

As discussed in Appendix 3, the taskforce has concluded that both the design basis accidents and less severe core melt accidents should be considered when selecting a basis for planning pre-determined protective actions.

And certain features of the more severe core melt accidents should be considered in planning

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to show that some capability exists to reduce the consequences of even the most severe accidents.

I do not see how that statement is consistent with the purely 1 rem 96 hours dose-based criterion for what you call the spectrum of credible accidents.

You have an opportunity to clear this up. It's been unclear now since the late '70s and you're blowing it in my view.

So, if you want to create a system that has really robust credibility, I really think you need to address and define these concepts finally in a way so that there's a clear and consistent standard for every reactor applicant so that they can't simply come up with what they've determined is their credible accidents and you have a shifting EPZ depending on their whims.

So, that's my statement. Thank you.

MS. OLMSTEAD: Thank you very much and I hope you submit your comments too. Right now we do not have anyone else in the queue for comment or questions.

If you do have one, please click on Star-1 and we will queue you up.

MR. SCHRADER: This is Eric Schrader, I

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had one comment to get back to.

The lady, she was the second one that had some comments and she asked about where she could find additional information about these advanced reactor designs.

One location that is available is on the Department of Energy website under the Advanced Reactor Demonstration Program.

You can go to that website and see what the current funding opportunities are, the fact that there was a \$160 million initial funding available through this opportunity, and also get some information on how these advanced reactor designs will be tested and go through a rather rigorous -- there won't be a commercial application and design proof but it will be prototyped and go through quite a bit of PRA and those types of testing.

MS. OLMSTEAD: All right, thank you. I noticed we have somebody else in the queue.

Operator, would you like admit her?

OPERATOR: Our next comment comes from Sarah Fields. Your line is now open.

MS. FIELDS: I'd like some clarity on what the definition of a large reactor is. According to the proposed rule, a large reactor is licensed to

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produce greater than 1000 megawatts thermal and I believe in the discussion that mentioned that was about 300 megawatts of electrical energy.

Does that mean that a small modular reactor that is going to produce 600 or 720 megawatts electric, do they fall under the designation of a small modular reactor or are there considered to be a large light-water reactor?

Are you looking at the total or are you looking at each individual reactor module when you determine whether a reactor is a large light-water or a small modular?

MR. SCHRADER: This is Eric Schrader. Licensed reactors are done on a -- each reactor is licensed by itself.

So, whether or not it would be considered a small modular reactor would be based on the size of that individual reactor.

MS. FIELDS: Even though they're in the same containment building and share the same reactor pool, they're still considered individual reactors?

MR. SCHRADER: Those are all design considerations and those design considerations would be handled by the people that we have, our reactor engineers, to determine, again, how those reactors

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could credibly be impacted by each other.

As far as the way we currently license reactors, we do them on a per-reactor basis.

MS. FIELDS: Even though they have systems that are connected to all of the reactors? Okay.

Also, one of the things that I think the NRC should consider is the proposed licensees for some of these SMRs or advanced reactors are utilities or entities that have no experience whatsoever in operation, ownership, licensing, or operations of a nuclear reactor.

That's the case with the proposed NuScale small modular reactor and I think that is one thing the NRC will have to take into consideration in the various licensing processes.

Also, I support the request for an extension of time. As you may know, the folks in Idaho expect to be the site of the first license 12-unit NuScale design small modular reactor.

I will put my request for an extension of time for comments in writing, thank you.

MS. OLMSTEAD: All right, thank you very much, Ms. Fields and I hope you submit your comments and your extension request.

I'm going to wait to see does anyone else

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from the NRC panelists have any comments? Okay, we do not have anymore people signed up in the queue to comment or give questions.

If you do have some, please type in Star-1 to queue up with the operator. I'm going to leave some time here so that people have time to unmute your phone and to get in the queue.

And if we don't have anyone else in the queue, we will continue on in our presentations. I'll give you a few minutes.

All right, Operator, I see we have someone else?

OPERATOR: Yes. Our next call comes from Don Safer, your line is now open.

MR. SAFER: Thank you, my name is Don Safer. I'm in Nashville, Tennessee with the Tennessee Environmental Council.

And the first thing I'd like to say is that I've been following small modular reactor development now for a number of years and I almost missed this meeting because there was no alert.

You may have listed it somewhere but those of us that follow this process almost missed the opportunity.

You claim that you sought public comment

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and public participation was actively sought, but in reality, I think you were trying to sneak this one past us.

And I want to register an objection, a strong objection, to the fact that you did not use the communication tools.

Those of us that have been following the NuScale design process have been in communication and you, I'm sure, had a list of people that are interested and could have done a better job in alerting us.

Because you would have had more participation if you had done a better job of actively seeking public participation, which is what you say, but your actions do not really indicate that you really want that.

I'll let you comment on that. I have other things to say.

MR. BEALL: Hi, this is Bob Beall from the Rulemaking Branch. We did use social media to announce this public meeting also, besides using the normal notice on the NRC public website.

So, we tried to do what we could to let people know far enough in advance.

So, if there's other opportunities or

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other vehicles that people would like to follow, then please put that on the feedback form that we'll talk about at the end of our presentation.

MR. SAFER: Okay.

PARTICIPANT: Bob, I'd like to also chime in on that.

Thank you for that comment and it's a fair point, and we want to make sure that we do have the individuals notified so they can be part of our conversation.

So, if you can put that on the feedback form, and specifically how you've been notified in the past and how we can notify you and others in the future. We would greatly appreciate that.

MR. SAFER: Okay. The other thing, as just a citizen who follows these issues, I'm not a scientist, I'm not an attorney, but it just strikes me as a real attempt to do an end run around the defense in depth that you all have done for all of the other reactors.

And it's just in an era where we're all seeing a lot of regulations and federal authority being kind of basically abandoned and just a laissez-faire attitude coming out of Washington.

I think it's entirely inappropriate for

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the Nuclear Regulatory Commission given what you're dealing with and, given what your mission is to protect public safety, to really abandon policies and practices that certainly could have been improved.

But this is going in the wrong direction.

I would also like to just -- I can't not mention the fact that hearing you talk about these so-called advanced reactors is something that I just have to chuckle about.

A lot of these things have been considered since the 1980s and there's really nothing advanced about them.

In as long as ways they're throwbacks to concepts that were tried and abandoned for a lot of reasons, not the least of which was safety.

And I just always marvel at the masterful use of language to deceive the public that the Nuclear Regulatory Commission has been able to accomplish everything from spent fuel to this performance-based assessment for reactors that have never even been operated and there's no performance to base any assessment on just computer simulations.

So, anyway, I continue to be disappointed by the work of the Nuclear Regulatory Commission and I wish that were different.

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And in the document that you all put out, at the very end is a statement by the Commissioner Jeffrey Baran that is I think very valuable and I wish you would listen to it.

A lot of what I've said, some of what I've said, he's said. I wouldn't put words into his mouth, I'll let you all reread that. If you have not read it, please read it.

And one of the things that he pointed out was that removing the site boundary to the -- removing the EPZ boundary down to the site boundary will totally remove the FEMA from any ability to engage.

And that is a serious degradation in the protection of the public. So, anyway, I appreciate the opportunity to comment and I will submit comments in writing.

I also echo the more time and I'll submit those as well. Thank you.

MR. KAHLER: If I can, this is Bob Kahler again from the Office of Nuclear Security and Incident Response.

One of the things, I do want you to submit all your comments that you can and provide us with your thoughts for consideration on the emergency preparedness rule.

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One thing I would like to re-emphasize though, and I don't know if people can see it well or not, what FEMA put back up, Diagram 13 I believe it is. No, Diagram 9, excuse me, I believe it is. That's the one.

As you see, both of these frameworks when we designed them, they both come to a final conclusion of reasonable assurance for adequate protection of public health and safety.

They utilize the same policies that have been around. We have not created new policies.

We're adhering to the current policy and those that have been in place since to talk about the advanced reactor that the Commission put out, the Commission policy on advanced reactors.

And we're looking at it as whether you have the large light-water reactor, a small modular reactor, a new technology, we tend to agree some of these technologies or coming to fruition now with enhancements and enhanced design and safety features that were not present or thought about.

And now we get to the point of saying that regardless, we're still basing the protection of public health and safety on dose savings to the public of 1 rem and 96 hours, which was the premise of NUREG-

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0396 as they went through and established the ten-mile emergency planning zone for the large light-water reactors currently in operation at that time.

This is an echo of the regulations, that current framework that you see to the left side of that decision block, and it has in it a footnote that talks about a special circumstance for reactors that are of a certain size.

And there were reactors that had small emergency planning zones that were licensed utilizing the same methodology as 396.

So, what we're seeing is that we are just applying that same approach, utilizing the 0396 approach that would create the 10-mile EPZ in saying that we need to make it a generic approach, plus whatever the technology is that we come in with, with that small design of less than 1000 megawatts thermal, approximately 300 megawatt electrical, that we can then apply a scalable EPZ.

And if that 1 rem per 96 hours does not exceed a site boundary, whatever that distance is, the site boundary can be a scalable site boundary also. It's the distance, it's wherever that occurs.

If it's the distance where that 1 rem and 96 hours that occurs, it's contained within the site

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boundary, then it is an onsite emergency plan for providing prompt protective actions to those individuals on the site.

If it goes beyond, then the same methodologies used today for the ten-mile EPZ would be in place or beyond the site boundary because the 1 rem per 96 hours, that distance is beyond whatever that line is.

And therefore, an offsite public protection scheme, formal, must be in place. It's the same approach.

So, that's the statement I'd like to make to let you know that the NRC takes this quite seriously and we will be making determinations of reasonable assurance by what is provided in the application.

Thank you.

MR. SAFER: Can I follow up with a question on that? Hello?

MS. OLMSTEAD: Yes, you can. We don't have anyone else in the queue yet, and if you do want to speak, please push Star-1.

MR. SAFER: I just wondered if I was still hooked up. Can you hear me?

MS. OLMSTEAD: Yes, we can.

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MR. SAFER: I think my concern about that standard just mentioned is that those numbers, we all know how numbers can be manipulated one way or another, and often are.

And the concerns, my concerns and the concerns of many, are that those numbers are manipulated to provide a false sense of security. And there's no real basis.

You can make that come out any way you want, and I'm not a scientist to be able to go into the calculations one way or another, but there's just a well-deserved high degree of skepticism when the public starts hearing about some rem-based standard that you all want to claim is protective of the public.

And those numbers get manipulated around to the point that they've lost their meaning for the public.

MR. COSTA: Don, this is Arlon Costa. Maybe we could put a few things in perspective here just in addition to what Bob Kahler said. The protective actions are similar to what we had for the large water reactors and the methodology is similar. But also look at these numbers, you're talking about the 96-hour TEDE, or 1 rem, that is equivalent to

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about 10 millirem per hour.

And then you have to consider the other regulatory items that we have in order to protect the public.

When you look into the 5 rem criteria per year when we consider how we take care of people inside a nuclear power-plant, inside the boundary, and the numbers that we have for hospitals and medical folks that individuals go and they receive a certain amount of radiation, sometimes close to a rem.

What I'm trying to tell you is that one of the bases for this proposed rule is because we're basing a very low risk.

And to emphasize what Mr. Segala said earlier, it is the responsibility of the designers to come with the analysis, to come to us and provide the necessary information for us to make this evaluation, to make these decisions.

Because our mission is to keep the health and safety of the public and that is not going to end.

So, when you look in a broad spectrum of the regulations that we have, that is our main concern for onsite folks, for offsite, for hospitals or medicals, for casks that may be stored someplace else.

You can see those items that are close to the 1 rem

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criteria we are envisioning exactly that, the protection of the public.

So, it is very consistent, our regulations our very consistent throughout the code of federal regulations.

MS. OLMSTEAD: Thank you, Arlon. And Mr. Safer, I do encourage you to submit comments on the proposed rule.

We don't have anyone else in the queue so I think I have a request to go back to Slide 38. Bob, do you want to say something about Slide 38?

MR. BEALL: Yes, this is just our slide for additional public comment.

MS. OLMSTEAD: Oh, okay, then I'll move on. I'd like to thank everyone for participating in this meeting and your interest and comments to improve our rulemaking efforts.

And I'm going to ask Bob Beall to describe ways you can submit formal comments on the proposed rule and the rulemaking process.

MR. BEALL: Thanks, Joan. The NRC Staff encourages the public to make comments on this proposed rulemaking.

The Staff will review and consider all comments received by July 27, 2020 on the proposed

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rulemaking and we'll provide comment responses as part of the final rule.

Members of the public are highly encouraged to submit comments on the proposed emergency preparedness for small modular reactors and other new technology rulemaking using the process on the website, regulations.gov, under docket ID NRC-2015-0225.

This is the preferred method for submitting public comment. Comments can also be emailed to rulemaking.comments@nrc.gov or mailed to the address shown on this slide and in the Federal Register.

Due to the current COVID-19 pandemic, the NRC is not accepting hand delivery or fax comments on this rulemaking.

In all cases, please include the docket ID in this rulemaking, which again is NRC-2015-0225 in all your correspondence.

If you have any problems with submitting your comment, please feel free to contact Ms. Carol Gallagher. Ms. Gallagher can help you through the process.

The contact information is in the Federal Register notice under addresses. Members of the

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public are also encouraged to monitor the process of this rulemaking on regulations.gov for NRC correspondence related to this rule.

As an example, the meeting summary and transcript from this meeting will be posted on regulations.gov.

Slide 40, please. In this slide, the Staff is presenting the current status and future steps to complete the emergency preparedness for small modular reactors and new technologies rulemaking.

As you can see from the blue arrow, we are at the last bullet at the published proposed rule for comments stage.

Once the comment period closes on July 27th, Staff will evaluate the comment submittals and prepare a draft rule package for Commission review and approval.

The Staff will also hold public meetings with the Advisory Committee on Reactor Safeguards before the draft final rule is submitted to the Commission.

The Staff will also make public in ADAMS and on the website regulations.gov draft rule documents once they are submitted to the Commission.

Slide 41, please. Joan, back to you for

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closing comments and remarks.

MS. OLMSTEAD: Yes, I'd like to thank everyone for participating in this meeting.

Your interests and comments will improve our rulemaking efforts and, as Bob mentioned, please send your comments that were mentioned in Slide 39 such as www.regulations.gov and the public comments must be submitted by July 27, 2020.

I want to remind everyone who hasn't registered for the WebEx who provided their name and affiliation to the operators to contact Bob Beall to provide your contact information.

Bob's contact information is on Slide 41, which you can see now. It's also on the media announcement.

And also, please don't forget to fill out the meeting feedback forms located at the NRC's recently held public meetings webpage in this meeting announcement.

Your input helps us improve future NRC public meetings. Thank you again for your participation and interest in the emergency preparedness for small modular reactors and other new technologies proposed rule.

I hope everyone has a good afternoon.

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(Whereupon, the above-entitled matter went
off the record at 3:26 p.m.)

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