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Operating Licenses -- Environmental Review
Evening Session

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U.S. NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING

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PROPOSED RULE RENEWING NUCLEAR POWER PLANT
OPERATING LICENSES -- ENVIRONMENTAL REVIEW

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THURSDAY

MARCH 16, 2023

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The public meeting convened at the Bethesda North Marriott Hotel & Conference Center, 5701 Marinelli Road, Rockville, Maryland, and via Video-Teleconference, at 6:00 p.m. EDT, Lance Rakovan, Facilitator, presiding.

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PRESENT

LANCE RAKOVAN

JENNIFER DAVIS

KEVIN FOLK

ROBERT HOFFMAN

PATRICIA HOLAHAN

BRETT KLUKAN

YANELY MALAVE-VELEZ

SHERRI MIOTLA

BILL ROGERS

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

6:00 p.m.

MR. RAKOVAN: Good evening, everyone.
Let's go ahead and get started.

My name is Lance Rakovan. I'm an Environmental Project Manager at the U.S. Nuclear Regulatory Commission, or NRC. I'll be facilitating the live in-house, if you will, portion of the meeting, along with my associate, Brett Klukan, who is on helping with the virtual part of the meeting.

For those of you who are participating on Microsoft Teams, please be aware that you can turn on closed captioning for this meeting by selecting the three dots on top of your screen, or "More". From the dropdown menu, you can select "Language and Speech" or "Accessibility" to turn on live captions.

Our purpose today is to provide information and receive public comments on the proposed changes to NRC regulations, Draft Revision 2 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," otherwise known as the LR GEIS, as well as associated guidance.

This is a comment-gathering meeting by

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NRC's definition. So, we will be actively seeking your input after we complete our presentation. You can find the slides we'll be speaking from today in the NRC's ADAMS electronic filing system under the Accession No. ML23069A013. You can find the link to these slides on the public meeting schedule page for this meeting.

We are going to go over the various ways that you can provide your comments later in the meeting, and we will go through how you can provide your comments at this meeting, once we have finished our presentation.

However, please be aware that we do want to hear from you directly. So, we will ask that you use the microphone if you're in the room to provide your comments or that you raise your hand and provide them virtually if you are participating in that way.

Keep in mind that we are transcribing this meeting to make sure we get your comments fully. You can help us make a clean recording by identifying yourself and any group you are with when you speak, and also, silencing background noise.

Can we go to slide 2, please? Okay.

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Other than that, for those of us in the room, if anything were to happen, obviously, the exits are to my left, and then, the closest exit outside is to the left and straight on then.

Other than that, I think that's it. So, please, let us get through our presentation, and then, we'll open up the floor after that and I'll be back.

And with that, I will turn things over to Trish Holahan.

DR. HOLAHAN: Okay. Can you go to slide 3, please?

Good evening, everyone, and welcome.

As Lance said, my name is Trish Holahan. I'm the Director of the Subsequent License Environmental Directorate, commonly known as SLED, in the Office of Nuclear Material Safety and Safeguards at the NRC.

Thank you all for coming out tonight and participating in this meeting.

With me at the table are Jennifer Davis and Kevin Folk -- they are both senior environmental PMs -- and Yanelly Malave, who's a rulemaking PM. Also, in the audience we have Sherri Miotla, Bob Hoffman, Bill Rogers, and Max

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Smith. And also, we have Brittney, who's an NRC Security Specialist. There are other members of the organization, either in the audience or on Teams, to listen to your comments as well.

The purpose of tonight's meeting is to obtain public comment on the Draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants and the proposed rule. I'll refer to these as the proposed rule package from here on out. Both these documents were published on March 3rd, 2023.

We're going to start off with a brief presentation by the staff. We want to maximize the amount of time that we have tonight to hear from you all.

I just want to start off with a few general comments on our rulemaking process at the NRC. Writing regulations is one of the most important things that we do at the NRC. It's the vehicle we use for implementing national policy and standards. It's also the mechanism we use at the NRC to fulfill our goals, which is maintaining health and safety and security and protecting the environment.

The meeting we are having tonight is a

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very important part of that rulemaking process. It's the opportunity for the public and other interested parties to comment on what the staff has done in draft form.

Over the past few months, the Directorate has been involved in an effort to develop a rulemaking which aligns with the Commission adjudicatory order and recent Commission decisions regarding the NEPA analysis of subsequent license renewal applications.

We want your perspectives and your input. Your feedback will help us to improve our final documents, and it will provide valuable input to the Commissioners during their deliberation in the final rule and the Final GEIS.

I also want to point out that in the proposed rule the NRC is asking for your input regarding whether this rulemaking should apply to more than two license renewal terms, initial and one subsequent. This topic will help us improve our final documents and will provide valuable input to the Commissioners during their deliberations on the Final Rule.

So, we encourage you to actively participate tonight and to provide us with your

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input. In addition, we are also receiving written comments on the draft proposed rule package, and we'll get into that later in the presentation.

This is the second of several hybrid meetings we'll be having on this proposed rule. The others will be in the vicinity of the regions later on this month and next. They will be in a similar format and we'll be receiving public comments at those meetings, as well as in writing.

So, once again, welcome and thank you for joining us tonight.

And I'll now turn it over to Jennifer.

MS. DAVIS: Okay. Slide 4, please.

Okay. Thank you, Trish.

Again, my name is Jennifer Davis. I'm one of the technical Project Managers for this rulemaking.

In terms of our agenda, first, we'll provide a very brief history of how we got here. Next, we'll discuss the purposes of NUREG-1437, the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, or as we call it, the License Renewal GEIS, or simply, the LR GEIS.

We will also discuss our methodology for the review and update of the GEIS and the

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proposed rule; summarize the proposed amendments to Part 51; discuss our schedule, and also, review how comments can be submitted. Next slide, please.

The NRC's regulations in Appendix B to Subpart A of Part 51 state that, on a 10-year cycle, the Commission intends to review the material in the Appendix, including Table B-1, and update it, if necessary. The last 10-year review and update was conducted in June of 2013.

In August of 2020, the NRC published a scoping notice in the *Federal Register* announcing the NRC's intent to review and potentially update the 2013 GEIS. The Notice also provided the results of the NRC staff's preliminary review, which included addressing subsequent license renewal, or, as we call it, SLR, and requested comments and suggestions from the public on other areas that needed to be updated.

During the scoping period, the NRC staff conducted four public webinars on August 19th and 27th, and the public scoping comment period ended on November the 2nd.

Staff used the scoping comments to inform and prepare a rulemaking plan, which culminated in a series of rulemaking plans

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submitted to the Commission for review and approval between July of 2021 and February -- or April of 2022. Excuse me.

All of the staff's rulemaking plans included amending Table B-1 and updating the License Renewal GEIS and associated guidance, to include addressing their applicability to subsequent license renewal, along with other pertinent updates.

On March 25th, 2022, the staff submitted a revised rulemaking plan called SECY-22-0024, to request approval to proceed with a rulemaking plan that aligned with the Commission's orders. The orders, in part, concluded that the staff had not conducted an adequate NEPA analysis for SLR environmental reviews. Next slide, please.

On April the 5th, 2022, the Commission issued a Staff Requirements Memorandum directing the staff to initiate a rulemaking that aligned with Commission orders and recent decisions. It also directed the staff to remove the word "initial" from 10 CFR 51.53(c)(3) and revise the License Renewal GEIS, Table B-1, and associated guidance to fully support subsequent license renewal. The update will also account for changes

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to applicable laws and regulations, new data, and lessons learned. The staff were also directed to complete the rulemaking within 24 months. Slide 7, please.

The primary purpose of the License Renewal GEIS is to identify all environmental issues associated with continued nuclear power plant operations during the license renewal term and evaluate those environmental impacts considered to be generic for all or a subset of nuclear power plants.

The License Renewal GEIS also identifies and provides information on issues that need to be addressed in plant-specific environmental reviews for license renewal. The NRC documents these reviews in plant-specific supplemental environmental impact statements [SEIS] prepared to the GEIS. Slide 8, please.

The License Renewal GEIS is the technical and regulatory basis for the proposed rule, the findings of which are codified in Table B-1 of 10 CFR Part 51.

The environmental issues evaluated in the License Renewal GEIS and listed in Table B-1 are characterized as either Category 1 or Category

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Category 1 issues are considered generic, as the impacts have been found to be, essentially, the same or similar at all or a subset of nuclear power plants, and that additional plant-specific mitigation measures are not likely to sufficiently be beneficial to warrant further consideration. Category 1 issues are only reevaluated in plant-specific environmental reviews if there is new and significant information.

In contrast, Category 2 issues are those that must be considered on a plant-specific basis. Each nuclear power plant specific review must address Category 2 issues, and Table B-1 summarizes those impact findings. Next slide, please.

The purpose of the NRC staff's evaluation was to determine whether the findings presented in the 2013 License Renewal GEIS remain valid for initial license renewal and to ensure that the analysis and assumptions support subsequent license renewal reviews.

In doing so, the NRC considered the need to modify, add to, or delete any of the 78 environmental issues in the 2013 GEIS and codified

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in Table B-1. These proposed changes are intended to maintain the accuracy of the License Renewal GEIS and to ensure that future environmental reviews meet the "hard look" standard to fully account for the environmental impacts of initial and subsequent license renewal, as documented in the draft revised GEIS. Slide 10, please.

As demonstrated on this slide, the staff used a systematic approach to evaluate the environmental effects of initial license renewal and focusing on the effects of subsequent license renewal, as directed by the Commission. The staff focused on describing the activity or aspect of plant operations that could affect a resource; identifying an affected resource; evaluating past license renewal reviews and other available information; assessing the nature and magnitude of the potential environmental impacts of initial or subsequent license renewal; characterizing the significance of those effects; determining whether the results of the analysis apply to all power plants or a subset of plants -- that is, whether or not the environmental issue is a Category 1 or a Category 2 -- and the consideration of additional mitigation measures for adverse impacts.

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Most importantly, lessons learned and knowledge gained during previous license renewal reviews provided a major source of information for this review.

Public comments received during the license renewal environmental reviews were reexamined to validate existing environmental issues and to identify new ones.

Since 2013, 15 nuclear power plants have undergone an initial license renewal review. And also, for the purposes of the staff's review, the NRC also considered five subsequent license renewal environmental reviews, including two reviews where the NRC had issued a draft SEIS, but not a final SEIS. Next slide, please.

In the proposed rule package, the NRC staff identified a total of 80 environmental issues that may be associated with nuclear power plant operation and refurbishment during the renewal term. Of the 80 issues, the staff identified 59 as Category 1, which could be codified in the proposed Table B-1 of 10 CFR Part 51. Applicants and the NRC staff would be able to rely on the generic findings for each Category 1 issue, as supported by the analysis in the draft revised GEIS, subject to

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the consideration of any new and significant information.

The NRC staff identified 20 issues as Category 2. These are issues that cannot be evaluated generically and must be evaluated by the applicant in its environmental report and the NRC staff in its supplemental environmental impact statement.

One environmental issue, electromagnetic fields, has been labeled as not applicable, or N/A. Studies have not uncovered consistent evidence linking the harmful effects with field exposures. Because the state of the science is currently inadequate, no generic conclusion on human health effects is possible. If in the future the Commission finds that a general agreement has been reached by appropriate federal health authorities that there are adverse effects from EMF, the Commission will then treat this issue similar to a Category 2 issue and require applicants to provide plant-specific information on this topic. Until such time, applicants are not required to submit information on this issue.

As indicated on this slide, no environmental issues were eliminated, but certain

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issues were consolidated for clarity and one issue was subdivided into three issues.

Next, we will summarize the key changes to environmental issues as evaluated in the draft revised GEIS, which are proposed to be included in Table B-1 under the proposed rule.

In general, all of the changes reflect new or updated technical or regulatory information, as described in the draft revised License Renewal GEIS. The proposed changes are also intended to enhance the effectiveness of the NRC staff's license renewal environmental reviews conducted under NEPA.

And now, I will turn the presentation over to my colleague, Kevin Folk.

MR. FOLK: Thank you, Jennifer.

And good evening, everyone.

My name is Kevin Folk, and I will summarize the major technical changes in the proposed rule package. Slide 12.

For this first issue, the staff proposes to combine two closely-related issues into a consolidated Category 2 issue. This revised issue is named, "Groundwater quality degradation, plants with cooling ponds."

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The scope of this combined issue considers the possibility that groundwater quality and beneficial water uses can become degraded from the migration of contaminants discharged to cooling ponds from operating nuclear power plants.

The existing Category 2 issue only considers plants with cooling ponds at inland site locations. This revised consolidated issue recognizes that plant discharges to cooling ponds can degrade groundwater, as well as surface water, quality in coastal areas, as well as at inland sites, depending on site-specific differences, such as cooling pond construction, operations, ambient water quality, and site hydrogeologic conditions.

This proposed change is based on new information identified by the NRC staff during the 2019 environmental review for the Turkey Point Plant in Florida. Slide 13, please.

This renamed consolidated Category 2 issue is titled, "Impingement mortality and entrainment of aquatic organisms, plants with once-through cooling systems or cooling ponds."

This issue pertains to cooling water intake effects on aquatic organisms, including finfish and shellfish, at operating plants with

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once-through or open-cycle cooling systems.

The proposed rule combines an existing Category 2 issue with the impingement component of an existing and related Category 1 issue to more fully address potential impacts on aquatic resources.

The staff proposes to revise and rename the issue to consider impingement mortality, rather than simply the total number of organisms impinged. This is consistent with the United States Environmental Protection Agency's 2014 Clean Water Act, Section 316(b) regulations and its revised impacts methodology. Slide 14, please.

This next issue has the same underlying regulatory and technical basis as the previous issue and combines two existing Category 1 issues into one new Category 1 issue named, "Impingement mortality and entrainment of aquatic organisms, plants with cooling towers."

This consolidated issue pertains to nuclear plants using cooling towers which are closed-cycle cooling systems.

For this combined issue, the NRC staff found that no significant impacts on populations of aquatic organisms have been reported at any

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existing nuclear power plant that relies on cooling towers.

Therefore, this combined issue is generically resolved with an impact level of small. This finding is also consistent with the U.S. EPA's revised Clean Water Act, Section 316(b) regulations that establish Best Technology Available standards, or BTA, for cooling water intake systems where cooling towers are recognized best technology for minimizing impacts on aquatic organisms. Slide 15, please.

This consolidated issue named, "Infrequently reported effects of thermal effluents," combines several closely-related, but seldom reported effects of nuclear plant thermal effluent discharges on aquatic organisms.

These various combined effects include, for example, cold shock, thermal barriers for migrating aquatic species, and effects on dissolved oxygen and other water quality changes, along with the thermal effluent component of an existing Category 1 issue.

As stated in the proposed rule package, these infrequent effects would be minor and would not destabilize or alter any important attributes

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of aquatic populations in receiving water bodies.

The NRC staff also projects that these effects or impacts would continue to be small for operating nuclear power plants during any license renewal term. Therefore, this combined issue is generic in nature for Category 1. Slide 17 (sic), please.

Here, the staff proposes dividing an existing Category 2 issue into three separate Category 2 issues that address the potential impacts of operating nuclear plants on federally-protected ecological resources.

This proposed change will promote clarity and consistency with the separate federal statutes and interagency consultation requirements that the NRC staff must consider.

The first issue concerns listed terrestrial and freshwater species and their critical habitats under the Endangered Species Act, or ESA, subject to U.S. Fish and Wildlife Service jurisdiction.

The second of the three issues concerns ESA-listed marine and migratory species and their critical habitats under National Marine Fisheries Service jurisdiction.

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The last issue concerns essential habitat for regulated marine fisheries under National Marine Fisheries Service jurisdiction, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act. Now, slide 17, please.

As described in the proposed rule package, the NRC staff has identified three new environmental issues for inclusion in Table B-1 of 10 CFR Part 51.

First, a new Category 2 issue titled, "National Marine Sanctuaries Act, Sanctuary Resources," would be added to evaluate potential effects of continued nuclear power plant operations on protected resources.

Currently, five operating nuclear power plants are located near designated or proposed National Marine Sanctuaries. This addition would enhance and clarify the NRC's interagency consultation requirements.

Specifically, Section 304(d) of the Act requires that federal agencies consult with the National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, for any proposed actions that may injure sanctuary

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resources.

The NRC staff would perform a plant-specific assessment as part of each license renewal environmental review to determine the potential effects on sanctuary resources and would consult, as appropriate.

The remaining two issues are closely linked and will facilitate the NRC staff's environmental reviews regarding greenhouse gas emissions, or GHGs for short, as well as climate change.

The NRC staff has been addressing GHGs and climate change in its licensing reviews in accordance with Commission direction since 2009, but such issues were not explicitly included in the 2013 License Renewal Generic Environmental Impact Statement and Table B-1.

Now, a Category 1 issue named "Greenhouse gas impacts on climate change" would be added that evaluates the GHG impacts on climate change associated with continued nuclear power plant operation during the license renewal term.

Based on the staff's evaluation, continued nuclear power plant operations and refurbishment activities emit small quantities of

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GHGs from such common industrial sources as diesel generators, pumps, boilers, motorized equipment, and motor vehicles.

Analysis shows that the impacts of these GHG emissions on climate change during the license renewal term would be small for all nuclear plants.

Additionally, a new Category 2 issue would be added titled, "Climate change impacts on environmental resources." This issue addresses the impacts of climate change on environmental resources that may also be directly impacted by continued nuclear power plant operations during the license renewal term.

Changes in resource conditions, such as water temperature, associated with climate change could result in environmental changes and interact with the incremental impacts of nuclear power plant operations.

The impacts of climate change on environmental resources are location-specific and cannot be evaluated generically. The NRC staff, therefore, proposes to perform a plant-specific impact assessment as part of each license renewal environmental review. Slide 18, please.

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The proposed rule package reclassifies the current Category 2, severe accidents issue, as a Category 1, or generic issue. Under the 2013 rule, the issue of severe accidents was classified as a Category 2 issue, requiring that license renewal applicants perform a Severe Accident Mitigation Alternatives analysis, or SAMA, if no SAMA had previously been performed for the nuclear power plant.

As proposed, this issue would be resolved generically for the vast majority, if not all, future license renewal applicants. This is because expected future applicants will have previously completed a full SAMA analysis.

All applicants will still have to identify any new and significant information, subject to independent review by the NRC staff.

This proposed change from Category 2 to Category 1 is further supported by new information and analyses performed by the NRC staff which shows an overall reduction in population dose risk, and that continued severe accident regulatory improvements have reduced the likelihood of finding additional beneficial plant safety upgrades.

This new and updated information

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further supports the Commission's expectation that further SAMA analysis would not be necessary for plants that have already completed a SAMA analysis or similar analysis, such as Severe Accident Mitigation Design Alternative analysis, or SAMDA.

Therefore, the NRC staff has concluded that the probability-weighted consequences of severe accidents during an initial and a subsequent license term would be small.

I will now turn it back to my colleague, Yanely, who will provide additional information on the rulemaking.

Thank you.

MR. MALAVE: Thank you, Kevin.

I'm Yanely Malave. I'm the rulemaking Program Manager for this project.

I know we have provided a lot of information. So, I would like to summarize the proposed amendments.

We will [be] revising the existing requirements for environmental reviews for applications for license renewal of operating nuclear power plants.

The proposed amendments will codify the updated generic conclusions of the draft revised

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License Renewal GEIS for those issues for which a generic conclusion regarding the potential environmental impacts of issuing an initial or subsequent renewal license for a nuclear power plant can be reached.

These conclusions have been updated to account for subsequent license renewal, as well as initial license renewal and other new information since the 2013 License Renewal GEIS update. These issues are identified as Category 1 issues in the draft revised License Renewal GEIS. The Category 1 issues identified and described in the draft License Renewal GEIS may be applied to any initial license renewal or subsequent license renewal application for an operating nuclear power plant, and have been determined to have a small impact for all plants or subset of plants.

Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 summarizes and codifies the Commission's findings for all Category 1 issues. The revisions to Table B-1 account for subsequent license renewal with lessons learned, knowledge gained, and experience from license renewal environmental reviews performed since the development of the 2013 License Renewal GEIS;

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considers changes to applicable laws and regulations, and factors in new scientific data and methodology with respect to the assessment of potential environmental impacts of nuclear power plant license renewal.

In addition, we made conforming changes to provisions of 51.53(c)(3) and 51.95(c). We also clarify that it only applies to one term of subsequent license renewal, but we do have a question in the proposed rule package as to whether it should be applied to more than one term of subsequent license renewal. Slide 20, please.

The NRC staff submitted the proposed rule package to the Commission on December 6, 2022, and the proposed rule was published on March 3rd. The FR citation is 88 FR 13329.

We are conducting multiple public meetings during the 60-day comment period which ends on May 2nd.

After the conclusion of the public comment period, the NRC staff will respond to questions received on the proposed rule, the License Renewal GEIS, and associated guidance, and update the package, as appropriate.

The NRC staff plans to submit the final

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rule package to the Commission for its review and approval by the end of November. The estimated date of publication for the final rule is April 2024. Slide 21, please.

We have created a public website with information related to this project and links to the documents are available. In addition, all documents can be found through ADAMS, and the table shows the correspondent ML numbers for each of these documents. Slide 22, please.

You can submit your comments by multiple ways.

One of the methods of submitting your comments is at today's meeting. The second option is online via regulations.gov. Be sure to search for the Docket ID No. NRC-2018-0296.

You can also email comments to rulemaking.comments@nrc.gov. If you do not receive an automatic email reply confirming receipt of your comment, please contact us at 301-415-1677. Slide 23, please.

Lastly, you can mail comments to the Secretary at the address shown in this slide.

And as a friendly reminder, the comment period ends on May 2nd. Slide 24, please.

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I also would like to point out that, in the proposed rule, the NRC is seeking comment on whether the proposed rule should be expanded beyond two license renewal terms. Please provide the rationale with your response. Slide 25, please.

This slide shows the list of points of contact for these projects. In case you have any questions, you can reach out to any of us.

And now, I will turn it over to Lance to further information as to how you can provide comments and questions.

MR. RAKOVAN: Okay. Thank you all.

So, let's go ahead and open the floor to any clarifying questions you may have on the presentation. We don't want to get into any in-depth discussion or back-and-forths on the issues. We just want to make sure that you understood the presentation.

If you had some concerns about the language or are looking for some clarity or had questions on the language of what you reviewed, that's kind of a comment in and of itself, in that, you know, you're suggesting that we provide clarity on that. So, just looking for clarifying questions on the presentation, either in the room or online,

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right now.

Brett, can we check in with you to just make sure that you're there with us?

MR. KLUKAN: Hey, Lance, how are you?

MR. RAKOVAN: Life is good, sir.

MR. KLUKAN: So, if you are online, participating via Teams, or on the phone, in order to ask a question right now, or a clarifying question, please press *5 on your phone, if you're participating via phone. Again, that is *5.

And via the Teams app, you can simply click the "Raise Hand" function. It looks like a little hand. It should be at the top or close to the top of your screen for most of you.

So, again, if you're participating via Teams, and you would like to ask a clarifying question, hit the "Raise Hand" button, or if you're participating via phone, press *5.

MR. RAKOVAN: All right. We'll pause for a second.

(Pause.)

MR. KLUKAN: Lance, I have no hands raised at this time.

MR. RAKOVAN: Okay. No interest in the room. So, why don't we go ahead and move to

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commenting.

Again, for those of you in the room, you can approach the microphone if you would like to provide a comment.

For those of you online, you can use the "Raise Your Hand" feature if you're participating through Microsoft Teams

Or if you are on the phone, you can hit *6 (sic), and Brett will take hands as he sees them and allow folks to use their microphones as we go through them.

So, right now, Brett, we have no one approaching the microphone in the room. Do we have any hands online?

MR. KLUKAN: We do, and, Mr. Gunter, I'm going to allow your microphone. You have to unmute yourself as well. Once you do, state your name, and then, begin your comment.

MR. GUNTER: Paul Gunter. Can you hear me?

MR. KLUKAN: Yes, we can hear you, loud and clear.

MR. GUNTER: Thank you.

I'm Director of the Reactor Oversight Project for Beyond Nuclear in Takoma Park,

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Maryland.

We were one of the intervenors that prompted the Commission order for the GEIS to be rescinded as it had been approved and rewritten to receive these comments.

And I'm going to focus my comments this evening on the GEIS assessment of license extensions pertaining to human health at Section 4.9.1, which states, "Based on past environmental monitoring data and trends, no significant human health impacts are anticipated during the license renewal period -- "term," I should say -- "that would be different from those occurring during the current license term."

So, Section 4.9.1.1, "the Environmental Consequences of Normal Operating Conditions," provides an evaluation of the impacts of radiological, chemical, microbiological, EMF, and physical hazards on occupational personnel and members of the public from continued operation and any refurbishment activities during the initial license renewal and subsequent license renewal terms. This evaluation extends to all U.S. nuclear power plants.

So, Section 4.9.1.1.1 on "Radiological

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Exposure and Risks," discusses two environmental issues relating to radiation exposures to plant workers and radiation exposures to the public, both of which would result in continued operation and refurbishment activities during the initial license renewal or subsequent license renewal term.

Given the time constraint -- and I'm not sure exactly how much time I have; I'm assuming it's three to five minutes -- but I'm going to focus my oral comments on the risk to public health and provide more details in written comments.

So, for radiation exposures to the public, the GEIS discusses the radiological exposure pathways from current operations in nuclear power plants and calculating dose and radiological monitoring performed at each nuclear power plant site to assure that an unanticipated buildup of radioactivity has not occurred in the environment.

The NRC conceded that, during the renewed operations, radioactivity will continue to be released to the environment, to both air and water. These public exposures from routine discharges of radioactive gas and liquid effluent include periodic purging of the reactor containment

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structures to the atmosphere and discharge of radioactive effluent to rivers, lakes, reservoirs, and coastal water.

While the NRC acknowledges these exposures occur under controlled conditions, and in accordance with as well as reasonably achievable principles, it should also be acknowledged, though, ALARA considers operator economics, and added to the radiation exposures are also unpredictable, abnormal occurrences.

The NRC concedes that the concentration of these radioactive materials in soils and sediments increases in the environment at a rate that depends on the rate of release and the rate of radioactive decay, which, in our view, means that there will be higher levels of radioactive exposure from long-lived radioactive isotopes accumulating into the license extension periods.

The GEIS concludes, on the basis of these considerations, the NRC concludes that the impact of continued operations and refurbishment activities on public radiological exposure during the initial license renewal and subsequent license renewal terms would be small for all nuclear power plants. This is a Category 1 issue.

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The public is, therefore, proposedly, to be barred from petitioning the NRC for hearings on site-specific health concerns and site-specific conditions. However, Beyond Nuclear argues that the NRC has not actually taken the necessary hard look in this GEIS for extended operations, now projected out to 80 years, on the human health under the National Environmental Policy Act. A closer look at potential health damage needs to be a prerequisite for operating license renewal.

In 2010, the NRC sought to address these human health concerns by Contract Grant No. NRC-04-10-152, "Analysis of Cancer Risks in Populations Near Nuclear Power Facilities," signed with the National Academy of Sciences, to perform a state-of-the-art study on cancer risks for populations surrounding NRC-licensed facilities, including commercial nuclear power stations.

Beyond Nuclear notes that the National Library of Medicine documents several accredited studies conducted around nuclear power stations in France, Great Britain, Germany, and Switzerland that have shown elevated rates of childhood leukemias above what was to be expected within the 5 kilometers, or 3.1 miles, of the commercial

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nuclear reactors.

The NAS agreed to conduct the epidemiological study in two phases. The first phase of the study identified scientifically-sound approaches for carrying out an assessment of cancer risks that would inform the study's designs to be carried out in phase two. Phase one recommended examining seven pilot sites, six of which are operating or closed nuclear power plants and one nuclear fuel processing facility.

In 2012, the NAS phase one also recommended two study designs: an ecological study that would look at a variety of cancers among adults and children over the operational history of the facilities and a record-linkage-based case controlled study examining cancer risks for childhood exposures to radiation during the more recent operating histories. Because the case controlled study would focus on children, Beyond Nuclear supported this study type over the ecological study recommendation.

NAS produced a cancer study model that would take 39 months at a cost of \$8 million to examine those seven pilot sites. Followed (sic) that, the NAS would turn its attention to the other

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nuclear facilities throughout America. Five years and \$1.5 million later, the NAS was ready to conduct the pilot study at the seven pilot sites to determine and advance the stronger methodology, and the NRC scuttled the project in 2015.

The NRC justified its cancellation as costing too much, taking too long, and would not provide any useful human health data, including for children in the vicinity of these nuclear facilities. These are claims; they're still disputed, nor acknowledged by the NRC in this GEIS. No such study has been conducted in the United States to date.

So, it's our concern that the NRC is actually suppressing a critical part of the Generic Environmental Impact Statement by not conducting a due diligence through NEPA on impacts of environmental releases of radiation to surrounding populations.

Thank you.

MR. KLUKAN: Thank you very much, Mr. Gunter.

We're now going to go to Adam Stein. I have allowed your microphone. Feel free to unmute yourself when you are ready. Again, Adam Stein.

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I have promoted you to a presenter, Adam, in case you're having trouble unmuting yourself. So, again, just click on the top of the screen. I think we heard you here just a second ago. Click on the little mic button at the top and you should be good to go.

(No response.)

Adam, did that help? I think there's two of you on here. So, I have unmuted both of you.

(No response.)

All right. Well, while we're waiting for Adam, we're going to go to Brett Titus.

Brett Titus, whenever you're ready, I've unmuted you. So, please feel free to begin. State your name, and then, your affiliation.

DR. STEIN: Can you hear me now?

MR. KLUKAN: I can hear you now. Is this Adam?

DR. STEIN: This is Adam. Thank you.

MR. KLUKAN: All right. Then, we will --

DR. STEIN: This one kicked me off the first time and I had to rejoin.

MR. KLUKAN: Okay. Sorry about that,

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but please go ahead.

DR. STEIN: Hi. This is Dr. Adam Stein, Director of Nuclear Energy Innovation at The Breakthrough Institute.

I will provide brief comments this evening, but I will provide significant more comments in writing.

The issue that was recently raised by the previous speaker is a complex one. The release of effluents is a continually-monitored oversight operation under the NRC, and therefore, it is not appropriate to reconsider on a completely new basis when a new environmental impact assessment is done for a license renewal because it is continually monitored.

I'll say the National Academy's report that was mentioned was not carried out, because even if carried out with the seven sites, would have lacked statistical power to show without bias whether there was Type 1 or Type 2 error in the results and could have shown incorrect results due to that. A much larger sample set over a much longer period of time would be necessary to conclude that. If you refer to SECY-15-0104, you will find the staff's assessment and justification

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for discontinuing that particular project.

With reference to consideration of climate change impacts on a site-specific basis, the Breakthrough Institute is supportive of that new consideration within a limit. The applicant for the renewal should be able to consider that and, without significant analysis, note whether the potential for impact exists or not before doing a very in-depth study.

For example, a plant that, with initial analysis, shows that there is no potential for impacts due to (audio malfunction) --

MR. KLUKAN: Adam, we may have lost you. It looks like you're still online, but we're not hearing you.

DR. STEIN: Can you hear me now?

MR. KLUKAN: Yes, I can hear you now.

DR. STEIN: What was the last thing that you did hear me say?

(No response.)

Okay. I'm not sure where you lost me.

MR. KLUKAN: I would back up about 30 seconds ago.

DR. STEIN: Okay. Consideration of climate change impacts on a site-specific basis may

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be useful for moving forward because we do expect to see impacts due to climate change on a site-by-site basis. However, those considerations should be able to be rejected through high-level analysis if there seems to be no consideration for that impact or that type of impact at a particular site without doing extensive analysis. But it would be certainly warranted for some particular plants.

We're also in favor of not limiting this to just one license renewal. Part of the issue with the recent rollback of license terms for SLR at some plants, such as Turkey Point, were due to the word "initial" being in the regulation. We want to avoid that for the future; however, maintain that when new and significant information is discovered, that that would warrant additional analysis.

That's my comment for the evening.
Thank you.

MR. KLUKAN: Thank you very much, Adam.
And again, we apologize for the technical difficulties you experienced.

We're now going to turn to Brett Titus.
I have unmuted you. Whenever you're ready, please feel free to unmute yourself, state your name, and

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any affiliation.

MR. TITUS: Thank you, Brett.

My name is Brett Titus. I'm the Licensing Director and Regulatory Affairs at the Nuclear Energy Institute. And one of my roles and responsibilities there is the NEI lead for the License Renewal Environmental Task Force.

First and foremost, our comment is to the staff. We know you've been under a very aggressive schedule and we appreciate the high prioritization that the Commission has placed on this activity to restore some stability and predictability to the second license renewal process.

Similar to Dr. Stein, we also believe that the GEIS should be applicable to any license renewal period. We think that that predictability and stability is consistent with the principles of good regulation, and that the existing process for updating the guidance documents is sufficient to take all things into consideration with new and significant information.

One other piece that we also are supportive of, recently, there was a RIC Technical Session that was chaired by Commissioner Crowell,

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and it was on the transformation and modernization of the environmental review process.

And on one of those slides, it was pretty succinctly stated that environmental reviews should be looking at the impact of operating the plants on the environment, and not the other way around. We think that that is a very distinct clarification; that the staff should continue to point all additional climate change aspects to the correct process when it comes to the potential impacts of climate change on the plant and safety itself. So, we think that those processes exist outside the environmental review process and those lines should be clearly delineated.

We do intend to provide written comments before the end of the comment period, but those are some of the highlights that we wanted to make sure were voiced this evening.

So, thank you.

MR. KLUKAN: Thank you very much.

Well, Lance, that exhausts the queue of individuals online. So, I'll turn it back to you in case there's anyone in the room.

MR. RAKOVAN: There is not at this time. So, let's go ahead and take our pause and

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see if you get any additional hands or if anyone wanders up to the microphone here.

MR. KLUKAN: Again, for those of you participating online, please use the "Raise Hand" function within the Teams app. If you're participating via phone -- and it looks like we have at least one person who is -- to raise your hand, press *5. Again, that is *5.

(Pause.)

MR. RAKOVAN: How are we looking, Brett?

MR. KLUKAN: At this time, no one has queued up.

Oh, we have one hand up. Mr. Gunter, let me allow your microphone. So, please begin whenever you're ready.

(No response.)

Mr. Gunter, I have enabled your microphone. Just feel free to unmute yourself whenever you're ready and begin --

MR. GUNTER: Okay. Now can you hear me?

MR. KLUKAN: Yes, I can hear you.

MR. GUNTER: Okay. I'm sorry.

So, Paul Gunter, Beyond Nuclear.

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You know, our concern is that I'm sure the agency is aware that the National Academy of Sciences is currently going through a process to develop a study on the maximum -- let's see -- the probable maximum precipitation, which is connected to flooding and a number of issues relative to safe operation of nuclear power into the projected climate change period for these license renewals.

And the issue being that the agency is still in the process of developing its probable maximum flood. So, you can't really develop a probable maximum flood methodology if you don't really, even have workable models for probable maximum precipitation. And this is what the NAS is currently striving to put forward.

So, it seems like, you know, the rush of the agency and the industry to push this process out is putting the cart before the horse in any kind of meaningful understanding and mitigation of climate impacts on the projected operation in these extension periods.

So, you know, again, it's hard to understand why the agency is so driven by schedule, when, in fact, it should be more focused on quality. So, again, the fact that schedule is

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driving this process is contrary to the intent and stated purpose of NEPA, which requires a hard look, not a quick look.

So that, again, I think that you're missing the point and just you're creating more likelihood of delay than actually, you know, coming about and taking the necessary measures to come up with a quality project and quality output.

So, thank you.

MR. KLUKAN: Thank you again, Mr. Gunter.

Anyone else who would like to make a comment at this time? Again, press *5 if you're on the phone. Or if you are participating via the Teams app, use the "Raise Hand" function.

MR. RAKOVAN: And we still have the active mic in the aisle if anyone here would like to make a comment.

(Pause.)

MR. KLUKAN: All right. Mr. Titus, I am --

MR. TITUS: I'm still unmuted. Don't worry about it, Brett.

MR. KLUKAN: Okay, great.

MR. TITUS: All right. This is Brett

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Titus again with the License Renewal Environmental Task Force from NEI.

I wanted to just elaborate on one of my earlier comments about the existing processes for dealing with things like, for example, hazard increases.

I think there's an opportunity for the staff to clearly delineate things like the LIC-208 process for ongoing analysis and natural hazard information; the 50.9 process; other processes that exist to take into account changes in the environment surrounding the plant, and really focus the environmental reviews on what the plant's impact is on the environment.

So, I just wanted to add that additional context to my earlier comment. Thanks.

MR. KLUKAN: Thank you very much, again, for your comments and for participating.

Anyone else this evening online? Again, press *5 to raise your hand if you're on the phone, or use the "Raise your Hand" feature within the app itself.

(Pause.)

Okay, Lance, I'm going to turn it back over to you. We have no hands raised at this time.

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MR. RAKOVAN: We're about to call the meeting. Do we have anyone who would like to approach the microphone and provide a comment at this time?

(No response.)

Okay. Trish, do you want to go ahead and close this out?

DR. HOLAHAN: Okay. Well, thank you for the comments. We'll take them. We're taking notes and we'll analyze all the public comments.

Thank you for those participating virtually as well as those in the room.

And we can close the meeting.

(Whereupon, at 7:00 p.m., the meeting was concluded.)

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