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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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REGULATORY POLICIES AND PRACTICES SUBCOMMITTEE

+ + + + +

WEDNESDAY

JUNE 21, 2023

+ + + + +

The Subcommittee met via Teleconference, at  
8:30 a.m. EDT, Matthew W. Sunseri, Chair,  
presiding.

COMMITTEE MEMBERS:

MATTHEW W. SUNSERI, Chair

RONALD G. BALLINGER, Member

VICKI M. BIER, Member

CHARLES H. BROWN, JR., Member

VESNA B. DIMITRIJEVIC, Member

GREGORY H. HALNON, Member

JOSE A. MARCH LEUBA, Member

ROBERT MARTIN, Member

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WALTER L. KIRCHNER, Member

JOY L. REMPE, Member

THOMAS ROBERTS, Member

ACRS CONSULTANT:

STEPHEN SCHULTZ

DESIGNATED FEDERAL OFFICIAL:

KENT HOWARD

ALSO PRESENT:

ALLEN FETTER, NRR

MICHELLE HAYES, NRR

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

8:31 a.m.

CHAIR SUNSERI: Okay. It's 8:31. This is a meeting of the Regulatory Policies and Practices Subcommittee and is being held in a hybrid meeting format using MS Teams.

I am Matt Sunseri, and I will be today's Chair of the subcommittee.

ACRS members in attendance are Ron Ballinger, Jose March-Leuba, Joy Rempe, Walt Kirchner, Vicki Bier, Charles Brown, and online we have Vesna Dimitrijevic. Are you there, Vesna?

MEMBER DIMITRIJEVIC: Yeah, I'm here. Good morning.

CHAIR SUNSERI: Okay. Dr. Bob Martin? Are you there? Shows to be.

And Greg Halnon. Are you online?

MEMBER HALNON: Yes, I am, Matt.

CHAIR SUNSERI: Okay. Thank you.

And did I miss any members online? Okay.

We are also joined by our consultant, Steve Schultz, and we have an invited expert, Tom Roberts.

I note that we have a quorum.

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1 Kent Howard, of the ACRS staff, has  
2 been designated federal officer for this meeting.

3 The purpose of this subcommittee  
4 meeting is for the NRC staff to provide an  
5 information briefing to the subcommittee on  
6 proposed Reg Guide 4.27, "Use of Plant Parameter  
7 Envelope in Early Site Permit Applications for  
8 Nuclear Power Plants."

9 The subcommittee will gather  
10 information, analyze relevant issues and facts, and  
11 formulate a proposed position and actions as  
12 appropriate for deliberation by the full committee.

13 Because this is an information  
14 briefing, I do not anticipate any additional  
15 actions from this session.

16 ACRS was established by statute and is  
17 governed by the Federal Advisory Committee Act.  
18 The committee only speaks through its published  
19 reports. Because this is a subcommittee meeting,  
20 you will only hear from individual member comments  
21 today and not any committee position.

22 The ACRS reviews and advises the  
23 Commission regarding safety aspects of the  
24 licensing and operation of production in  
25 utilization facilities, the adequacy of proposed

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1 safety standards, technical and policy issues  
2 related to the licensing of evolutionary and  
3 passive plant designs, and other matters referred  
4 to it by the Commission.

5 The ACRS section of the U.S. NRC public  
6 website provides our charter, bylaws, federal  
7 reports, and full transcripts of all full and  
8 subcommittee meetings including the slides  
9 presented at the meeting.

10 The rules for today's participation are  
11 announced in the Federal Register. We have not  
12 received any written comments or requests for time  
13 to make oral statements from members of the public  
14 regarding today's meeting.

15 A transcript of the meeting is being  
16 kept and will be made available on our website.  
17 Therefore, we request that participants in the  
18 meeting should identify themselves and speak with  
19 sufficient clarity and volume so they may be  
20 readily heard.

21 A telephone bridge line has been opened  
22 for members of the public to listen in on the  
23 presentations and deliberations by the subcommittee  
24 in addition to the MS Teams link.

25 We have set aside time at the end of

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1 the meeting to offer members of the public the  
2 opportunity to provide comments. Please mute your  
3 individual lines during the presentation and  
4 subcommittee discussions when you are not speaking.

5 At this time, I request everyone to  
6 silence their cell phones.

7 We'll now proceed with the agenda. And  
8 I call on Michelle Hayes to start the staff's  
9 presentation.

10 Good morning, Michelle.

11 MS. HAYES: Thank you. Good morning.

12 So I'm Michelle Hayes, Chief of the  
13 Licensing and Emerging Core Infrastructure branch  
14 within NRR. That okay. Better?

15 MEMBER MARCH-LEUBA: Just speak as  
16 close as you can to the microphone.

17 MS. HAYES: Better?

18 MEMBER MARCH-LEUBA: Yes.

19 MS. HAYES: Thank you for the  
20 opportunity to brief you on this initial issuance  
21 of Reg Guide 4.27, which provides guidance on using  
22 a Plant Parameter Envelope rather than a specific  
23 reactor design in an application for an Early Site  
24 Permit. This is the approach TVA took in their  
25 Clinch River Early Site Permit, which we granted in

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1 2019.

2 Issuing this reg guide will provide  
3 durable guidance for future applicants who want to  
4 do the same.

5 Now I'll turn it over to Allen Fetter  
6 to discuss the whats and whys of Early Site  
7 Permits, the history of this reg guide and how  
8 staff responded to public comments, and our next  
9 steps.

10 And I also want to thank NEI for their  
11 interest and their public comments. Allen.

12 MR. FETTER: Good morning, ACRS  
13 committee members and Chair.

14 Allen Fetter. I'm senior project  
15 manager in NRR, the Office of Nuclear Reactor  
16 Regulation, Division of New Reactor Licensing, and  
17 the New Reactor Licensing and Infrastructure  
18 Branch. Just got a new branch. Michelle's our new  
19 branch chief.

20 I was looking back at my notes and  
21 everyone can hear me okay? Yes.

22 So I had briefed the ACRS back in I  
23 think it was November of 2019 when we were working  
24 or no, 2017, when we were working on the Clinch  
25 River Early Site Permit. We gave them a little bit

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1 of an overview.

2 And some of the slides I have prepared  
3 today are a bit of a refresher, so I'm going to go  
4 over that. And also, what we've been doing with  
5 respect to the reg guide. So here we go.

6 And so, again, this is on Regulatory  
7 Guide 4.27, "Use of the Plant Parameter Envelope in  
8 Early Site Permit Applications for Nuclear Power  
9 Plants."

10 So the purpose of today's meeting is to  
11 describe what an Early Site Permit is and why an  
12 applicant would pursue an Early Site Permit;  
13 describe the role of the Plant Parameter Envelope,  
14 also known as the PPE, in the ESP process; describe  
15 regulations and guidance and why Reg Guide 4.27 was  
16 developed; discuss the issuance of Regulatory Guide  
17 4.27 in the next step; and answer your questions.

18 So, at a fundamental level, an Early  
19 Site Permit is an approval of the safety and  
20 environmental suitability of a proposed site to  
21 support a future construction and operation of a  
22 nuclear power plant.

23 Now, a lot of folks often wonder, "So  
24 what are you doing? What does the permit provide?"  
25 And when I'm working with other federal agencies, I

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1 often describe this as almost like a zoning permit  
2 for a nuclear power plant where you're zoned to  
3 get, but you cannot construct and operate a nuclear  
4 power plant even though you have the "zoning" you  
5 need to have. You need to have another application  
6 before NRC with a selected design, either through a  
7 combined license or construction permit  
8 application, referencing a specific reactive  
9 technology. And that must be reviewed and  
10 approved.

11 So here's the why. Why would an  
12 applicant choose to pursue an Early Site Permit?  
13 It allows us to identify and resolve site and  
14 environmental siting issues early, reduce  
15 regulatory and financial uncertainties when  
16 planning for the future. It's valid for up to 20  
17 years and may be renewed, and it gives flexibility.  
18 And the part of 50 regulations 52 subpart A  
19 regulations allow an ESP or CP, or COL application  
20 can fall in our site permit.

21 MEMBER MARCH-LEUBA: Specifically, 20  
22 years is to the time the first shovel goes in the  
23 ground? Or it's the first time they submit a  
24 document?

25 MR. FETTER: So there's a little bit

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1 more detail. If you want to once you have

2 MEMBER MARCH-LEUBA: A sign up?

3 MR. FETTER: Yeah. Yeah. So once you  
4 have an Early Site Permit if you're it can be  
5 renewed again. But you have to there's  
6 regulations with respect to it, and I going from  
7 memory, and I can follow up with the committee if  
8 you'd like, but I think it's three months before it  
9 expires, you have to submit some sort of notice  
10 that you're going to renew your Early Site Permit  
11 for yet another 20 years.

12 MEMBER MARCH-LEUBA: And, basically,  
13 your 20 years is the first time you put the shovel  
14 in the ground until the time you complete the plan,  
15 the time you submit some documents that you plan to  
16 do something?

17 MR. FETTER: So I'm not quite sure I  
18 understood.

19 So the Early Site Permit doesn't allow  
20 you to build anything. You can do preconstruction  
21 activities, but the

22 MEMBER MARCH-LEUBA: Say they have a  
23 build is 19 years and 6 months old and, I'm  
24 assuming, now a CP, construction permit. Am I  
25 still within the time frame? Or do I have to start

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1 moving now?

2 MR. FETTER: Yes. You should be within  
3 the time frame, yes.

4 MEMBER MARCH-LEUBA: Submit all the  
5 documentation.

6 MR. FETTER: Yes, correct. Correct.

7 MEMBER MARCH-LEUBA: Because from that  
8 point until construction operation maybe allow 20  
9 years.

10 MR. FETTER: Yes. So because then,  
11 once we have a construction permit or a COL  
12 application before us, then that's referencing that  
13 which was valid, so

14 MEMBER REMPE: To follow up on this  
15 thing, again, like you said, even if they get the  
16 construction permit, it may be another 10 years  
17 before they actually break ground because of all  
18 the work that has to be done between the  
19 construction permit and the operating license  
20 submittal. And that still, they're good.

21 MR. FETTER: So yeah. It's

22 MEMBER REMPE: It's an interesting time  
23 frame.

24 MR. FETTER: Yeah. If we want to  
25 but if you're familiar with the Bellafonte plant

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1 down in Alabama, that had a construction permit.  
2 And that was '80 I think it ended in '84. It  
3 went on for a very long time. And it was put on  
4 hold, and they actually, they reinstated their  
5 CP. So that CP for Bellefonte is still valid from  
6 my understanding

7 MEMBER REMPE: Thank you.

8 MR. FETTER: if that helps.

9 So one of the things is that the  
10 benefits is because you have a site, if you're not  
11 locked in with a specific vendor and design, it  
12 allows an applicant to get a little bit more, I  
13 guess, negotiation power with looking at other  
14 vendors.

15 Okay. So now we're going to talk about  
16 the role of the Plant Parameter Envelope in the ESP  
17 process, which is approving an ESP site without a  
18 selected reactor technology.

19 So an Early Site Permit Plant Parameter  
20 Envelope values can bound a variety of reactor  
21 technologies rather than one specific technology.  
22 It's an amalgam of values representing a surrogate  
23 what's known as a surrogate plant.

24 So the PPE values are bounding criteria  
25 used by staff to determine the suitability of an

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1 ESP site for construction operation of a nuclear  
2 power plant.

3 At the CP or COL stage, when a specific  
4 technology is identified, the ESP PPE values are  
5 compared to those with the selective technology.  
6 If the design parameters of the selected technology  
7 exceed the bounding ESP values, additional reviews  
8 are conducted to ensure that the site remains  
9 suitable from a safety and environmental standpoint  
10 for construction operation of a nuclear power  
11 plant.

12 So regulations guidance I already  
13 mentioned. NCFR part 52, subpart A, on Early Site  
14 Permits, you have to have emergency planning in  
15 other areas. There's an environmental report  
16 associated with that, and then there's NCFR 100 per  
17 reactor site criteria.

18 So the guidance that was previously  
19 used was review standard RS-002, and that will be  
20 supplanted by Reg Guide 4.27 when that's issued.  
21 And then, of course, there's the Standard Review  
22 Plan, NUREG-0800.

23 So why was Reg Guide 4.27 developed?  
24 Review standard RS-002, title "Processing  
25 Applications for Early Site Permits" contained

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1 outdated guidance and updates Reg Guide 1.206,  
2 "Applications for Nuclear Power Plants," does not  
3 contain all of the PPE information that's in RS-  
4 002.

5 So Reg Guide 4.27 was developed as  
6 updated guidance that retains the PPE information  
7 for use by future prospective ESP applicants. And  
8 issuance of Reg Guide 4.27 allows the staff to  
9 withdraw the outdated review standard, RS-002.

10 Okay. So here's a chronology of Reg  
11 Guide 4.27 development. In the summer of 2020, the  
12 decision to withdraw Reg Guide Regulatory  
13 Standard 002.

14 And then, in the fall of 2020, there  
15 was some preparation of Draft Guide 4.029 was  
16 initiated to capture the PPE information in Review  
17 Standard 002 that was not included in the other  
18 guidance.

19 So, during the winter and spring of  
20 2021, there was internal and external stakeholder  
21 interactions to inform the development of the draft  
22 guide.

23 In June of 2021, Draft Guide 4.029 was  
24 issued for public comment, and RS-002 was  
25 withdrawn.

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1 August 2021, we received comments from  
2 NEI on Draft Guide 4.029, and NRC resolved those  
3 comments in the preparation of Reg Guide 4.27.

4 So summer of 2023 is ahead of us or  
5 actually may have started today summer. And so,  
6 we will work on finalizing and issuing Reg Guide  
7 4.27 this summer.

8 So the comments we received we  
9 received comments from NEI. Three of these were  
10 the three main noneditorial comments was request to  
11 endorse NEI 10-01, Rev 2, which was the " Industry  
12 Guideline for Developing a Plant Parameter Envelope  
13 in Support of an Early Site Permit."

14 So, right now, just from a planning  
15 standpoint, there might be an applicant planning to  
16 prepare an Early Site Permit as early as 2025, and  
17 we wanted to get Reg Guide 4.27 out on the street  
18 and then subsequently look at endorsing this NEI  
19 Technical Report. And, if we endorse it, we would  
20 then make a future revision to Reg Guide 4.27 that  
21 would endorse it.

22 So any revision to Reg Guide 4.27, if  
23 the staff does, in fact, endorse the NEI Technical  
24 Report, would involve that revision and discussion  
25 of the language. So it would not be a major

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1 rewrite.

2 So the other public NEI comment was to  
3 acknowledge that ESP applications may be followed  
4 by a CP, construction permit, in addition to a COL.  
5 That was incorporated into Reg Guide 4.27.

6 And the other one was to acknowledge  
7 that ESP applications may be accompanied by a  
8 limited work authorization. And there was a  
9 request to incorporate a reference to COL ESP,  
10 Interim Staff Guidance 026.

11 MEMBER REMPE: So I'm looking at NEI  
12 10-01. And I just did an internet search. And I  
13 have Rev 1 issued May 2012. Is there a REV 2 that  
14 they wanted you to endorse or something? Or what  
15 is

16 MR. FETTER: That's correct. Yeah.  
17 Rev 2 is what and Rev 1 was looked at by the  
18 staff. And my understanding I actually talked  
19 to someone who's in retirement right now because  
20 this was done so long ago. There was an effort  
21 my understanding was that the staff endorsing that  
22 reg guide, but or no, that technical report from  
23 NEI. But at the time, I think there was a broad  
24 I wouldn't call it necessarily consensus, but maybe  
25 note there wouldn't be any more ESPs. And so,

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1 developing endorsing the guidance wasn't  
2 priority, and other activities were going on.

3 So now that ESPs applicants, future  
4 applicants, or potential applicants continue to  
5 express an interest, this has been revived. NEI,  
6 in this Rev 2, they have incorporated some of the  
7 maybe updates related to ESPs issued after 2012,  
8 specifically PSEG and TVA's early site program.

9 MEMBER REMPE: Can we get a copy of it  
10 even though it

11 MR. FETTER: Absolutely.

12 MEMBER REMPE: it didn't pop up on  
13 the internet.

14 MR. FETTER: Yeah. That's

15 MEMBER REMPE: Could you send it to  
16 Ken, and he'll forward it to us?

17 MR. FETTER: That's publicly available.  
18 That should be

19 MEMBER REMPE: Yeah. Maybe I just  
20 my internet search

21 MR. FETTER: available anytime so.  
22 And the redline that they submitted with their  
23 comments shows what changes were made since Rev 1.  
24 And the staff will be working on reviewing that for  
25 endorsement.

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1 MEMBER REMPE: Thank you.

2 MR. FETTER: Okay.

3 CHAIR SUNSERI: Hey, Allen. I  
4 apologize for missing this but could you turn on  
5 your microphone.

6 MR. FETTER: Oh. I must apologize  
7 to everyone. I must have inadvertently hit it. It  
8 was working my mouse.

9 Did everyone do you want me to  
10 repeat any of that?

11 CHAIR SUNSERI: No. You were good.

12 MEMBER MARCH-LEUBA: We have a backup  
13 microphone.

14 MR. FETTER: Okay. So hopefully, I was  
15 speaking loudly enough.

16 MEMBER MARCH-LEUBA: Maybe we need to  
17 ask the court reporter

18 MR. FETTER: If the court reporter has  
19 any questions about anything I said between, I can  
20 help clarify.

21 All right. Okay. Good. Good.

22 And then the final comment was to  
23 acknowledge that OSO. And so, we added language  
24 noting that an ESP may be associated with an LWA,  
25 or a Limited Work Authorization. But we did not

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1 include the COL, ESP, ISG, and 026 as a reference  
2 because that doesn't offer any guidance related to  
3 Plant Parameter Envelopes.

4 So next steps. Finalization and  
5 issuance of Reg Guide 4.27 via Federal Register  
6 notice. And, as I said earlier, that would be this  
7 summer.

8 Then NRC staff review of NEI Technical  
9 Report 10-01 Rev 2, "Industry Guidelines for  
10 Developing a Plant Primer Envelope in Support of an  
11 Early Site Permit," for potential endorsement.

12 And, if endorsed, NEI 10-01, Rev 2,  
13 could be referenced in an update to Reg Guide 4.27.

14 And one of the questions is that the  
15 endorsement of the reg guide, if staff work on  
16 that, that the timeline we're putting together a  
17 timeline for that. And I hesitate to say when that  
18 could be. But it could be in the relatively and  
19 often Reg Guides aren't updated on a it's more  
20 on a five to ten-year basis, but this would if  
21 there is an update, it could be much sooner. And  
22 we would be happy to meet with HCRS to discuss any  
23 changes to that, or we could share that with the  
24 subcommittee lead.

25 DR. SCHULTZ: Allen, Steve Schultz.

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1 MR. FETTER: Yes.

2 DR. SCHULTZ: Did NEI indicate that  
3 there were applicants that were wanting to use  
4 their guidance document, at this point, the Rev 2?  
5 Is there enough

6 MR. FETTER: Well

7 DR. SCHULTZ: over there

8 MR. FETTER: So I

9 DR. SCHULTZ: that could utilize  
10 that?

11 MR. FETTER: I'm going on the working  
12 premise that well, first of all, the reg guide  
13 is a priority because that's an NRC document. And  
14 so, that, we want to get that out on the street.

15 And my premise in NEI, I understand,  
16 is on this call, and maybe they can weigh in as  
17 well. But I would presume that they would want  
18 that endorsed to have applicants use that as  
19 something to help develop their Early Site Permit  
20 application.

21 DR. SCHULTZ: As you see it, would it  
22 be a combination of both if an applicant were to  
23 come in, they would be using the NEI Guidance along  
24 with the Regulatory Guidance that you have?

25 MR. FETTER: I believe so. That would

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1 be true.

2 DR. SCHULTZ: Good.

3 MR. FETTER: And right now, their -- NEI  
4 does have Rev 1, we did not endorse it. It is  
5 mentioned as a reference in the current Reg Guide  
6 4.27, but there's not an endorsement of it. And  
7 there as you say as I said earlier there are  
8 updates that would be useful to a new applicant.

9 DR. SCHULTZ: But you don't see any  
10 specific schedule or issue associated with an  
11 applicant moving forward with the guidance that  
12 exists until

13 MR. FETTER: I do not. I do not see  
14 that. But that is I think it's incumbent on us  
15 to work to look at the guidance to see if we can  
16 endorse it in a timely manner.

17 DR. SCHULTZ: Thank you.

18 MR. FETTER: Okay. And now other  
19 questions. Yes.

20 MEMBER BIER: I want to come back to  
21 some of the discussion at the very beginning of the  
22 presentation about how long the preliminary site  
23 approval is valid for because, even with plants  
24 that have already been constructed, we've seen that  
25 plants that were built somewhere in a remote

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1 location, by 20, 30 years later, it's not so  
2 remote. They're in the middle of suburban sprawl  
3 and in a place where, if they had proposed that  
4 place at that time, we might not have approved it  
5 based on remote citing.

6 And I don't want to say plants that  
7 already have been built have to have their licenses  
8 revoked because people move nearby. But has there  
9 been consideration to putting some type of time  
10 limits or conditions on the preliminary site  
11 approval to prevent this kind of thing?

12 MR. FETTER: So well, let me just  
13 say in terms of we have a safety review and an  
14 environmental review, and some of the in the  
15 environmental and the safety review, it looks at  
16 population and so, in the population and  
17 population projections.

18 Now, in the Counsel for Environmental  
19 Quality, which is associated with guidance for  
20 environmental impact statements, I think that my  
21 understanding their guidance is that an EIS,  
22 Environmental Impact Statement, that supports a  
23 licensing action, is valid for on the order of five  
24 years. But our permit would be good.

25 But if somebody comes in with a new

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1 that COL application or CP application, you still  
2 have to have an environmental report with updated  
3 obviously, if changes to water use conditions or  
4 population, you have to look at the delta and how  
5 things have changed. So it's doing significant  
6 change, and that's an environmental term of art for  
7 our environmental reviews.

8 MEMBER BIER: Okay. So, in other  
9 words, the preliminary approval would technically  
10 remain valid. But, say, a construction permit  
11 could still be disapproved based on too high a  
12 population at the time they came in to request it.  
13 Is that right?

14 MR. FETTER: So I'd have to we're  
15 starting to get into almost a legal question that  
16 would have to because certain areas that have  
17 been resolved at the Early Site Permit stage are  
18 considered closed. But that being said, you might  
19 get into policy statement, as you say, if a lot of  
20 people were to move around. That's a change. And  
21 that could be

22 In our process, we have notice of  
23 opportunity for hearing, and that could be  
24 something that potential intervenors could bring up  
25 as an issue. And, obviously, that's something we

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1 want to be open and transparent and responsive to  
2 stakeholders.

3 MEMBER BIER: Okay.

4 MR. FETTER: But that you're getting  
5 into a legal question where maybe we would want

6 MEMBER BIER: Yeah. Yes.

7 MR. FETTER: If we want to have another  
8 briefing where we have an attorney to talk about

9 MEMBER BIER: I don't think we need  
10 another briefing, but I think the short answer is  
11 it's complex, correct?

12 MR. FETTER: Yes. Yes. Exactly.  
13 Yeah. But hopefully, that was a helpful answer.

14 MEMBER BIER: Yeah.

15 CHAIR SUNSERI: I think it's complex,  
16 but I mean, it's all sequenced together, right, so  
17 that you get some level of finality on issues that  
18 are reasonable to create that finality on in  
19 preparation for a construction permit or a COL,  
20 which would add additional, especially if you're  
21 referencing a DCA or an SBA. I want to pull all  
22 this together.

23 MEMBER KIRCHNER: Exactly. To add to  
24 Matt's comments, isn't there a requirement you do a  
25 projection of population growth pursuant to

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1 MR. FETTER: That's correct. Yeah.

2 MEMBER KIRCHNER: So that partially  
3 addresses what you're raising.

4 MEMBER MARCH-LEUBA: There are other --  
5 you mentioned water rights. I'm thinking I  
6 probably have an ESP permit for a plant in the lake  
7 in Zaporizhzhia (phonetic), conditions have  
8 changed.

9 MEMBER BIER: Yes.

10 MR. FETTER: And that's water  
11 condition, you can get a license from the NRC, but  
12 an applicant also needs to comply with the Clean  
13 Water Act requirements that are also partly

14 MEMBER MARCH-LEUBA: My point is

15 MR. FETTER: appointed by the state,  
16 and

17 MEMBER MARCH-LEUBA: My point is  
18 conditions change.

19 MR. FETTER: Conditions change,  
20 exactly.

21 MEMBER MARCH-LEUBA: And they can  
22 change overnight in this case.

23 MR. FETTER: Yeah. Yeah. Yeah.

24 CHAIR SUNSERI: So Member Martin has  
25 his hand up.

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1                   Bob, do you have a question? You need  
2 to unmute. Bob Martin, we can't hear you. If you  
3 unmute.

4                   MR. MOORE: Member Martin, this is  
5 Scott Moore. You may need to press \*6.

6                   CHAIR SUNSERI: No, he's on Teams.

7                   MR. MOORE: Oh, sorry.

8                   CHAIR SUNSERI: Okay. Well, we're  
9 going to go ahead, Bob, and continue on. Just  
10 break in when you think you have it resolved.

11                   Ron?

12                   MEMBER MARCH-LEUBA: You may have to  
13 reboot your computer when you have problems with  
14 the driver the microphone driver.

15                   I have a comment question.

16                   CHAIR SUNSERI: Yeah.

17                   MEMBER MARCH-LEUBA: When you guys were  
18 not reviewing. No, reviewing NEI 10, 10-01, and  
19 developing the guideline, what was your did you  
20 think of what the risk was of undoing the ESP the  
21 regular way and creating a parameter?

22                   Let me give you some examples. I'm  
23 thinking of a light water reactor, that I designed  
24 it with respect to those parameters. And then, the  
25 guys that come with a sodium reactor. They have to

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1 consider sodium fires, they have to consider  
2 chemical beryllium leaks, things like that. Was  
3 that a concern of yours?

4 MR. FETTER: Well, if you go back to  
5 Clinton Early Site Permit, I think they included  
6 something like the pebble bed reactor as one of  
7 their options. And that created there was a lot  
8 of complexity with the source term.

9 So we look at external hazards or even  
10 internal hazards. So if you have sodium fires,  
11 that would have to be looked at. And if that  
12 wasn't if you didn't get finality on that, or if  
13 that's new, then that would have to be reviewed by  
14 staff, obviously.

15 MEMBER MARCH-LEUBA: But my point is  
16 when you try to encompass with parameters an ESP,  
17 my question is: Have you covered all the  
18 parameters?

19 MR. FETTER: Well, it doesn't matter.  
20 I mean

21 MEMBER MARCH-LEUBA: Is there such a  
22 thing is there such a thing like a mutation or  
23 condition in a reg guide that says, "This is  
24 limited to reactors of this type"?

25 MR. FETTER: I might have to get back

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1 to you on that.

2 But the parameters, you have plant  
3 parameters and site parameters that you look at.  
4 And so

5 (Simultaneous speaking.)

6 MEMBER MARCH-LEUBA: source term?

7 MR. FETTER: Yes.

8 MEMBER MARCH-LEUBA: It's the same for  
9 everybody.

10 MR. FETTER: Yeah. Yeah.

11 MEMBER MARCH-LEUBA: But new plants  
12 come with new risks. And they're likely minimal,  
13 often minimal. I'm just thinking if you thought  
14 about that.

15 MR. FETTER: But, in the end, whatever  
16 plant is chosen to apply for construction there has  
17 to fit within the parameters of the ESP. It's  
18 going to reference the ESP.

19 MEMBER MARCH-LEUBA: But if my plan  
20 if my ESP didn't have any limits on my beryllium  
21 release, I can't plan with beryllium. How do I  
22 know it's inside of my parameters?

23 CHAIR SUNSERI: And that was one of the  
24 parameters that wasn't considered.

25 MR. FETTER: That wasn't brought up, so

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1 it's information that was outside of the PPE. So  
2 it's the staff always look at new information  
3 that wasn't included.

4 So just because you have you can  
5 if we come in with a reactor, and it's outside of  
6 the suppose you said you were going to use 800  
7 megawatts, and it becomes 810, we want to do bigger  
8 because we have

9 Well, you have to look at what is that  
10 power upgrade what are the implications for  
11 source term? What are the implications for  
12 emergency planning? What are the implications for  
13 the ultimate heat sink? What are the and also,  
14 going back to water resources, I mean,  
15 environmental, you cannot you can only withdraw  
16 a certain amount from a river. There's some sort  
17 of EPA limit of 10 percent of the mean low flow or  
18 something like that. But if that helps.

19 CHAIR SUNSERI: Thanks. So I do have  
20 Member Martin's written we have a workaround.  
21 Here's the

22 MR. FETTER: Okay. Okay. Workaround,  
23 good. Good.

24 CHAIR SUNSERI: So the comment I'll  
25 read the question, and I think it's pretty

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1 straightforward.

2 But the question is: What level of  
3 engagement will the staff and applicant have with  
4 the ACRS under this reg guide or whatever it is  
5 spelled out with the ESP?

6 So I think the let me translate  
7 that. If an applicant comes in with an ESP, what  
8 level of engagement will the staff and an applicant  
9 have with the ACRS?

10 MR. FETTER: Yep. Yeah, so just like  
11 any review, if we have an Early Site Permit, we  
12 have a safety review and environmental review. And  
13 when we have the safety, we have the different SC  
14 sections. The subcommittee would look at the SE  
15 sections, and you'd have a final committee review  
16 of the safety evaluation report as well as the  
17 same.

18 MEMBER KIRCHNER: Part 52 requires an  
19 ACRS review, actually.

20 So for new members on the committee,  
21 the most recent ESP that was reviewed was for  
22 Clinch River site. And Jose's line of questioning,  
23 I think it was a presumption wasn't one of those  
24 other reactor types. They talk mainly in  
25 megawatts, thermal not and the presumption was

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1 probably source terms based on LW QR technology.

2 MEMBER MARCH-LEUBA: Because I can  
3 think of reactors that produce off tritium, which  
4 have less power than 800 megawatts and, clearly,  
5 it's not covered by my ESP analysis.

6 MR. FETTER: Some of the ESPs can come  
7 in with a proposed source term. And when you see  
8 the NEI often there's a table for different  
9 radionuclides.

10 MEMBER MARCH-LEUBA: In a pinch and  
11 then you lose some power, not on technology.

12 MEMBER KIRCHNER: Kind of a follow on  
13 question is it clear in the Reg Guide I  
14 haven't had the opportunity to read it thoroughly  
15 through yet with regard to is it total source  
16 term, so to speak, regardless of the number of  
17 modules? Is it clear on say you have a  
18 modularized reactor, and you have multiple units,  
19 Clinch River data was bound to the largest single  
20 unit. And I think it was 800 megawatts thermal.  
21 But it's the total source term? Or is it a single  
22 unit's source term?

23 MR. FETTER: Yeah. My recollection of  
24 the Clinch River, their permit was for one or more  
25 SMRs at the site, not to exceed 800 megawatts

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1 thermal. So that was bounding. And so, you could  
2 divide it up, so you had three SMRs that had 800  
3 megawatts electric, and it was I think it's 2400  
4 megawatts thermal, whatever the arithmetic is on  
5 that. So that would be that's the total. And  
6 what would the source term be for all of those?

7 Because I know this I recall that  
8 this is something that's been asked before related  
9 to how do you look at this in terms of if you have  
10 multiple units in the accidents. Is that what  
11 you're getting a little bit?

12 MEMBER KIRCHNER: Yeah.

13 MR. FETTER: So my understanding, my  
14 recollection is that it has to do with the entire  
15 source term regardless of how many units. But I  
16 can follow up with the committee if you'd like.

17 MEMBER REMPE: So I've been given the  
18 in the Rev 2, but even in the Rev 1, it talks about  
19 multiple units. I haven't had a chance or I've  
20 forgotten when I looked at it, but does it include  
21 the source term from the spent fuel pool, too, and  
22 all the hazards on the site that might contribute  
23 is one question.

24 And then have you started to look at  
25 Rev 2 versus Rev 1, and do you see any differences

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1 with it, just out of curiosity? Do they still  
2 consider the same release height and things like  
3 that from the releases?

4 MR. FETTER: Yeah. So since we're  
5 reviewing it right now, I don't want to comment.  
6 But it is a publicly available document. Yeah. We  
7 can actually, since it's publicly available, I can  
8 share that. And I can pull up the table and run  
9 through it real quick.

10 MEMBER REMPE: But you've not seen any  
11 big differences so far for

12 MR. FETTER: I have not.

13 MEMBER REMPE: Okay.

14 MS. HAYES: I did want to mention I was  
15 looking at the Clinch River ESP, and they put a  
16 limit both on the single and the combined. And the  
17 table is for the total.

18 MR. FETTER: Okay. Thank you,  
19 Michelle.

20 CHAIR SUNSERI: I just want to  
21 acknowledge that what the staff is doing here is  
22 updating the old guidance with the new information,  
23 including the contributor and all the experience to  
24 date. So, I mean, they're not creating, really  
25 there may be some new things, based on your

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1 experience, but it's really a roll-up of the  
2 experience we've gained. And so, this has all been  
3 proven to work already once, I guess. Yeah.

4 MR. FETTER: Also, when the staff is  
5 looking at the NEI technical report, we're looking,  
6 also, at the vision of advanced reactors network.  
7 So this is going to not just be looked at by our  
8 division, but it's going to be looked at by  
9 different divisions, who also are considering other  
10 alternatives as a member.

11 Jose mentioned that are we looking at  
12 beryllium and other sorts of fires, sodium fires  
13 and beryllium releases and tritium, and so on and  
14 so forth. So the staff's going to take a hard look  
15 at that.

16 And there will be opportunities, as we  
17 go through this, to engage with the public on NEI  
18 on any observations we have and comments we have on  
19 their technical report.

20 MEMBER MARCH-LEUBA: So this probably  
21 is more a question for -- probably isn't for you,  
22 but you view these as a draft ESP is kind of  
23 it's a new site permit, but we're going to look at  
24 it when you resubmit the concession permit?

25 MR. FETTER: Yeah. The point is as I

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1 said to sort of like a zoning permit for a  
2 nuclear power plant. And that's the way to kind of  
3 come back to the fundamentals. You're looking at  
4 site safety, suitability, and also environmental  
5 acceptability.

6 And then that's when you look at the  
7 hard look at the reactor to how it fits within the  
8 at the site.

9 MEMBER REMPE: So, as you're thinking  
10 about this interaction with NEI, you might also not  
11 only think about the spent fuel pool and the  
12 modules but the spent modules as we think about  
13 what's coming down the pipeline or what people are  
14 talking about, too, because, again, it's all  
15 sources of radiation on the site.

16 MR. FETTER: So are you referring to  
17 not only the spent fuel pool but ISFSIs or whatever  
18 the

19 MEMBER REMPE: I'm talking about if  
20 they have a bloated fuel module. And if they bring  
21 it on-site before it's installed. And then, after  
22 it's done, where they're going to the parking  
23 lot until they can ship it off-site, and so you  
24 might have that consideration too.

25 MR. FETTER: Yeah.

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1 CHAIR SUNSERI: Any other comments?

2 MEMBER MARTIN: This is Bob Martin.

3 Can you all hear me?

4 CHAIR SUNSERI: Yes.

5 MEMBER REMPE: Yes.

6 CHAIR SUNSERI: Yes, Bob, we can hear  
7 you.

8 MEMBER MARTIN: Okay. Great. In part,  
9 I wanted to ask a question just to see if I can get  
10 this to work.

11 I was wondering if, in the Reg Guide,  
12 is there a mention of how applicants might approach  
13 change, change to the PPE both in situations where  
14 maybe their have an opportunity to relax the PPE  
15 or, obviously, in a case where you can constrain  
16 it, or it might open up all or part of their  
17 original application?

18 Anyway, main question is: How is  
19 change addressed?

20 MR. FETTER: So we had an application  
21 for an ESP with Plant Parameter Envelope values.  
22 And during the course of the staff's review, if  
23 they want to update their application to change it,  
24 they can and a lot of revs are a Rev 1, and  
25 often if so it depends on how much it is.

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1           If it's significant enough, they'll  
2           have to withdraw           perhaps they'll have to  
3           withdraw the application, submit a new one. Or  
4           they'll just make updates to request a change in  
5           the Plant Parameter Envelope value that the staff  
6           has to review.

7           Is that what you're getting at?

8           MEMBER MARTIN: Well, okay. The simple  
9           question, I guess           and it's in the interest of  
10          minimizing engagement where it doesn't have to be  
11          done, but if           say, among the many plant  
12          parameters, they see that they can relax a few,  
13          which would otherwise be easy to disposition.  
14          Would they have to engage in the staff on that in  
15          anything more than, say, a report? Or would it  
16          open up a review? And then, hence, they'd be  
17          discouraged to engage in that particular case?

18          Obviously, if it tightens up, they lose  
19          population changes, they sell property           and I'm  
20          just thinking from a radiological example that  
21          opens things up. But I just kind of wondered.  
22          There's, yeah, a number of things that are probably  
23          on that PPE. And they can sharpen the pencil or  
24          what have you and find that there's margins that  
25          they can maybe otherwise credit for, say, a future

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1 engagement or just looking to ensure they have  
2 as much flexibility under the permit as practical.

3 MR. FETTER: Yeah. I think, well,  
4 getting a permit or an application license from the  
5 NRC is a non-trivial matter.

6 And so, when you're preparing a Plant  
7 Parameter Envelope review, you want to try to  
8 rightsize it to capture the bounding. But it  
9 doesn't have to go so large that you're going to  
10 have 4 AP 1000s on-site. You want to rightsize it  
11 so it's I'd say it's incumbent on the applicant  
12 to do their due diligence in determining what the  
13 PPE values are reasonable, so that the staff can do  
14 the reviews so that they have the flexibility to  
15 and they get finality on certain aspects of the  
16 site.

17 So, obviously, applications can always  
18 be amended or revised. But then my basic answer is  
19 there is flexibility in it. And those parameters  
20 should be bounding.

21 But putting those bounds on there  
22 doesn't mean it has to be wildly bounding. You  
23 don't have to have an order of magnitude. We can  
24 have enough so that you have an engineering margin  
25 of adding an additional 20 percent to some sort of

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1 boundary or whatever the case may be.

2 So is that helpful?

3 MEMBER MARTIN: I think you've answered  
4 the question.

5 MR. FETTER: Okay.

6 CHAIR SUNSERI: So, Greg or Vesna, you  
7 folks have any questions or

8 MEMBER DIMITRIJEVIC: Yeah. I just  
9 want to make a very general comment. It's not a  
10 question or anything.

11 This is a very high-level reg guide in  
12 this moment. And all of these questions which we  
13 were asking are very specific questions.

14 So I think this reg guide would  
15 benefit, really, very much running the gauges NEI  
16 than 01 because a lot of those questions address  
17 and discuss that.

18 But I doubt it doesn't really provide  
19 the specific directions for a lot of those  
20 questions, but I hope the next version will do  
21 that.

22 MR. FETTER: Yeah. So NEI technical  
23 report definitely has more granularity than our reg  
24 guide.

25 CHAIR SUNSERI: Any other questions?

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1 MEMBER BROWN: Yes.

2 CHAIR SUNSERI: Charlie?

3 MEMBER BROWN: Yeah. I'm not exactly  
4 sure whether I'm going to phrase this right. But  
5 it seemed to me there were two thoughts in this.  
6 One was to allow some flexibility for applicants to  
7 get advanced planning done within an envelope of  
8 characteristics, which the committee I mean the  
9 Commission thinks are very, very important.

10 But when you paw the reg guide, and you  
11 look at, what, four new regs, which are voluminous,  
12 and some of the other documents you've got in here,  
13 there's just a whole plethora of items that need to  
14 be addressed.

15 And I guess my thought, what if you  
16 tried is there a way to is there a way to  
17 characterize the most critical parameters that are  
18 needed for seismic or hurricanes or other  
19 environmental issues that has to be addressed  
20 separate from the 1500-megawatt thermal plants or  
21 whatever they are, whether you got one of them or  
22 four of them or what have you?

23 I mean, there's certain characteristics  
24 that have to be defined that would reject a site  
25 regardless of what you were going to put on it.

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1 And that doesn't seem to be that doesn't seem to  
2 be captured by some effort. And it's not a  
3 critical. I'm not being critical here. It's just  
4 the thought process of laying out, "Hey guys,  
5 there's 422 characteristics listed in these four"  
6 I throw that number out as candy at a child's  
7 party.

8 CHAIR SUNSERI: Yeah.

9 MEMBER BROWN: But here, the 50  
10 specific items that are kind of independent of a  
11 specific plant design that could be settled so that  
12 you don't run the risk of having to lose the  
13 characteristics or the approval of your Early Site  
14 Permit. And I didn't see that in here.

15 I thought this was supposed to kind of  
16 try to simplify it somewhat for applicants to get  
17 some advance work done and not have everything be  
18 squashed into one early time frame.

19 So that was just an observation. If  
20 I'm wrong, tell me.

21 MR. FETTER: Well, I would tell you if  
22 you look at sitting, you have seismic. You have  
23 bearing capacity of a site from the geologic  
24 strata. You have well, now we have a reg guide.  
25 The one that's before this is on volcanic hazards.

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1 We have meteorology, your flooding. Obviously, you  
2 don't want to build it in a flood plain, on a  
3 fault. And if you do it in a hurricane area, you  
4 want to you need to assess what the floods are.

5 There are certain siting criteria in  
6 Part 100. The main one's meteorology, seismology,  
7 flooding, those sort of hazards. And I have some  
8 additional slides that kind of cover those main  
9 reviewers. Those are the ones that are to kind of  
10 simplify it in terms of the siting.

11 MEMBER BROWN: Yeah, but does that  
12 is that clear to the applicants that that's what  
13 you want to do? I mean, there's no statements in  
14 there that, "Hey, these items is a boundary  
15 condition stuff that need to be addressed  
16 regardless." And, obviously, you don't put it on  
17 top of a volcano site.

18 MR. FETTER: Yeah, yeah.

19 MEMBER BROWN: That's kind of obvious.

20 MR. FETTER: Yeah.

21 MEMBER BROWN: But stuff that they  
22 probably are not going to fail when they come back  
23 with whatever point they want to. There's a lot of  
24 other stuff once you know the footprint and what  
25 type of plant it's going to be, what type of water

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1 or cooling sources you need, et cetera, et cetera,  
2 et cetera, which drives some other parameters  
3 there.

4 I just got a little bit lost on that.  
5 It's still pretty complex is all I'm saying.

6 MR. FETTER: Yeah. Yeah. So the Early  
7 Site Permit process, you can do an Early Site  
8 Permit and even reference the design. It's been  
9 done before with Vogtle. They did an Early Site  
10 Permit, and they even had a design they referenced.

11 But an Early Site Permit, you still  
12 have to go through all the safety review and all  
13 of the siting and environmental reviews are all by  
14 and large the same. So we've been the best  
15 practices for applicants is to get involved in  
16 engagement with the NRC in advance. Of course,  
17 they hire their own consultants, and they can see  
18 other Early Site Permits we've issued to kind of  
19 give them that can kind of help inform what they  
20 prepare.

21 But this is just having the reg  
22 guide is useful because we don't have because  
23 RS-002 was sunsetted, we need to have we need to  
24 have this reg guide there.

25 And I don't know if this is a

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1 satisfactory answer for you.

2 MEMBER BROWN: I'm just trying to get  
3 some illumination. It's obvious not obvious but  
4 seems to be apparent that it's the applicant  
5 does not have a clear, crisp A, B, C, D, E,  
6 satisfies "That's what I've got to look at" focus.  
7 There's a lot of what I call little spurious  
8 branches that get tossed in along the way. And you  
9 probably can maybe you can't eliminate those.  
10 They just have to be addressed as you go.

11 MR. FETTER: I'd say, yeah, the staff's  
12 review for siting is just as thorough as for a COL  
13 or a CP.

14 MEMBER BROWN: Okay. All right.  
15 That's fine.

16 MEMBER HALNON: Charlie, this is Greg.

17 MEMBER KIRCHNER: That one is the  
18 part of 52 that covers the ESP spells out a lot of  
19 these requirements.

20 So, for example, when we saw that  
21 Clinch River application, they, essentially, did  
22 the Chapter 2 that you're used to looking at. So  
23 they went through all the ologies, so to speak,  
24 that would enact

25 Some of that was the citing. So that

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1 was part of it, but, again, they picked a Plant  
2 Parameter Envelope, basically, as the surrogate for  
3 the actual plant that might be built.

4 MEMBER BROWN: Okay.

5 CHAIR SUNSERI: Greg, did you have a  
6 comment?

7 MEMBER HALNON: Yeah. Just real quick.  
8 Trying to help some of the context of all this.

9 This Early Site Permit is in the recipe  
10 of all the stuff that we do to encourage and allow  
11 future nuclear utilities, actually, see an ESP as  
12 an asset when they find the site that is worthy of  
13 a nuclear plant, and they can get some of the  
14 regulatory hurdles out of the way.

15 But typically, this is coming at it  
16 from a different angle. But the ESP is typically  
17 provided or applied by a utility that is looking  
18 for a plant that might fit onto a site, where what  
19 we have been reviewing is some new technology  
20 reactors coming in doing a reactor that needs to  
21 have a site that it fits. So it's sort of coming  
22 at it from a different angle.

23 So you'll probably not see a new  
24 technology vendor come in for an Early Site Permit,  
25 but you'll see a larger utility that wants to

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1 increase their nuclear footprint.

2 So it's an important piece of the  
3 puzzle, but not necessarily what we have been  
4 reviewing in the past.

5 That's why TVA came in with Clinch  
6 River. They were looking at a variety of different  
7 nuclear plant SMRs that might fit into that  
8 parameter. And so, this was in the early 2000  
9 teens. This was the push to get these regulatory  
10 hurdles out of the way so that they could  
11 concentrate on finding the right technology to put  
12 onto the site.

13 I just wanted to kind of provide that  
14 with some context for the old reg guide.

15 MEMBER BROWN: Thanks, Greg.

16 CHAIR SUNSERI: Yeah, thanks, Greg. I  
17 think that's a good wrap-up, actually.

18 So, at this point, I'd like to open the  
19 line for any public comments.

20 If you're a member of the public, and  
21 you want to make a statement, then now would be  
22 your chance to go do that.

23 If you're on the phone, you'll have to  
24 use \*6 to unmute yourself. If you're on MS Teams,  
25 just open your mike.

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1 All right. So we're not hearing any  
2 takers on the request for comments, so we'll close  
3 that part of the session.

4 And we'll go into our final committee  
5 subcommittee discussion here.

6 So, as I mentioned earlier, this is a  
7 subcommittee information briefing by the staff to  
8 let us know where they're going. We know there's a  
9 follow-on piece to want to incorporate the newest  
10 guidance that NEI is developing as a companion to  
11 this process. And that will be the subject of a  
12 future revision to this reg guide.

13 So as I had mentioned in the P&P, when  
14 we last discussed this, as far as ACRS actions, now  
15 is the kind of the final choice here.

16 But I recommend that we close out this  
17 issue, that no letter is required, and that we take  
18 this up again as a topic when it's next revised to  
19 incorporate the most current NEI to address the  
20 most current NEI adoption.

21 Any members have any comment on that?

22 MEMBER BROWN: Is there an NEI document  
23 out there right now, at this point, some 10-01 or  
24 something?

25 MR. FETTER: 10-01, Rev 2.

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1                   MEMBER BROWN:   Okay.   So I didn't quite  
2                   remember that.

3                   CHAIR SUNSERI:   And, by the way, Kent  
4                   has reminded me that NEI is in our reference  
5                   material if you go to our website.   I remember  
6                   looking at it, I just didn't

7                   MR. FETTER:   And you have the redlined  
8                   markup?

9                   CHAIR SUNSERI:   We have, yes.

10                  MR. FETTER:   Okay.

11                  CHAIR SUNSERI:   Okay.   So, not hearing  
12                  any other further discussion, then that will be the  
13                  direction we'll go.

14                  And at this point, then, we are  
15                  adjourned. Thank you.

16                  (Whereupon, the above-entitled matter  
17                  went off the record at 9:27 a.m.)

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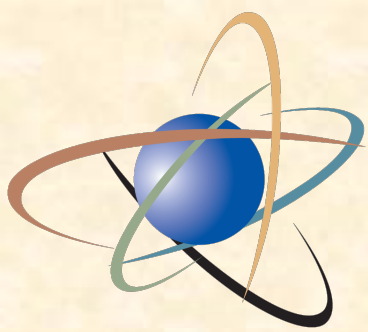
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# U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

*Protecting People and the Environment*

## **Presentation to the ACRS on Regulatory Guide 4.27, "Use of Plant Parameter Envelope in Early Site Permit Applications for Nuclear Power Plants"**

**June 21, 2023**

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Allen Fetter, Senior Project Manager, NRR/DNRL/NLIB

# Purposes of Today's Meeting

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- Describe what an Early Site Permit (ESP) is and why an applicant would pursue an ESP
- Describe the role of Plant Parameter Envelope (PPE) in the ESP process
- Describe Regulations and Guidance and why RG 4.27 was developed
- Discuss issuance of Regulatory Guide 4.27 and next steps
- Answer questions

# Early Site Permit (ESP)

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- An ESP is an approval of the safety and environmental suitability of a proposed site to support future construction and operation of a nuclear plant
- An ESP does not allow for construction and operation of a nuclear plant
- Before a nuclear plant can be constructed and operated at a site with an ESP, a combined license (COL) or construction permit (CP) application referencing a specific reactor technology for the site must be reviewed and approved by NRC

# Early Site Permit – Why?

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- An applicant chooses an ESP to identify and resolve safety and environmental siting issues early, and to reduce regulatory and financial uncertainties when planning for the future
- An ESP is valid for up to 20 years, which gives applicants schedule flexibility for seeking approval to build a plant (COL or CP application submittal)
- Because an ESP does not need to reference a specific reactor design, an applicant can be in a better position to negotiate offers from competing reactor technology vendors prior to submitting a COL or CP application

# Role of the Plant Parameter Envelope (PPE) in the ESP Process

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## **Approving an ESP Site without a Selected Reactor Technology**

- ESP Plant Parameter Envelope (PPE) values can bound a variety of reactor technologies rather than one specific technology (an amalgam of values representing a surrogate nuclear plant)
- The PPE values are bounding criteria used by staff to determine the suitability of an ESP site for construction and operation of a nuclear plant
- At the COL or CP stage, when a specific technology is identified, the ESP PPE values are compared to those of the selected technology. If design parameters of the selected technology exceed bounding ESP PPE values, additional reviews are conducted to ensure that the site remains suitable from a safety and environmental standpoint for construction and operation of the selected nuclear plant technology

# Regulations and Guidance

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## **Regulations:**

- 10 CFR 52, Subpart A, Early Site Permits
- 10 CFR 50 (Emergency Planning & other areas)
- 10 CFR 51 (Environmental Report)
- 10 CFR 100 (Reactor Site Criteria)

## **Guidance:**

- Review Standard No. RS-002 will be supplanted by RG 4.27
- NUREG-0800 (Standard Review Plan)



# Why was RG 4.27 developed?

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- Review Standard No. RS-002 “Processing Applications for Early Site Permits” contained outdated guidance and updates to RG 1.206, “Applications for Nuclear Power Plants” does not contain all of the PPE information in RS-002.
- RG 4.27 was developed as updated guidance that retains the PPE information for future use by prospective ESP applicants
- Issuance of RG 4.27 allows the NRC staff to withdraw the outdated Review Standard No. RS-002

# Chronology of RG 4.27 development

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- Summer 2020 – Decision to withdraw RS-002
- Fall 2020 – Preparation of DG-4029 initiated to capture PPE information in RS-002 that was not included in other guidance
- Winter/Spring 2021 – Internal and external stakeholder interactions to inform development of DG-4029
- June 2021 – DG-4029 issued for public comment and RS-002 withdrawn
- August 2021– Received comments from NEI on DG-4029 and NRC resolved those comments in the preparation of RG 4.27
- Summer 2023 – Finalize and issue RG 4.27

# Public Comment Disposition (non-editorial)

<b>NEI Comment</b>	<b>NRC Response</b>
Request NRC endorse NEI 10-01, "Industry Guideline for Developing a Plant Parameter Envelope in Support of an Early Site Permit," Rev. 2 as part of this RG 4.27	NRC will review NEI 10-01 Rev. 2 and consider endorsing in future revision to RG 4.27
Acknowledge that ESP applications may be followed by a CP in addition to a COL	Incorporated
Acknowledge the ESP applications may be accompanied by Limited Work Authorization (LWA) request and incorporate reference to COL/ESP-ISG-026	Added language noting an ESP may be associated with an LWA; COL/ESP-ISG-026 is not an appropriate reference because it does not offer any guidance related to PPEs

# Next Steps

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- Finalization and issuance of RG 4.27 via Federal Register Notice
- NRC staff review of NEI Technical Report 10-01, Rev 2, “Industry Guidelines for Developing a Plant Parameter Envelope in Support of an Early Site Permit” for potential endorsement
- If endorsed, NEI-10-01 Rev 2 could be referenced in an update to RG 4.27

# Regulatory Guide 4.27

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Questions?

# Early Site Permit

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**Additional Slides**

# Required Reviews for an ESP Application

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- Atomic Energy Act, as amended, authorizes the NRC to protect public health and safety, and to provide for the common defense and security
- The safety review team creates a Safety Evaluation Report (SER) addressing
  - Site Safety
  - Emergency Planning
  - Security
- The environmental review team prepares an Environmental Impact Statement (EIS)

# ESP Safety Review

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- Site characteristics and areas reviewed include:
  - Seismology
  - Geology
  - Hydrology
  - Meteorology
  - Geography
  - Demography (population distribution)
  - Site Hazards Evaluation
  - Radiological Effluent Releases
  - Radiological Dose Consequences
  - Emergency Preparedness (with FEMA)
  - Security Plan Feasibility



# ACRS Review

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## ACRS Review

- ACRS reviews each ESP application and staff's Safety Evaluation Report (SER)
- ACRS reports to Commission on safety portions of ESP application

# ESP Issuance

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**Commission issues ESP with terms and conditions, as it deems appropriate**

## **ESP Terms**

- Valid for up to 20 years
- Renewal application – between 1 and 3 years before expiration of permit
  - Must contain information necessary to bring previous application up-to-date
  - Good for up to an additional 20 years

## ESPs Issued & Potential ESP Application Submittal

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- The NRC has issued six ESPs:
  - Clinton (IL) - March, 2007
  - Grand Gulf (MS) - April, 2007
  - North Anna (VA) - November, 2007
  - Vogtle (GA) - August, 2009
  - PSEG (NJ) - May, 2016
  - TVA (TN) – December, 2019
  - Unnamed Applicant - 2025