

PLACE: Dobbs Building, Raleigh, North Carolina

DATE: Tuesday, September 20, 2022

TIME: 1:45 p.m. - 4:58 p.m.

DOCKET NO.: E-100, Sub 179

BEFORE: Chair Charlotte A. Mitchell, Presiding

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Commissioner Daniel G. Clodfelter

Commissioner Kimberly W. Duffley

Commissioner Jeffrey A. Hughes

Commissioner Floyd B. McKissick, Jr.

Commissioner Karen M. Kemerait

IN THE MATTER OF:

Duke Energy Progress, LLC, and

Duke Energy Carolinas, LLC,

2022 Biennial Integrated Resource Plans

and Carbon Plan

VOLUME: 18

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## T A B L E O F C O N T E N T S

## E X A M I N A T I O N S

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 REGIS REPKO, STEVE IMMEL, CHRIS NOLAN AND  
 CLIFT POMPEE

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

CHAIR MITCHELL: Let's go back on the record, please. Ms. Cress, you may continue.

MS. CRESS: Thank you, Chair Mitchell.

REGIS REPKO, STEVE IMMEL, CHRIS NOLAN AND CLIFT POMPEE, having previously been duly sworn, were examined and testified as follows:

CONTINUED CROSS EXAMINATION BY MS. CRESS:

Q. Good afternoon again, gentlemen. Before the lunch break, do you recall that we were discussing ways in which ratepayers would be protected from risks like stranded asset costs or the possibility that long lead-time resources will not end up resulting in use and useful assets; do you recall that?

A. (Chris Nolan) Yes.

Q. So turning back to the issue of ratepayer protection, is it fair to say that this Commission has an integral role to play in ensuring that ratepayers are protected going forward?

A. (Regis Repko) Yes, absolutely.

Q. And do you recall responding to -- or the Company responding to data requests pertaining to the issue of ratepayer protection?

A. I do not, not in my review for this panel.



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1 Q. Okay.

2 MS. CRESS: At this time, I would like  
3 to introduce Duke's response to Public Staff Data  
4 Request 7-10. And, Chair Mitchell, we'll request  
5 that this exhibit be marked for identification as  
6 CIGFUR II and III Long Lead-Time Panel Direct Cross  
7 Examination Exhibit Number 2.

8 CHAIR MITCHELL: Okay. Document will be  
9 marked as CIGFUR II and III Long Lead-Time Panel  
10 Direct Cross Examination Exhibit 2.

11 (CIGFUR II and III Long Lead-Time Panel  
12 Direct Cross Examination Exhibit  
13 Number 2 was marked for identification.)

14 MS. CRESS: Thank you, Chair Mitchell.  
15 And has a copy been provided to the panel?

16 MS. LINK: I would just note for the  
17 record this is -- the responder is Mr. Jirak.

18 Q. Gentlemen, is it fair to say that subpart B  
19 deals with this issue of how ratepayers will be  
20 protected in the context of long lead-time development?

21 A. Yes.

22 Q. Can you please read the answer to subpart B  
23 into the record?

24 A. "Customers will be protected from stranded

1 asset costs with the Commission's oversight and review  
2 of the Companies' development activities in the manner  
3 deemed appropriate by the Commission."

4 Q. Great. Thank you. Circling back to SLR  
5 costs, you testified before the lunch break that SLRs  
6 are expected to cost, you said, between \$40 million and  
7 \$50 million; is that correct?

8 A. (Chris Nolan) I did.

9 Q. Is that per SLR or is that total in the  
10 aggregate?

11 A. It's per site.

12 Q. Per site, not per unit?

13 A. Correct.

14 Q. Okay. So per site, then, if there's six  
15 sites, we're talking about a range of between  
16 \$240 million and \$300 million?

17 A. So yes. The only reason I would hesitate is,  
18 when we did original license renewal, we combined the  
19 Catawba and McGuire sites together as one application.

20 Q. Thank you for that clarification.

21 Is it fair to say that these SLRs are needed,  
22 regardless of which portfolio is ultimately selected  
23 for Carbon Plan implementation?

24 A. That is correct.

1 Q. Is it also fair to say that, pursuit of  
2 70 percent carbon emissions reduction, regardless of  
3 whether that occurs by 2030 or 2032 or 2034, would be  
4 technically and economically infeasible without the  
5 Companies obtaining SLRs for their existing nuclear  
6 fleet?

7 A. That is correct.

8 Q. Switching gears, it's correct, it is not,  
9 that 800 megawatts of offshore wind had to be forced  
10 into the EnCompass model because it was not  
11 economically selected?

12 MR. LINK: Objection, Chair Mitchell.

13 This is a Modeling Panel question on how it was  
14 modeled, whether it was forced or included.

15 CHAIR MITCHELL: All right. I'll  
16 sustain the objection. You can ask the question in  
17 a different way.

18 MS. CRESS: If counsel for Duke will  
19 agree, I'm happy to just save this line of  
20 questioning for Modeling Panel on rebuttal.

21 MS. LINK: To the extent it's in their  
22 rebuttal, I have no objection.

23 Q. Moving on, with respect to Bad Creek II, Duke  
24 began project development activities for that resource

1 in 2019; is that correct?

2 A. (Steve Immel) That is correct.

3 Q. And it's Duke's position that the Companies  
4 are legally required to own any offshore wind  
5 generation selected by the Carbon Plan; is that right?

6 MS. LINK: Objection. It's a legal  
7 question. I think there are extensive comments  
8 filed by the Company. And it's also been asked and  
9 answered by this panel.

10 MS. CRESS: Chair Mitchell, I think  
11 it's -- if I recall correctly, the Commission  
12 indicated that this was an issue where issues of  
13 fact could be addressed in the evidentiary hearing,  
14 and issues of law could be addressed in comments.

15 CHAIR MITCHELL: All right. Well, I'll  
16 sustain the objection. You may ask questions of  
17 fact related to the issue.

18 Q. Does Duke maintain this position, even if  
19 utility-owned offshore wind generation does not result  
20 in the least-cost resource mix?

21 A. (Regis Repko) Yes. If offshore wind is  
22 selected by the Commission as a resource per the Carbon  
23 Plan, yes, the Company would have ownership.

24 Q. Okay. Thank you. Nothing further.

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1 CHAIR MITCHELL: All right. CPSA?

2 CROSS EXAMINATION BY MR. SNOWDEN:

3 Q. Thank you, gentlemen. Ben Snowden here on  
4 behalf of CPSA.

5 Mr. Repko, just to recap, you've testified  
6 that had the Company is asking the Commission to  
7 authorize cost recovery for development expenses for  
8 long lead-time resources, correct?

9 A. (Regis Repko) For the three within my  
10 testimony, yes.

11 Q. Right. So those include SMRs and offshore  
12 wind?

13 A. It does.

14 Q. Okay. And Duke is requesting that the  
15 Commission authorize cost recovery for those  
16 development costs, even if those resources are not  
17 selected in the Carbon Plan, right?

18 MS. LINK: Your Honor -- I apologize,  
19 old habits die hard. Chair Mitchell, I object.  
20 Mr. Repko did not state that we were requesting  
21 cost recovery. The Companies are requesting  
22 approval of the decision to begin to incur the  
23 development activity costs.

24 MR. SNOWDEN: Okay. Well, I'll ask it

Page 22

1 another way. I think Mr. Repko is free to correct  
2 me if I'm wrong, but you make a good point.

3 Q. So, Mr. Repko, the Company has asked the  
4 Commission to authorize Duke to go out and spend money  
5 to develop these long lead-time resources during the  
6 Near-Term Execution Plan period, right?

7 A. Correct, to begin incurring the costs  
8 associated with the development of them.

9 Q. Thank you. Again, that is -- even if the --  
10 I tell you what, why don't I go back to the petition.  
11 And this is page 16 of the Companies' petition for  
12 approval of the Carbon Plan. And I could just read it  
13 if you want. It's in paragraph 2C, romanette iii, the  
14 Company is asking the Commission to make a  
15 determination that, in the event the long lead-time  
16 resources are ultimately determined not to be necessary  
17 to achieve the energy transition and CO2 emission  
18 reduction targets of 951, such project development  
19 costs will be recoverable through base rates over a  
20 period of time to be determined by the Commission; is  
21 that right?

22 A. That's correct.

23 Q. Thank you. And at this time, it is not clear  
24 whether small modular reactors or offshore wind will be

1 selected by the Commission as part of the Carbon Plan;  
2 is that right?

3 A. The Commission has the discretion to select  
4 the resources.

5 Q. Okay. And the Company has estimated the  
6 amount of development costs it plans to incur on SMR  
7 development during the Near-Term Execution Plan as --  
8 is at \$72 million; is that right?

9 A. That's correct.

10 Q. Okay. And it's -- and I don't want to go  
11 into your rebuttal testimony, but just to acknowledge,  
12 the Company has indicated that it would agree to a cap  
13 on those Near-Term Development Plan -- I'm sorry, those  
14 near-term development costs for SMRs of \$75 million; is  
15 that right?

16 A. That's correct. The Company supports caps  
17 for all the three resources for long lead items.

18 Q. Has the Company estimated the development  
19 costs that it would occur on SMRs by 2030?

20 A. I'd have to ask Mr. Nolan if we have assessed  
21 that.

22 A. (Chris Nolan) So the Modeling Panel has  
23 assessed the cost. I can describe the process.

24 Q. Okay. You can if you want to, but there's no

1 need. Thank you.

2 And then with respect to offshore wind, the  
3 Company estimates that the total cost of near-term  
4 development activities during the period of the  
5 Near-Term Execution Plan is about \$317 million; is that  
6 right?

7 A. (Regis Repko) That's correct.

8 Q. Okay. And what -- and there's a cap the  
9 Company has agreed to on those costs as well, right?

10 A. We have, yes, or we propose.

11 Q. Okay. And what's that cap?

12 A. That's within my rebuttal testimony, if  
13 you'll give me just a moment.

14 (Witness peruses document.)

15 Q. I can -- I believe it's on --

16 A. Thank you.

17 Q. -- page 16 of your rebuttal testimony.

18 A. And your question was relative to offshore  
19 wind, correct?

20 Q. Yes, sir.

21 A. So the proposed cap is \$325 million.

22 Q. Okay. Thank you. Mr. Nolan, I have a couple  
23 of questions for you.

24 You have been with Duke since 2006; is that



1 right?

2 A. (Chris Nolan) That is correct.

3 Q. Okay. And you've testified that you are  
4 familiar with the risks involved in constructing  
5 nuclear facilities, correct?

6 A. I am.

7 Q. Okay. Is your perspective on the risks  
8 involved with developing nuclear facilities informed,  
9 in part, by Duke's experience with the Lee nuclear  
10 station?

11 A. It is.

12 Q. Okay. And were you involved in the  
13 development of Lee?

14 A. I was.

15 Q. Okay.

16 MR. SNOWDEN: At this time, I would ask  
17 to mark for identification CPSA Long-Term Resources  
18 Panel Direct Cross Examination Exhibit 1.

19 CHAIR MITCHELL: Okay. The document  
20 will be marked as CPSA Long Lead-Time Resources  
21 Panel Direct Cross Examination Exhibit 1.

22 (CPSA Long Lead-Time Resources Panel  
23 Direct Cross Examination Exhibit 1 was  
24 marked for identification.)

1 Q. My apologies for the delay in getting those  
2 handed out.

3 So, Mr. Nolan, I'll represent to you that  
4 this is an article from the Charlotte Business Journal  
5 about Duke's abandonment of the Lee nuclear station; do  
6 you see this?

7 A. (Chris Nolan) I see it.

8 Q. Okay. And you have personal knowledge of  
9 circumstances related to Lee?

10 A. I was on the project between 2007 and 2010.

11 Q. Okay. So prior to its cancellation?

12 A. Prior to its cancellation.

13 Q. Okay. Were you familiar with the  
14 circumstances surrounding its cancellation?

15 A. Generally.

16 Q. Okay. Thank you.

17 Mr. Repko, were you involved with the  
18 cancellation of Lee?

19 A. (Regis Repko) No, not directly.

20 Q. All right. So I'll ask you guys to speak  
21 based on your personal knowledge here.

22 So I just want to direct your attention to  
23 page 2 of this article, right near the top where it  
24 says, "To ease impact of Lee's cost on the rate hike,

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1 Duke wants to spread recovery of the \$368 million over  
2 12 years." And actually, I'm sorry, strike that. Let  
3 me back up. I say the proposed Lee nuclear facility.

4 This was not a facility that was ever built,  
5 correct?

6 A. (Chris Nolan) We have a combined operating  
7 license for it. We did not enter the construction  
8 phase.

9 Q. Okay. So Duke requested the permission of  
10 this Commission to cancel the nuclear project, correct?

11 A. I don't have that knowledge.

12 Q. Okay. So you're not aware of whether it was  
13 canceled?

14 A. I don't -- I know we made a decision not to  
15 build it. I couldn't answer your question.

16 Q. Okay. So going back to the exhibit, it says,  
17 "Duke wants to spread the recovery of the \$368 million  
18 over 12 years."

19 As I interpret that, the Company requested  
20 rate recovery of \$368 million in development expenses  
21 associated with Lee. Does that sound right to you?

22 A. I believe that is correct.

23 Q. Okay. And then in the next page, it says,  
24 "The cost allocation would be North Carolina's share of

1 the \$541 million Duke spent to date on the project."

2 Does that sound right?

3 A. What page?

4 Q. I'm sorry, this is the same page, in the next  
5 paragraph after it says half a billion spent.

6 A. (Witness peruses document.)

7 Okay.

8 Q. Okay. So does that \$541 million in total  
9 development costs sound right to you?

10 A. It's approximately right.

11 Q. Okay. Would you agree, just based on your  
12 experience with Lee, that the Company originally  
13 received authorization from this Commission to incur  
14 \$125 million in development expenses on the Lee  
15 project?

16 A. I'm not aware of that.

17 Q. Okay. Okay. And are you aware of whether  
18 this Commission ever capped further development  
19 expenses for the Lee project?

20 A. I'm not aware.

21 Q. Okay. Thank you.

22 Mr. Repko, are you aware of that?

23 A. (Regis Repko) I'm not.

24 Q. Okay. Thank you. Okay.

1 Mr. Nolan, would you agree that this  
2 Commission ultimately authorized the recovery of  
3 approximately \$347 million in development costs for  
4 Lee?

5 A. (Chris Nolan) I believe that is correct.

6 Q. Okay. And the South Carolina Commission  
7 authorized recovery of approximately \$125 million in  
8 development costs for Lee?

9 A. I can't attest to the dollar value, but I  
10 believe that we did recover those investments.

11 Q. Okay. Thank you.

12 Do you recall that the Lee nuclear station,  
13 as designed, would use a new reactor technology that  
14 was developed by Westinghouse?

15 A. The AP1000.

16 Q. Right. And so in your role at Duke, you were  
17 familiar with the AP1000 design?

18 A. I am.

19 Q. Okay. And would you agree that, at the time,  
20 AP1000 was an innovative new design that promised to  
21 simplify the construction of nuclear facilities?

22 A. AP1000 was one of the first designs to  
23 include passive features, so it enhanced the safety.  
24 And yes, it was a new design.

1 Q. Okay. Was it expected to reduce the cost of  
2 construction of nuclear facilities?

3 A. I don't believe so.

4 Q. Okay. Would you agree that Duke was one of  
5 the first utilities in the United States to attempt to  
6 develop a reactor with that technology?

7 A. I believe we were the second utility to  
8 submit a license application.

9 Q. Okay. So you were a second mover on that  
10 AP1000 reactor?

11 A. No.

12 Q. Okay. Would you -- and I'm using  
13 Mr. Snider's nomenclature here. He characterized -- he  
14 talked about being an early adopter of technology.

15 Would you say that Duke was an early adopter  
16 of the AP1000 technology?

17 A. No. I think our actions were prudent, right.  
18 We decided that we needed to address the regulatory  
19 issues, so we pursued a combined operating license. We  
20 decided we wouldn't go to the field unless we had a  
21 detailed design and an approved license from the  
22 Commission. And we didn't go to the field because we  
23 never got those two criteria. And at some point in  
24 time, the economic conditions that favored new nuclear

1 changed.

2 Q. So you attribute the failure of the -- the  
3 cancellation of the project to a change in economic  
4 conditions?

5 A. It was one of the factors.

6 Q. Okay. Would you agree that the reason the  
7 project was canceled was that Westinghouse, which had  
8 designed the reactor, declared bankruptcy because of  
9 losses taken by its nuclear division?

10 MS. LINK: Chair Mitchell, I believe  
11 this article gives the Companies' reason and answer  
12 to that question, and it speaks for itself. There  
13 is a quote on page 3. So Mr. Nolan has been clear  
14 that he was involved in that project early on and  
15 not at the time of the filing with the Commission,  
16 so we could speed this along if --

17 MR. SNOWDEN: Sure. That's fine, I'll  
18 withdraw that.

19 Q. And, Mr. Nolan, I'm not -- I'm not trying  
20 to -- just to be clear, I'm not trying to demonstrate  
21 that the Company was doing anything imprudent with  
22 regard to development of Lee nuclear.

23 I guess the question I have to you is, even  
24 assuming the Company acts reasonably and prudently,

1     there is a -- would you agree that there is a  
2     significant risk with a new technology that it may  
3     ultimately not be available?

4           A.     So I believe that the development activities  
5     that we laid out are prudent reasonable actions. I  
6     think addressing regulatory risk is a right first step.  
7     I think the dynamics that are driving the focus on  
8     AP1000 are different than the dynamics that are focused  
9     on climate change.

10          Q.     Okay. Thank you for that. Let me ask you  
11     another question.

12                 Is the Company planning to ask -- if you  
13     know, is the Company planning to ask the South Carolina  
14     Public Service Commission to authorize the recovery of  
15     development costs for SMRs for offshore wind regardless  
16     of whether they are selected for the Carbon Plan?

17           A.     (Regis Repko) I don't know at this time.

18          Q.     Okay. Would you agree, Mr. Repko, that if  
19     Duke didn't ask the South Carolina Commission for that  
20     or if the South Carolina Commission did not agree with  
21     that, either Duke's shareholders or North Carolina  
22     ratepayers would be on the hook for those costs?

23           A.     That would be likely.

24          Q.     Okay. Regardless of whether these resources



1 were ultimately included in the Carbon Plan?

2 A. Correct.

3 Q. Thank you. Mr. Nolan, would you characterize  
4 SMRs as a mature technology?

5 A. (Chris Nolan) I would say the light-water  
6 SMR are very similar to the reactors that we operate  
7 today.

8 Q. Would you characterize SMRs as a mature  
9 technology?

10 A. No.

11 Q. Okay. And Duke is planning to deploy SMRs on  
12 an aggressive schedule, right?

13 A. The Carbon Plan lays out an aggressive  
14 schedule for nuclear development.

15 Q. Okay. Would you agree that Duke is trying to  
16 deploy SMRs as soon as it can?

17 A. I would say I think we laid out a prudent  
18 action to learn from others.

19 Q. Okay. Do you believe that SMRs will be a  
20 mature technology when Duke starts constructing them,  
21 assuming it does?

22 A. I believe when we say we want to be a second  
23 mover, we are indicating we want to learn the lessons  
24 from the initial plants.

1 Q. Would you agree that there is a lot of  
2 interest in the utility sector in SMRs?

3 A. Yes.

4 Q. Okay. And would you agree that a lot of  
5 utilities are looking to deploy SMRs?

6 A. That is correct.

7 Q. Okay. So you would expect there would be a  
8 number of lessons learned as these first utilities  
9 begin to deploy SMRs in the U.S.?

10 A. I believe so.

11 Q. Okay. Would you expect that there would be a  
12 number of technological innovations in the early years  
13 of SMR deployment?

14 A. I think the advanced reactors have some  
15 technical hurdles that they have to get through. And I  
16 think the Department of Energy funding the ARDP  
17 projects is a way to accelerate their deployment.

18 Q. Okay. Well, with respect to SMRs  
19 specifically, would you expect that the technology  
20 would be refined as SMRs start to go online in the  
21 U.S.?"

22 A. I think the technology is -- no. I think  
23 the -- that the challenge is in making sure it is built  
24 efficiently and effectively.

1 Q. Okay. So when you say the challenge is  
2 making sure it's built efficiently and effectively, are  
3 you referring to cost of construction or something  
4 else?

5 A. The cost and time.

6 Q. Cost and time. So what I hear you saying is  
7 that there will be a challenge in keeping SMRs on  
8 schedule and on budget.

9 Is that a fair characterization of what  
10 you're saying?

11 A. I believe what I'm saying is that we laid out  
12 an approach that will allow us to learn from the first  
13 movers.

14 Q. Okay. Would you agree, Mr. Nolan, that there  
15 are significant risks associated with the development  
16 of SMRs?

17 MR. LINK: Objection. It's a vague  
18 term, "significant."

19 Q. Okay. Would you agree, Mr. --

20 CHAIR MITCHELL: Mr. Snowden, do you  
21 want to respond to the objection and then let me  
22 rule on it?

23 MR. SNOWDEN: I can simply rephrase my  
24 question.

1 CHAIR MITCHELL: Okay. Go ahead.

2 MR. SNOWDEN: Make it easier.

3 Q. Mr. Nolan, would you agree that there are  
4 risks associated with the development of SMRs?

5 A. Yes.

6 Q. Okay. And those would include the risks that  
7 the technology will not be available when it is planned  
8 for; would you agree with that?

9 A. Could you be more specific? What do you mean  
10 by --

11 Q. Sure. Sorry. Would you agree that, if Duke  
12 were to plan to add SMRs to its portfolio in, say,  
13 2032, there is a risk that SMRs might not be available  
14 for deployment at that time?

15 A. I think there will be SMRs available at that  
16 time. I think the 2032 schedule is aggressive.

17 Q. Okay. Well, let me reframe my question,  
18 then. Do you think it is possible that Duke will not  
19 hit that timeline?

20 A. I think it's possible.

21 Q. Okay. Do you think, Mr. Nolan, or would you  
22 agree that there is a risk that the prices of SMRs, or  
23 rather the cost to construct SMRs will be higher than  
24 Duke projects?

Page 37

1           A.       There is uncertainty in the pricing.

2           Q.       Okay.  Would you acknowledge that there is a  
3 risk that SMRs might not ultimately be least-cost  
4 resources?

5           A.       I think in order to meet net zero climate  
6 change, nuclear really has to be part of the solution  
7 to have a safe and reliable grid.  So I think it's  
8 really a question of when and not if.

9           Q.       Okay.  But you would agree that there is a  
10 substantial risk that the cost of SMRs may be higher  
11 than is projected by Duke?

12                   MR. LINK:  Objection, Chair Mitchell, to  
13 the use of the word "substantial."  It is vague  
14 again.

15                   MR. SNOWDEN:  I can attempt to quantify  
16 the risk, but I fear that -- I'm asking Mr. Nolan  
17 to testify, sort of, based on a subjective -- you  
18 know, his experience with developing nuclear  
19 projects.  You know, I guess I would ask Mr. Nolan  
20 to use the word significant as he would define it  
21 himself.  I mean, do you have trouble understanding  
22 the -- I'm sorry, I shouldn't ask a question, but I  
23 think --

24                   CHAIR MITCHELL:  Can you ask the

1 question, Mr. Snowden, without using a word that is  
2 subjective?

3 MR. SNOWDEN: Sure.

4 CHAIR MITCHELL: Can you just figure out  
5 a way to restate the question?

6 Q. Mr. Nolan, do you think it's possible that  
7 the cost of SMRs would be more than -- would exceed  
8 125 percent of the costs that are projected in Duke's  
9 Carbon Plan?

10 A. I'd say that there's uncertainty in the cost  
11 and that's why the lead projects are important.

12 Q. Okay. Thank you. Notwithstanding these  
13 risks, do you believe that it is appropriate for the  
14 Commission to authorize Duke to undertake these early  
15 development activities on SMRs?

16 A. The early development activities are for an  
17 early site permit, so yes, I believe it's appropriate.  
18 And the reason I believe it's appropriate is the value  
19 of that permit is not dependent on time.

20 Q. Okay. Okay. Those are all the questions I  
21 have. Thank you.

22 CHAIR MITCHELL: All right.

23 Environmental Working Group?

24 CROSS EXAMINATION BY MS. BONVECCHIO:

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1 Q. Good afternoon, everyone. Can you hear me?  
2 My name is Andrea Bonvecchio, I'm here on behalf of the  
3 Environmental Working Group. I hope you all are doing  
4 well today. My questions are relating to nuclear, and  
5 we've already covered a lot of ground, Mr. Nolan, so I  
6 just have a couple of clarifying questions for you.

7 And so if you will please turn to page 28 of  
8 your testimony.

9 A. (Witness complies.)

10 Q. And so towards the bottom of page 28 and on  
11 page 29, you identify four new nuclear technologies and  
12 state that these four are scheduled to be built on five  
13 different projects and are expected to be operational  
14 in the next decade. Did I read that right?

15 A. (Chris Nolan) Yes.

16 Q. So just to be clear, the four designs that  
17 you identify on page 29 are also identified in Appendix  
18 L of the Company's Carbon Plan, correct?

19 A. They are identified on page 29. I don't have  
20 Appendix O in front of me.

21 Q. Do you have a copy of Appendix L just --

22 A. (Regis Repko) I do.

23 Q. Great.

24 A. (Chris Nolan) Did you say L or O?

1 Q. L.

2 A. Oh, I have it.

3 Q. Okay.

4 A. I misunderstood you.

5 Q. I'll refer to it later.

6 And so the Companies expect that it could  
7 have an SMR unit up and running with an in-service date  
8 of mid-2032; is that correct?

9 A. That's in the Carbon Plan, yes.

10 Q. And we'll get into these designs specifically  
11 in a moment, but other than the NuScale VOYGR or the GE  
12 Hitachi BWRX-300, which are both SMRs, are there other  
13 designs that Duke Energy is considering for that  
14 proposed first SMR planned in mid-2032?

15 A. So we haven't selected a technology. We have  
16 identified that light-water reactor -- light-water SMRs  
17 have less of a technical leap and would be prioritized.  
18 Those are not all the light-water SMRs that there are,  
19 but we put those in place because they're -- because of  
20 the development activity underway or scheduled for  
21 these designs.

22 Q. Sure. And I understand that technology has  
23 not been selected, but other technologies outside the  
24 scope of these four that you've identified in your



1 testimony are being considered?

2 A. Correct.

3 Q. Do you happen to know any of those designs  
4 off the top of your head?

5 A. So we are continually assessing all the  
6 designs. We listed these four as the leading  
7 candidates.

8 Q. And do you happen to know what the expected  
9 time frames are for those other designs that are in  
10 consideration to be in commercial operation?

11 A. I don't believe any of them have an expected  
12 operation date.

13 Q. Okay. So, Mr. Nolan, I'd just like to ask a  
14 few questions regarding the specific SMR designs that  
15 you've identified. And you testified earlier, but just  
16 to be clear, no SMRs have been built in the United  
17 States, correct?

18 A. Correct.

19 Q. And they haven't been deployed at a  
20 commercial utility scale, correct?

21 A. That is correct.

22 Q. So one of the technologies that you identify  
23 in your testimony on page 29 is the GE Hitachi BWRX-300  
24 SMR. And on line 4, you state that, Ontario Power

1 Generation is building a BWRX-300 at its Darlington  
2 site in Clarington, Ontario.

3 But I just want to be clear, is the BWRX-300  
4 SMR currently being built or are there plans to build  
5 it?

6 A. I think there are plans to build it.

7 Q. Okay. So is it fair to say that there are  
8 plans to build it and it hasn't been built because it  
9 hasn't been certified by the NRC?

10 A. So that plant will be in Ontario, so it will  
11 be the Canadian regulator that would give that license.

12 Q. Thank you for clarifying that.

13 And so jumping to page 37 of your testimony,  
14 you mention that -- on lines 6 through 7, you mention  
15 that the BWRX-300 SMR is based on the GE Hitachi  
16 economic simplified boiling water reactor design; is  
17 that correct?

18 A. That is correct.

19 Q. And you also say that that design has already  
20 been licensed by the NRC as an improved design over the  
21 large light-water reactors in operation today; is that  
22 correct? That's on lines 7 through 8.

23 A. So yes, it is -- it is certified as a design  
24 certification.

1 Q. Okay.

2 A. And it has passive features.

3 Q. Great. That was actually one of my  
4 questions.

5 So was that predecessor design ever  
6 constructed?

7 A. No.

8 Q. So it was never put in operation for utility  
9 in the United States?

10 A. That is correct.

11 Q. And if you'll go back to page 29. Sorry to  
12 make you jump around.

13 Another SMR design -- another SMR design that  
14 you identify is the NuScale VOYGR SMR, correct?

15 A. Correct.

16 Q. And specifically, you refer to the  
17 77-megawatt NuScale design that the Utah Associated  
18 Municipal Power system plans to deploy in 2029; is that  
19 right?

20 A. That's correct.

21 Q. But would you agree that NuScale previously  
22 raised its SMR design's capacity or power output from  
23 50 megawatts, then to 60 megawatts, then to 77  
24 megawatts?

1           A.       They have a design certification for the  
2       50-megawatt module and they're pursuing an SDA for the  
3       77-megawatt module.

4           Q.       Okay. So could we agree that, as originally  
5       submitted to the Nuclear Regulatory Commission, NuScale  
6       proposed an SMR design with modules producing  
7       50 megawatts?

8           A.       Correct.

9           Q.       And so given your experience in the nuclear  
10      industry of -- does increasing a reactor's generating  
11      capacity lower or raise any costs related to that  
12      reactor, such as capital costs or levelized costs of  
13      electricity?

14          A.       I think there would be some incremental  
15      increase in the cost of the design because of the power  
16      output increase.

17          Q.       Okay. So now I will refer to Appendix L.  
18      Specifically on page 8 there is a table labeled L-4.

19          A.       (Witness peruses document.)

20          Q.       Are you there?

21          A.       Yes.

22          Q.       Thank you. So would you agree that this  
23      section of Table L-4 -- so L-4, it has -- it's labeled  
24      "Leading Advanced Nuclear Reactor Technologies"; do you

1 see that? And then I'm looking at the small modular  
2 reactor section. And I'm looking at the first section  
3 which is referring to the NuScale VOYGR 6 and VOYGR 12.  
4 Do you --

5 A. I'm sorry, can you pause. I was looking at  
6 Figure L-4.

7 Q. I'm sorry if I said Figure, Table L-4.

8 A. (Witness peruses document.)  
9 I'm there.

10 Q. Thank you.

11 A. Sorry.

12 Q. No, you're fine. So would you agree that  
13 this section of Table L-4 right under small modular  
14 reactors is referencing the project that plans to  
15 deploy the 77-megawatt NuScale design?

16 A. Yes.

17 Q. So would you agree that, since this section  
18 of Table L-4 is referencing the NuScale 77-megawatt  
19 reactor design, stating that it received a design  
20 certification approval in August 2020 in that second  
21 bullet, is not entirely accurate?

22 A. NuScale did receive a design certification  
23 approval. It is not for the 77-megawatt. So those two  
24 are not aligned. But I think what we're trying to say

1 is that there is a degree of confidence in the  
2 regulatory process because the delta between a  
3 50-megawatt design and a 77-megawatt design is small  
4 compared to the overall approval.

5 Q. Okay. Thank you for clarifying that.

6 So because the project that is identified is  
7 proposing to deploy that 77-megawatt NuScale design,  
8 would that design have to undergo a separate review  
9 process by the Nuclear Regulatory Commission?

10 A. So there's three ways you can enter the part  
11 52 licensing process. You can use a certified design;  
12 an SDA, a standardized design approval; or a  
13 site-specific application.

14 Q. Okay. So would you agree, though, that  
15 neither of those processes would constitute approval to  
16 build or operate a reactor?

17 A. It would time -- it would take time to get an  
18 operating license.

19 Q. Okay. So that's sort of the second --

20 A. For any of the designs.

21 Q. Okay. And I just want to move on to the  
22 advanced reactors.

23 A. Uh-huh.

24 Q. And I just have about two questions.

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1           So one of the advanced reactor designs  
2 identified in your testimony is the Natrium reactor by  
3 TerraPower and GE Hitachi, correct?

4           A.     Correct.

5           Q.     And according to your testimony, that design  
6 is scheduled to be operational in 2028, correct?

7           A.     That is correct.

8           Q.     You also state on page 29, on line 15 of your  
9 testimony --

10          A.     (Witness peruses document.)

11                 All right. Page number?

12          Q.     Page 29.

13          A.     All right. That was in line 15, right?

14          Q.     Line 15.

15          A.     I got them inverted. Line 15?

16          Q.     Yeah, thank you. So you state there that  
17 TerraPower is building a Natrium plant for PacifiCorp  
18 in Kemmerer, Wyoming.

19                 But again, just to be clear, is the Natrium  
20 plant currently being built or are there just plans to  
21 build it?

22          A.     So the activities include siting, developing  
23 the license application, and designing it. At some  
24 point in time they will enter the construction phase.

1 Q. Okay. So actually constructing the reactor  
2 itself?

3 A. They need to get a construction permit from  
4 the NRC before they can build it.

5 Q. Okay. All right. And then I just have a  
6 couple of questions about the near-term development  
7 activities for new nuclear.

8 A. What page?

9 Q. So on page 31.

10 A. Okay.

11 Q. On lines 5 through 14, you provide a timeline  
12 of near-term actions; is that right?

13 A. Correct.

14 Q. And between 2022 and 2023, according to this  
15 timeline, two near-term development activities include  
16 performing a new nuclear technology selection, that's  
17 on line 9, and the selection of a company that will  
18 construct the new nuclear technology --

19 A. Correct.

20 Q. -- is that accurate? Thank you.

21 And this was pointed out earlier today, but  
22 there are costs associated with these activities,  
23 correct?

24 A. Correct.



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1 Q. And in this timeline of near-term activities,  
2 according to your testimony, is to support the future  
3 availability of SMRs, specifically to achieve a  
4 mid-2032 in-service date for an SMR; is that right?

5 A. They are to advance the deployment to create  
6 an option.

7 Q. Okay. So would you agree, then, that based  
8 on this timeline you provided, Duke Energy plans to  
9 select a design and company well before the technology  
10 is expected to be in commercial operation?

11 A. I think we are continually monitoring the  
12 technologies. Our hope is that, to support the 2024  
13 version of the Carbon Plan, we'll do a check and adjust  
14 and update the Commission on the technologies and their  
15 viability. And I can't predetermine what that will be.  
16 I just know we'll do the work in 2022 and 2023 to be  
17 ready for 2024.

18 Q. Got it. So if you're check and adjusting and  
19 you're, sort of, monitoring the development of these  
20 technologies, that would -- is it possible that those  
21 actions will likely happen after 2024? The --  
22 specifically selecting the new technology and choosing  
23 the technology and company to build the first plants.

24 A. So we laid out our best view of the timing of

1 activities, and really it will be the pace of  
2 development of those technologies that will lead to  
3 that answer.

4 Q. Okay. And if any of these activities were to  
5 happen outside of the 2022 to 2024 time frame, wouldn't  
6 you agree that those activities would be more  
7 appropriate to request in the -- during the next Carbon  
8 Plan proceeding for update?

9 A. So I think each time we update the Carbon  
10 Plan, we'll give the Commission the best available  
11 information. I think our approach has been two-fold.  
12 I think we've given the Commission the earliest date  
13 that we think we could deploy a technology, which is  
14 mid-2032.

15 When you look at the projects that we  
16 described, we did that with the intent of showing the  
17 reasonableness of that but yet the aggressiveness as  
18 well. At the same time, we've also laid out an  
19 approach that manages risk, and that's to focus on  
20 siting while those technologies develop. Admittedly,  
21 the technology development is out of our control, so we  
22 just have to respond to the events as they develop.

23 Q. Thank you, Mr. Nolan. And so as part of the  
24 near-term development activities, do the Companies

1 intend -- and again, I'm just referring to those two on  
2 line 9 and on line 11.

3 Do they intend to select just one technology  
4 or does it intend to select multiple technologies?

5 A. I can't predetermine whether it would be a  
6 narrowing of options or it would be a focus on one.

7 Q. Okay. And I'm just looking at the -- I'm  
8 turning to page 32 of your testimony, and there is  
9 Table 2. And I'm looking at the section -- so it's the  
10 second row where it says develop COL application.  
11 That's a combined --

12 A. Operating license.

13 Q. Thank you. So if there are costs associated  
14 with that but the Companies don't know which technology  
15 they're selecting, does that mean that multiple COL  
16 applications would have to be developed?

17 A. No.

18 Q. No. Just one?

19 A. There are site-specific portions of the COL  
20 that can be developed independent of the technology  
21 selection. The majority of it needs the technology.  
22 But what we would do is we would take the license  
23 applications from the lead plants and be ready to  
24 assimilate that into a license application once the

1 technology is selected.

2 Q. Thank you, Mr. Nolan, and I think I have just  
3 a couple more questions for you. At the beginning of  
4 this panel's testimony, Mr. Repko identifies the  
5 performance of a new nuclear technology due diligence  
6 review as a near-term development activity.

7 Are you familiar with the statement?

8 A. (Regis Repko) Yes.

9 Q. Well, Mr. Nolan, if one of the activities is  
10 the performance of a due diligence review, could you  
11 explain what that due diligence review could look like?

12 A. (Chris Nolan) For a technology?

13 Q. For new nuclear.

14 A. Okay. So we are looking at the various  
15 aspects of the design, looking at the risks associated  
16 with those, and then participating on the utility  
17 advisory panels, participating in the design reviews,  
18 doing deep dives with the technologies under NDAs, and  
19 narrowing our view of what the most viable technologies  
20 are.

21 Q. Thank you, Mr. Nolan. And do you think that  
22 this review -- you mentioned risks.

23 Do you think that it should include an  
24 assessment of the risks of water availability during

1 extreme heat events?

2 A. So we do that as part of the siting. That  
3 would be done under the early site permit.

4 Q. Great. And are you aware of discussions or  
5 documentation about these types of climate-related  
6 risks in the Companies' Carbon Plan specifically  
7 related to new nuclear generation?

8 A. Yes.

9 Q. Could you point me to where in the Carbon  
10 Plan that's --

11 A. So risks associated with new nuclear  
12 generation?

13 Q. Specifically climate-related risks.

14 A. Oh, no. Sorry, I misunderstood you.

15 Q. Oh, you're fine. And just have one more line  
16 of questioning. And I just want to briefly clarify the  
17 proposed development of an early site permit and its  
18 estimated costs. And so it may be helpful to have  
19 Appendix L out, specifically page 12, Figure L-3.

20 A. (Witness peruses document.)

21 Yes.

22 Q. So the Companies are seeking approval  
23 pursuing the development of an early site permit that  
24 would potentially be submitted to the NRC in 2024,

1 correct?

2 A. Correct.

3 Q. And this would be to have an SMR operational  
4 by 2032, correct?

5 A. Correct.

6 Q. And this early site permit would be for just  
7 one site, correct?

8 A. Correct.

9 Q. And an early site permit takes approximately  
10 two years to develop, according to your testimony,  
11 correct?

12 A. Correct.

13 Q. Are you aware that every portfolio in the  
14 Companies' Carbon Plan reflects two SMRs being  
15 installed by 2035?

16 A. Correct.

17 Q. So if two SMRs are anticipated by 2035, is it  
18 possible that that may require submitting two early  
19 site permits to the NRC?

20 A. Unlikely. We would likely put both sites --  
21 both units at the same site.

22 Q. Okay. That answers my question. And I  
23 believe that's everything I have for you. Thank you  
24 for your time.

1           A.       Thank you.

2                   CHAIR MITCHELL: All right. NCSEA?

3                   MS. JONES: Thank you.

4       CROSS EXAMINATION BY MS. JONES:

5           Q.       Good afternoon, gentlemen. Taylor Jones for  
6       the North Carolina Stainable Energy Association.

7                   Mr. Nolan, if could keep you in the hot seat,  
8       I'll try not to retread a lot of this territory. I  
9       think you've established, both in response to  
10      Mr. Snowden and in your testimony, that in your various  
11      roles with the Company, you've managed planning and  
12      project development activities for new nuclear  
13      interest; is that a fair characterization?

14          A.       I was involved in the licensing of the Lee  
15      nuclear site.

16          Q.       Thank you. And if I could ask you to just  
17      help me understand some of this reactor design  
18      terminology.

19                   Under the umbrella of a light-water reactor,  
20      there's a pressurized water reactor that's sort of a  
21      subset of the light-water reactor designs; is that  
22      correct?

23          A.       Right.

24          Q.       And the Westinghouse AP1000 reactor was a

1     pressurized water reactor and a type of light-water  
2     reactor?

3           A.     Correct.

4           Q.     At the time Duke Energy Carolinas proposed  
5     the Lee nuclear project, did you consider the  
6     Westinghouse AP1000 reactor design to be a proven  
7     technology?

8           A.     I think -- I think we had confidence in it,  
9     but it was yet to be proven.

10          Q.     Okay. Is it fair to say that it's the  
11     practice of at least the team responsible for nuclear  
12     generation proposing projects for development that you  
13     only propose new projects when you believe the  
14     technology to be viable?

15          A.     I believe that's fair.

16          Q.     Thank you. And you've testified that you --  
17     that the Companies believe small modular reactors to be  
18     a proven technology at this time?

19          A.     They're based on a proven technology.

20          Q.     Okay. Thank you. Just a few more questions.  
21     On page 24 of your direct testimony, I believe it is,  
22     you speak to the Companies' track record of operating  
23     the nuclear facilities in its fleet. And you testified  
24     that, you know, you think this information is relevant



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1 to the Commission's consideration with respect to the  
2 Companies' requested relief for SMR development.

3 I'm wondering, Mr. Nolan, can you tell me the  
4 last new nuclear facility either of the Companies  
5 developed and brought online?

6 A. Harris was the one -- the most recent plant  
7 brought online.

8 Q. Subject to check, do you agree the commercial  
9 operation date for the Harris unit was in 1987?

10 A. I don't know the exact date, but subject to  
11 check, I'll --

12 Q. Okay. Thank you. And since that time, the  
13 Company has not successfully brought any new nuclear  
14 generation online in the Carolinas?

15 A. That's correct.

16 Q. Thank you. Nothing further.

17 CHAIR MITCHELL: All right. NC Warn?

18 MR. QUINN: Thank you, Chair Mitchell.

19 All of my questions have been asked maybe a few  
20 times, so I'm gonna waive cross.

21 CHAIR MITCHELL: Thank you, Mr. Quinn.

22 All right. SACE?

23 MS. THOMPSON: No questions, Judge,  
24 thank you.

1 CHAIR MITCHELL: Tech Customers?

2 CROSS EXAMINATION BY MR. SCHAUER:

3 Q. Good afternoon. My name is Craig Schauer and  
4 I represent the Tech Customers. One moment. I wasn't  
5 expecting to go this early. Here we go.

6 Earlier, I believe you testified, in response  
7 to questions from other counsel, that the Companies'  
8 acquisition of the Carolina Long Bay lease from the  
9 Duke affiliates is necessary for the Companies to make  
10 sure the wind lease development progresses at a pace  
11 sufficient to meet the expected timelines in the Carbon  
12 Plan.

13 Is that an accurate paraphrase of your  
14 testimony?

15 A. (Regis Repko) That's correct.

16 Q. Okay. And you also testified that had the  
17 Duke affiliate is currently developing the lease?

18 A. It is progressing along those lines, yes.

19 Q. Is the Duke affiliate currently developing  
20 the lease at a pace that is sufficient to meet the  
21 timeline in the Carbon Plan?

22 A. I don't know.

23 Q. All right. If you -- if the Companies do not  
24 know if the Duke affiliate is developing the wind lease

1 at a sufficient pace, then why do the Companies believe  
2 that acquiring the lease will allow the Companies to  
3 achieve its execution plan for offshore wind?

4 A. So that we can have direct oversight and  
5 accountability for that.

6 Q. So is it your testimony that, if the  
7 Companies -- I'm sorry.

8 Is it Duke's position that, if the Companies  
9 do not own the lease, there's no guarantee that the  
10 lease will be developed at a sufficient pace in order  
11 to meet the timelines of the Carbon Plan?

12 A. Yes, that's correct. That's what I'm saying.  
13 If the development continues in the commercial  
14 affiliate, there's really not an incentive to  
15 accelerate that development to meet, you know, an  
16 aggressive timeline for the Carbon Plan, if the  
17 Commission chooses offshore wind as an option.

18 Q. Should the Duke affiliate not transfer the  
19 lease to the Companies, do you know what it would do  
20 with the wind lease?

21 A. So it is likely that, you know, some  
22 progression of development would, and they could very  
23 well be looking for an off-taker, you know, to sell the  
24 lease.

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1 Q. Earlier, I also believe you testified that  
2 Duke favors the self-development of offshore wind over  
3 build-own transfer of offshore wind because  
4 self-development was more straightforward, I believe  
5 that's the term you used.

6 MR. LINK: Objection, Chair Mitchell. I  
7 don't think that -- that might be a summary of a  
8 number of different questions together, but I don't  
9 believe that was Mr. Repko's testimony.

10 MR. SCHAUER: Chair Mitchell, I'd ask  
11 that the witness answer the question and not  
12 opposing counsel.

13 CHAIR MITCHELL: All right. Did you --  
14 do you have a response to her objection, though?

15 MR. SCHAUER: Yes, Chair Mitchell. It  
16 was a question seeing if I accurately paraphrased  
17 his testimony. And I think it's a fair question  
18 for him to answer.

19 CHAIR MITCHELL: All right. I'm gonna  
20 overrule the objection. Ask it again so he  
21 understands what you're asking him.

22 MR. SCHAUER: Thank you.

23 Q. So earlier, I believe you testified that Duke  
24 favors the self-development of offshore wind over

1 build-own transfer of offshore wind because  
2 self-development was more straightforward.

3 Do you recall that testimony?

4 A. I don't. If I used those words, you know,  
5 what I was referring to, in terms of self-development,  
6 is that we would have the project management oversight  
7 of that. You know, we would procure the necessary  
8 expertise relative to engineering, procurement,  
9 construction of offshore wind, and we would do that  
10 through, you know, bid events, RFPs of that nature.  
11 But we would own the project management and oversight  
12 of that.

13 Q. So to elaborate on that, what are the  
14 advantages of self-development of offshore wind versus  
15 build-own transfer of offshore wind, from Duke's  
16 perspective?

17 A. Well, you would even -- you could have a  
18 model of build-own transfer under that development  
19 model where the Company has that oversight of the  
20 project management activities to ensure it's  
21 progressing and they're aware of the status of those.  
22 But again, like an EPC, you could do that under a BOT  
23 model, build-own transfer.

24 Q. You just used two acronyms that I'm not

1 familiar with, so I'm just going to move on.

2 A. I'm sorry.

3 Q. That's fine.

4 A. BOT, build-own transfer.

5 Q. Okay. Thank you. And then EPC, could you  
6 define that for me as well?

7 A. Engineer, procurement, and constructor.

8 Q. Can you explain to me what that is? I  
9 apologize.

10 A. Yeah. So you could -- you could acquire an  
11 experienced project developer and constructor that  
12 would do the actual engineering, the procurement of the  
13 materials, and literally construct the facility, the  
14 project. So you could bid that out each individually  
15 or you could bid that out in terms of one Company or  
16 entity that would do all three.

17 Q. So at this stage, does Duke have a preference  
18 for what style or what form of development it would  
19 choose for the offshore wind lease --

20 A. Not at this point, no.

21 Q. Are you aware of the price at which Avangrid  
22 purchased the Kitty Hawk wind lease?

23 A. Yes.

24 Q. Is it approximately \$9 million?

1 A. Yes.

2 Q. Okay. And Duke's affiliate acquired its wind  
3 lease for \$155 million; is that correct?

4 A. That's correct.

5 Q. If Avangrid was willing to sell its lease  
6 for, say, \$90 million, then acquiring the lease from  
7 Avangrid would save ratepayers approximately  
8 \$65 million, as compared to the Companies buying the  
9 wind lease from the Duke affiliate; is that correct?

10 A. Yes. But as I stated previously, Duke  
11 assessed all options for a lease prior to participating  
12 in the option. The pursuit the -- the pursuit of  
13 options for a lease included discussions with Avangrid  
14 Renewables, but those discussions were under a  
15 confidentiality agreement.

16 Q. So have the Companies made an offer to  
17 Avangrid to acquire Avangrid's wind lease?

18 MS. LINK: Chair Mitchell, at this time,  
19 as Mr. Repko has represented, there have been  
20 discussions with Avangrid that are subject to a  
21 nondisclosure agreement. We are allowed to say  
22 that there is the existence of a nondisclosure  
23 agreement, but unless we go into confidential  
24 session, which we are absolutely willing to do,

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1 we're not allowed to say any more on the public  
2 record. And we have no objection to going into  
3 confidential session, I just wanted to be clear.

4 CHAIR MITCHELL: Okay.

5 MR. SCHAUER: If could have just one  
6 moment to think of whether or not my line of  
7 questioning is worth going into confidential  
8 session.

9 CHAIR MITCHELL: Okay.

10 MR. SCHAUER: I apologize.

11 CHAIR MITCHELL: Go ahead. Take your  
12 time.

13 (Pause.)

14 MR. SCHAUER: So, Chair Mitchell, I  
15 think I can ask a question that would avoid the  
16 divulgence of confidential information.

17 CHAIR MITCHELL: All right. Proceed,  
18 please.

19 Q. If the Companies never attempt to acquire the  
20 Avangrid wind lease, how would the Companies  
21 demonstrate to the Commission that the Companies'  
22 purchase of the Carolina Long Bay lease from the Duke  
23 affiliate is the least-cost means of securing offshore  
24 wind?



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1 MS. LINK: Chair Mitchell, I would -- I  
2 appreciate counsel's efforts. In order to actually  
3 answer this question, the information would need to  
4 be in confidential session pursuant to the  
5 confidentiality agreement that the parties have  
6 signed.

7 MR. SCHAUER: I actually think I --  
8 Chair Mitchell, if I may. I believe it could be  
9 viewed as a hypothetical. In the hypothetical  
10 situation, if the Companies were to never have  
11 attempted to acquire the Avangrid wind lease, how  
12 would they demonstrate least cost to the  
13 Commission?

14 MS. LINK: Chair Mitchell, I don't think  
15 it's appropriate to answer a hypothetical when  
16 there is a reality that's also available to respond  
17 to. I don't know the value of answering it  
18 hypothetically. And he is under oath.

19 CHAIR MITCHELL: All right. So let's do  
20 this. Let's go into confidential session so that  
21 you can get your question answered.

22 MR. SCHAUER: Thank you, Chair Mitchell.

23 CHAIR MITCHELL: Let's turn off YouTube,  
24 please, and we will clear the room. If you are not

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1 under a confidentiality agreement, exit, and please  
2 do so quickly. Go ahead. Everybody, please,  
3 quickly.

4 MS. GRUNDMANN: Chair Mitchell, to that  
5 end -- oh. My question is, I may also have  
6 questions of a similar topic that would, based on  
7 her representation, may indicate confidential, and  
8 I'd rather not pull us in and out if possible.

9 MR. SNOWDEN: I'll also -- if I may ask,  
10 this may be for Duke counsel. We are party to an  
11 NDA with Duke, but I just don't know whether this  
12 information is subject to that.

13 CHAIR MITCHELL: All right.

14 MR. LINK: Yeah, so, Chair Mitchell, if  
15 we could have maybe a five-minute recess. I do  
16 want to discuss with Avangrid's counsel how we  
17 would manage --

18 CHAIR MITCHELL: All right. We're off  
19 the record.

20 (At this time, a recess was taken from  
21 2:47 p.m. to 3:09 p.m.)

22 CHAIR MITCHELL: All right. We will  
23 resume with cross-examination of the Long Lead-Time  
24 Resources Panel. We're going to defer any

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1 questions that may -- that may go to confidential  
2 information until rebuttal -- until this panel is  
3 up for their rebuttal testimony. At this point in  
4 time, we're gonna go to Walmart to ask its  
5 questions, and then we'll go to the Public -- we'll  
6 hear from the Public Staff.

7 MS. GRUNDMANN: Thank you, Chair  
8 Mitchell.

9 CROSS EXAMINATION BY MS. GRUNDMANN:

10 Q. Good afternoon, gentlemen. My name is  
11 Carrie Grundmann on behalf of Walmart. I have a few  
12 questions that I believe are probably for witnesses  
13 Repko and -- and is it Pompee? Am I -- Pompee?

14 A. (Clift Pompee) Pompee.

15 Q. Thank you. And it relates predominantly to  
16 offshore wind.

17 As it relates to the near-term activities,  
18 the Companies' proposal is for the Commission to  
19 essentially approve the Companies' acquiring the  
20 Carolina Long Bay lease from Duke Energy Renewable Wind  
21 LLC; is that correct?

22 A. (Regis Repko) That's correct.

23 Q. And for purposes of my questions, can we  
24 agree that Duke Wind is the affiliate, and I'll just

1 tall it that, Duke Wind, moving forward?

2 A. I'm fine with that.

3 Q. Okay. And if we look at Table 3 of page 49  
4 of your testimony, you're proposing to acquire that  
5 lease for \$155 million plus the \$200,000 in ongoing  
6 year-to-year lease costs?

7 A. That is correct.

8 Q. And \$155 million is the cost that Duke Wind  
9 paid to the federal government when it won the auction  
10 for that lease?

11 A. It was the winning price at the auction. The  
12 lower of the two prices for the two parcels, correct.

13 Q. And am I correct that the reason that DEC and  
14 DEP are able to acquire that lease -- that lease at  
15 cost is because of obligations of the nature of the  
16 affiliate transaction that obligates it to be procured  
17 at the lower of the cost or market?

18 A. That's correct.

19 Q. And so you've indicated that Duke Wind is  
20 pursuing additional development activities related to  
21 the SAP; is that correct?

22 A. That's correct.

23 Q. And to the extent Duke Wind incurs those  
24 costs, would you reimburse Duke Wind for those costs

1 when you or if you acquired the lease?

2 A. I had understood that, in the affiliate  
3 transfer, those costs would be included with that, so  
4 that's my understanding.

5 Q. But to the extent that Duke Wind expends  
6 costs associated with whether it be the SAP, the site  
7 assessment plan, or the COP, when -- if DEC or DEP  
8 acquires that lease, they would essentially pay back  
9 Duke Wind's cost; is that correct?

10 A. At cost, correct.

11 Q. At cost. And it would be the lower of cost  
12 or market; is that fair?

13 A. That is correct.

14 Q. Now, by contrast, if DEC or DEP is the holder  
15 of the lease, and DEP or DEC incurs the cost with  
16 respect to the COP or the SAP -- are you following me  
17 so far?

18 A. I am.

19 Q. Those costs expended by DEC or DEP would  
20 subject to the Companies' ability to earn a return,  
21 would it not?

22 A. I believe so, yes.

23 Q. Which is not a possibility if those costs are  
24 incurred initially by Duke Wind, correct?

1 A. Correct.

2 Q. Mr. Pompee, you discussed with counsel for  
3 Avangrid -- and I want you to correct me if I get this  
4 wrong, but the -- I think you said that the capital  
5 expenses associated with the additional length of  
6 underground cabling that would be needed to connect  
7 Kitty Hawk to the Companies' preferred point of  
8 interconnection at New Bern, that essentially the cost  
9 of that cancel out any benefits associated with Kitty  
10 Hawk having a 43 percent net capacity factor versus the  
11 Duke Wind Carolina Long Bay lease net capacity factor  
12 of 36 percent; is that correct?

13 A. (Clift Pompee) There are a couple of  
14 corrections there.

15 Q. Please.

16 A. You said underground, and what we're  
17 referring to is subsea. It is underground, but it's  
18 below the seabed.

19 Q. It's further underground.

20 A. Well, it's -- not really. It's just the  
21 difference of offshore versus onshore underground or  
22 something like that.

23 Q. Understood.

24 A. I just wanted to clarify. So the subsea to

1 the landing point, from the landing point to New Bern,  
2 all of that, yes, doubled. The capacity factors, as I  
3 stated earlier, we don't agree that Carolina Long Bay  
4 is a 36 percent capacity factor because the work hasn't  
5 been done yet. And that's specifically what we're  
6 asking for, is to do that work. We believe at this  
7 point that it's unknowable whether that capacity factor  
8 is 36 percent or higher.

9 Q. Is that something that Duke Wind would study  
10 in the course of either the SAP or the COP or other  
11 developmental activities?

12 A. Yes. So the site assessment plan gets  
13 submitted, and then the survey work, including the  
14 meteorological buoy that goes out there to collect wind  
15 data.

16 Q. And all of that data is needed, is it not, in  
17 order to submit the COP?

18 A. That is part of the engineering work that  
19 goes into construction operations plan.

20 Q. So the ability of DEC and DEP to pursue those  
21 activities is not -- well, let me see if I can rephrase  
22 that.

23 Is it your understanding that Duke Wind will  
24 pursue those activities regardless of whatever decision

1 this Commission makes with respect to DEC and DEP's  
2 ability to acquire the lease and pursue those  
3 activities?

4 A. I believe that's a question that's better  
5 answered by Mr. Repko.

6 A. (Regis Repko) I don't know the extent to  
7 which. I mean, there are timelines relative to the  
8 BOEM process, so will I assume that Duke Energy wind is  
9 proceeding on those timelines.

10 Q. And because if they do not operate within  
11 those BOEM timelines, it is possible that they would  
12 lose their rights to the lease; isn't that correct?

13 A. That's possible. But again, as I said, BOEM  
14 has the discretion to grant extensions and they have  
15 done so.

16 Q. But going back to this concept, I understand  
17 we clarified that it's subsea cabling and that you-all  
18 somewhat disagree with the 36 percent net capacity  
19 factor.

20 But at the end of the day, when you factor  
21 those in, assuming their numbers were right, which is  
22 what I think you did in response to counsel for  
23 Avangrid's question, those sort of put the projects on  
24 par from a cost perspective; is that correct?



1           A.       (Clift Pompee) I would say those are two  
2 factors that cancel each other out. There are other  
3 factors that go into whether the projects would be on  
4 par or not.

5           Q.       And one of those additional factors is the  
6 difference in lease price; is that correct? Which is  
7 the \$155 million paid by Duke Wind versus the  
8 approximately \$9 million paid by Avangrid; is that  
9 correct?

10          A.       That would be one of the factors, yes.

11          Q.       And then if I look -- again, at Table 3, I  
12 believe, on page -- I believe it's 49 of your  
13 testimony, when it relates to the development expenses,  
14 I see that your expenses are greater in 2023 and 2024  
15 when you spend the overwhelming majority of the  
16 \$62 million in development costs.

17                   Is it your understanding that those costs  
18 relate predominantly to the SAP and the COP?

19          A.       So the -- the original -- the \$2 million is  
20 for the development of the site assessment plan. The  
21 \$20 million includes the surveys and the buoys that I  
22 mentioned just earlier. And the \$40 million includes  
23 the assessment work and the start of the engineering  
24 work to support the COP.

1 Q. So all of this work is either related to the  
2 SAP or inputs to the COP?

3 A. That is correct.

4 Q. And you are aware, are you not, that Avangrid  
5 has submitted an SAP and had it approved by BOEM?

6 A. No, I'm not, and that is actually incorrect.  
7 Avangrid has submitted a COP for phase 1 of Kitty Hawk,  
8 and they also submitted a COP for phase 2. The COP  
9 that was submitted for phase 1 shows interconnection  
10 into Virginia, and the COP for phase 2, we don't have  
11 access to, it's not part of the public record. Both  
12 COPs have not yet been accepted by BOEM.

13 Q. I'm sorry, maybe I said it incorrectly. What  
14 I said is they submitted an SAP and it was approved.

15 They've now moved on to the second step with  
16 the COP; is that correct?

17 A. That is correct.

18 Q. So to the extent the Companies were to  
19 negotiate any type of agreement with Avangrid, would  
20 you agree with me that you would likely be paying for  
21 all of those costs that Avangrid has incurred today,  
22 including the purchase of the lease and the development  
23 costs that they've incurred to bring the project at  
24 Kitty Hawk to the place it is today?

1           A.       Again, I would defer to Mr. Repko. And not  
2       having been part of these discussions that occurred  
3       previously, I think Mr. Repko is in a better position  
4       to be able to answer that.

5           A.       (Regis Repko) That gets into -- that gets  
6       into aspects of the confidentiality agreement.

7           Q.       Wonderful. We could defer that to rebuttal  
8       as necessary.

9           A.       Okay.

10          Q.       I think my last question is -- and I'm gonna  
11       put this question to any of you on the panel.

12                 Do any of you have any reason, evidence, or  
13       basis to believe that Duke Wind will abandon or  
14       otherwise not pursue development of the Carolina Long  
15       Bay wind lease if this Commission does not approve DEP  
16       and DEC's near-term action request with respect to  
17       offshore wind?

18          A.       I think I heard it.

19          Q.       I can repeat it if you'd like me to.

20          A.       Please, just the first part.

21          Q.       Does any person on this panel have any reason  
22       or basis to believe that Duke Wind will abandon or not  
23       pursue development of the Carolina Long Bay lease if  
24       DEP and DEC's near-term action request with respect to

1 offshore wind are not approved by this Commission?

2 A. I do not have direct information or evidence.

3 Q. Do you have any indirect information or  
4 evidence?

5 A. Oh, no. No, sorry.

6 Q. Thank you. Those are all the questions that  
7 I have.

8 CHAIR MITCHELL: All right. Public  
9 Staff.

10 MR. FREEMAN: Thank you. Thank you,  
11 Commissioners. Thank you, panelists.

12 CROSS EXAMINATION BY MR. FREEMAN:

13 Q. I'm Will Freeman. I'm an attorney with the  
14 Public Staff here on behalf of The Using and Consuming  
15 Public. If I could ask a few questions about new  
16 nuclear.

17 And you're aware that new nuclear is selected  
18 in all six portfolios that have been run in this  
19 matter, right?

20 A. (Chris Nolan) Correct.

21 Q. And let me step back. I said all six  
22 portfolios.

23 Duke ran four portfolios and then two more  
24 were run by Duke after consultation with various

1 parties, including the Public Staff, right?

2 A. Correct.

3 Q. And new nuclear was economically selected in  
4 all six of those portfolios, right?

5 A. Correct.

6 Q. Thank you. Are you aware that Centrus Energy  
7 has been approved in Ohio to make HALEU fuel that would  
8 go in new nuclear reactors?

9 A. I was not aware of that information, but I do  
10 know that they were interested in pursuing it.

11 MR. FREEMAN: I have a publication from  
12 the Department of Energy, a press briefing. If I  
13 could hand these out, and I think there's some help  
14 coming too.

15 (Pause.)

16 Q. If you'll take a minute to review the first  
17 page of this, USNRC recently approved Centrus Energy's  
18 request for making high-assay low --

19 CHAIR MITCHELL: All right.

20 Mr. Freeman, let's mark the document, please.

21 MR. FREEMAN: I apologize.

22 CHAIR MITCHELL: That's all right. The  
23 document will be marked for identification as  
24 Public Staff Long Lead-Time Resources Panel Direct

1 Cross Examination Exhibit 1.

2 MR. FREEMAN: Thank you.

3 (Public Staff Long Lead-Time Resources  
4 Panel Direct Cross Examination Exhibit 1  
5 was marked for identification.)

6 Q. If I can direct your attention to the second  
7 page of this document, the first paragraph.

8 Can we say that this fuel needed for new  
9 nuclear is underway in Ohio, the United States?

10 A. That's what the document says.

11 Q. Do you have any reason to doubt that?

12 A. No.

13 Q. And I believe you said \$700 million was  
14 allocated under the Inflation Reduction Act to --

15 A. That is correct.

16 Q. Tell me what \$700 million was allocated for  
17 under the Inflation Reduction Act.

18 A. So it was allocated for a number of different  
19 factors. I know \$500 million of it was for a  
20 procurement to buy HALEU to create a reason for the  
21 enrichment facilities to pursue it. I can't recite off  
22 memory the other \$200 million.

23 Q. Thank you so much. I'd like to ask some  
24 questions now about Bad Creek II.

1 A. (Steve Immel) Yes.

2 Q. And I was sitting here earlier, and you  
3 referenced a 2019 study --

4 A. Yes, sir.

5 Q. -- correct?

6 In connection with that 2019 study, you  
7 didn't seek special cost recovery, such as a deferral  
8 for that, did you?

9 A. No, sir.

10 Q. And that was -- that study that we're talking  
11 about was before HB 951 was passed?

12 A. It was.

13 Q. And this is maybe a question for the whole  
14 panel, but possibly you.

15 If there was a comparable energy storage  
16 system that was less expensive, would Duke abandon Bad  
17 Creek II?

18 A. That's a -- that's very much a hypothetical.  
19 You know, right now, pump storage, you know, we have --  
20 we have 50 years' worth of experience with pump  
21 storage. It's a very mature technology. I think  
22 that's quite a stretch to think we could have that much  
23 long duration storage in the time frame that we're  
24 talking about with this Carbon Plan.

1 Q. Well, then can I phrase the same question as  
2 a hypothetical?

3 Hypothetically, if there were comparable  
4 long-term storage that was less expensive, would Duke  
5 abandon Bad Creek II?

6 MS. LINK: Chair Mitchell, I believe  
7 he's answered it. He took it as a hypothetical and  
8 answered the question.

9 CHAIR MITCHELL: All right. I'm gonna  
10 overrule. Let him answer it one more time, and  
11 then we'll move on to the next.

12 THE WITNESS: So again, currently, we  
13 don't see the length of duration and capacity in  
14 storage in emerging technology today, even in the  
15 future. So it's hard for me -- difficult for me to  
16 speculate that we would pursue something that has  
17 the history and the performance that this  
18 technology has that we are pursuing.

19 Q. Thank you. I'd like to talk about offshore  
20 wind for a minute. And I believe I heard the panel say  
21 8 to 10 years for offshore wind to come online to hit  
22 this 2030 goal.

23 Is that a fair characterization?

24 A. (Clift Pompee) It is.



1 Q. And you remember those six portfolios we just  
2 talked about; offshore wind is only selected in half of  
3 those before 2040; isn't that right?

4 A. That is correct.

5 Q. So help us understand why a third of a  
6 billion dollars on something that's got a 50/50 chance  
7 of not being selected is not least regrets?

8 A. (Regis Repko) I'll talk about that, if I  
9 may. So we clearly -- again, to the models you point  
10 out, we do have offshore wind in about half. But I  
11 step back and look at it with a different lens.  
12 Ms. Bowman talked about the four core objectives of the  
13 Carbon Plan. The last one is executability.

14 So if you take a look at even P5 and P6,  
15 which are absent of offshore wind, you've got to look  
16 at the whole portfolio and take a look at the scale of  
17 the remainder of the resources that is needed to  
18 preclude offshore wind. So additional gigawatts of  
19 solar, battery storage, that the P4 or P5 -- P5, P6  
20 scenarios have 25 percent additional solar than the P1  
21 scenario. 35 percent more for P6. Twice the  
22 batteries. I think it's P6 has twice the onshore wind  
23 components that's necessary to preclude offshore wind.

24 So from an executability standpoint, it

1 serves -- it demonstrates to me the need to develop  
2 offshore wind as an option.

3 Q. Couldn't we just wait a few years and then do  
4 it?

5 A. It is relative to the timeline. So I  
6 would -- you know, the development activities, really  
7 for all three of these long lead items, have future  
8 value. That development work can be refreshed at the  
9 appropriate time and utilized. So it is not -- it is  
10 not throwaway expenditures.

11 Q. You would agree with me that DEP -- DEP has  
12 never developed offshore wind?

13 A. That's correct.

14 Q. Can't Duke Wind do this development project?

15 A. We would -- DEP would develop offshore wind  
16 commensurate to the requirements of HB 951.

17 Q. Wouldn't it be less risky to shift to Duke  
18 Wind -- or some other third party, sorry, not just Duke  
19 Wind -- these offshore wind development projects? Less  
20 risky for the ratepayers?

21 A. Again, you know, our view is that to maintain  
22 offshore wind is an option on a time frame of  
23 discretion of the Commission that they commence now.

24 Q. Well, offshore wind was never selected in

1 Portfolio 3, and only selected after 2040 in Portfolios  
2 5 and 6. And if we have the 8-to-10 years that I heard  
3 him say, I'm just doing some backward math, right?

4 A. Yeah. So you're correct around where  
5 offshore wind fits in terms of the portfolio. So this  
6 really gets into this evaluation and the value of  
7 onshore wind that the modeling team has in their  
8 rebuttal testimony. And I would suggest we leave the  
9 question for them in the rebuttal.

10 Q. Okay.

11 A. They go into detail on it.

12 Q. Has Duke Energy studied whether wind leases  
13 might be less expensive in light of the fact that the  
14 moratorium on the Southeast wind portion was lifted by  
15 the Inflation Reduction Act?

16 A. We have not done a formal study, in terms of  
17 future values of lease areas.

18 Q. Would Duke Wind sell to Duke Energy in five  
19 years?

20 A. I don't know. I presume so.

21 Q. If Duke Energy bought from Duke Wind the  
22 55,000 acres and did this development process you're  
23 discussing, and turned out that it did not want to move  
24 forward with offshore wind, would Duke Wind buy it back

1 from Duke Energy?

2 A. That I don't know.

3 MR. FREEMAN: Commissioners, if I could  
4 have a moment, I think I'm near the end of my  
5 questioning.

6 (Pause.)

7 Q. Is Duke Wind capable of developing offshore  
8 wind?

9 A. Yes. I mean, we have got personnel that are  
10 familiar -- have offshore wind experience. To date, I  
11 do know that they have even developed project  
12 management models for offshore wind that have been  
13 validated against other developers, experienced  
14 developers of offshore wind. And then, of course,  
15 whatever expertise in the area of engineering,  
16 procurement, and construction, it would be acquired.

17 Q. You said "we," but I think you meant "them,"  
18 right?

19 A. I'm sorry, the affiliate, correct.

20 Q. Okay. What benefits do the ratepayers get  
21 from DEP acquiring the asset now and developing the  
22 wind itself rather than some build-own transfer or  
23 future arrangement in the years to come?

24 A. I mean, the value of offshore wind earlier

1 for the regulated utilities is for earliest possibility  
2 to be selected by the Commission as a resource, and  
3 then again as an option for risk management.

4 MR. FREEMAN: Okay. If you'll bear with  
5 me one more moment, Commissioners.

6 (Pause.)

7 Q. Would you agree with me that 951 doesn't  
8 require Duke to develop assets, but requires Duke to  
9 own assets? And I'm excluding the solar and the  
10 battery -- solar plus battery storage issue.

11 A. I believe that's the case.

12 Q. Thank you. Okay. Thank you, panel, I  
13 appreciate your time.

14 MR. FREEMAN: Thank you, Commission, I  
15 appreciate your indulgence. I don't have any more  
16 questions.

17 CHAIR MITCHELL: All right. Redirect?  
18 REDIRECT EXAMINATION BY MS. LINK:

19 Q. Mr. Repko, just to clarify the record, I  
20 believe there were some questions about whether the  
21 Companies are asking the Commission to select these  
22 three resources at this time.

23 Do you generally recall those questions?

24 A. (Regis Repko) I do.

1 Q. Are the Companies asking the Commission to  
2 select any of these resources, whether it be Bad Creek  
3 II or SMRs or offshore wind, at this time in this  
4 proceeding?

5 A. No. We are not asking the Commission to make  
6 decisions on selection of the resources.

7 Q. Okay. So the ask is to incur the development  
8 activities and the expenses thereof, correct?

9 A. That's correct.

10 Q. And then the Companies would come back at a  
11 later time, whether it be at a future Carbon Plan, with  
12 that information for perhaps future selection?

13 A. That is correct.

14 Q. Okay. Just turning to another point. There  
15 was some discussion with Ms. Grundmann for Walmart  
16 regarding developing the offshore wind lease in the  
17 affiliate; do you recall that?

18 A. Yes.

19 Q. And I believe -- and again, this could go  
20 into a legal issue that you may not know the answer to,  
21 but I believe there was discussion on whether the  
22 affiliate could get a return on its investment for  
23 development; do you recall that?

24 A. Yes.

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1 Q. And are you aware that, in the course of an  
2 affiliate transfer, that in addition to the affiliate  
3 transferring at the lower of cost or market, it can  
4 also get a reasonable return?

5 A. I was not aware of that.

6 Q. Okay. There was also some discussion of --  
7 from Ms. Grundmann regarding whether Duke Energy  
8 Renewables Wind would abandon its development  
9 activities of the Carolina Long Bay lease; do you  
10 recall that?

11 A. I do.

12 Q. And I believe you said that you had no  
13 knowledge of whether they would or they would not?

14 A. That's correct.

15 Q. Would you just clarify for this Commission,  
16 why are the Companies requesting that the activities  
17 related to transferring the affiliate's lease to the  
18 Companies are appropriate at this time?

19 A. Yes. Again, when -- with House Bill 951  
20 requirements for the Carbon Plan, we sought out --  
21 senior leadership directed that we pursue all options  
22 for a lease, and we pursued those to the fullest  
23 extent. That's all I can say at that point. Out of  
24 that, with that work, there was a decision in order to

1 maintain offshore wind as an option for the Carbon  
2 Plan, that we anticipate in the BOEM auction for the  
3 Carolina Long Bay parcel.

4 And again, our commercial affiliate entered  
5 into that auction process, acquired it at the lower of  
6 the two parcel prices of that auction, the lower of  
7 market value as demonstrated to a third-party lease.  
8 So it was acquired for the sole purpose to maintain  
9 offshore wind as an option for this Commission relative  
10 to a Carbon Plan resource.

11 Q. And is there a reason why the Companies  
12 didn't procure the lease in either DEP or DEC?

13 A. It really came down to, number 1, to ensure  
14 that an option was maintained; number 2, that we could  
15 be transferred through an affiliate transfer; and then,  
16 quite frankly, number 3, as I said, we had experienced  
17 personnel with offshore wind that were very familiar  
18 with the BOEM auction process.

19 Q. And isn't it also true that the Companies did  
20 not want to get in front of -- ahead of the  
21 Commission's decision in this proceeding?

22 MS. GRUNDMANN: Your Honor, I'm gonna  
23 object. I think this is meant to respond to the  
24 subject of direct exam, and I believe the link was



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1 to the questions that I asked previously, which had  
2 nothing to do with Duke or internal decisions among  
3 its regulated and unregulated affiliates and  
4 parents as to who should own the lease and bid the  
5 lease. So I feel like we've moved beyond the scope  
6 of direct exam in counsel's questions on redirect.

7 MS. LINK: I was just exploring the next  
8 question, which is why the Companies did not  
9 procure the lease in their own names. If it's not  
10 relevant to the Commission, I can move on.

11 CHAIR MITCHELL: I'm gonna overrule the  
12 objection. You can ask the question.

13 THE WITNESS: That is correct. We did  
14 not want to create a presumption for offshore wind.  
15 It is the Commission's discretion to select the  
16 resources. So we did not want to get in front of  
17 the Commission.

18 Q. Thank you. I have no further redirect.

19 CHAIR MITCHELL: All right. Let's see  
20 if there are questions from Commissioners.

21 Commissioner Clodfelter?

22 EXAMINATION BY COMMISSIONER CLODFELTER:

23 Q. Mr. Nolan, just one or two questions for you.  
24 I don't think it will turn into anything more than

1 that.

2 The Company, Duke Carolinas, still owns and  
3 controls the Lee nuclear site; am I correct?

4 A. (Chris Nolan) That is correct. We have a  
5 combined license and we maintain it currently.

6 Q. Okay. Is there -- is the Lee nuclear site an  
7 eligible potential candidate for an early site permit?

8 A. It is an eligible candidate for siting.

9 Q. Would consideration of that as a potential  
10 ESP site in any way impair or interfere with the COL  
11 that you're still holding for that site?

12 A. COL is for a specific technology.

13 Q. Right.

14 A. And we know a lot about the Lee site from an  
15 environmental and regulatory perspective, and one could  
16 argue that you may not need an ESP to build at that  
17 site. That's why I gave you the answer that I did.

18 Q. Say more about what you just said.

19 One could argue that you don't need an ESP?

20 A. So an ESP is to mitigate risks associated  
21 with siting.

22 Q. Risks to the Company?

23 A. Risk to the customers.

24 Q. And to the Company?

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1           A.       And to the Company, yes. And we've already  
2       been through an environmental review with Lee, so we  
3       know a lot about the site, so we have some degree of  
4       confidence in the site. If you select a different  
5       technology, then you have affected that combined  
6       license.

7           Q.       How have you -- if you had sufficient  
8       physical land area to put one or two SMR buildings on  
9       there, would that impair your COL?

10          A.       So it would not. But thank you for  
11       clarifying. I'm answering under the presumption of  
12       knowledge of the site, which is it was designed and  
13       selected for a large light-water reactor. That land  
14       that you're talking about is not readily available. Or  
15       it's not on the site specifically. You would have to  
16       expand the site.

17          Q.       You would have to expand the site?

18          A.       That's correct.

19          Q.       Okay. And would -- if you have to expand the  
20       site, would that require you to go through an ESP?

21          A.       Yes.

22          Q.       Okay.

23          A.       If it was in a different location.

24          Q.       Thank you for that.

1           Mr. Pompee, I'm gonna ask you a question  
2       because you're the technology guy and because I don't  
3       have anybody else so far that can talk to me about this  
4       subject, which is onshore wind, since you were talking  
5       a lot about offshore wind. And I really just have an  
6       open-ended question for you to get some education.

7           Are you aware of any developing technologies  
8       that may be on the horizon or just over the horizon  
9       that you're following that might enhance the siting of  
10      viable onshore wind in North Carolina? That might  
11      expand the area where we could get viable and  
12      commercially sustainable onshore wind?

13          A.      (Cliff Pompee) I'll try my best to answer  
14      the question. In my role, I typically focus on  
15      emerging technologies. Onshore wind is considered a  
16      mature technology. I am not aware of any potential  
17      technologies that are on the horizon that would expand  
18      the siting as it applies in the Carolinas.

19                I'm aware of emerging technologies for  
20      onshore wind, such as high hub height wind, which  
21      allows you to place the wind turbines taller to get a  
22      bigger wind profile. But that doesn't necessarily  
23      change the siting limitations that we have in the  
24      Carolinas as I understand it.

1 Q. It wouldn't expand the geographical area  
2 where we could get a commercially viable turbine up?

3 A. The way I understand it, no. And I defer to  
4 the Modeling Panel to answer it more.

5 A. (Regis Repko) We actually -- there's a map,  
6 I believe, in the appendix. So the wind resources in  
7 North Carolina, coastal or mountains, right, and not  
8 much in between.

9 Q. Right. And again --

10 A. And even as far as expansion of the turbines  
11 and the size, it would still predominantly be in those  
12 areas, because the difference in the wind resource  
13 compared to the middle of the state is that large.

14 Q. So we're not waiting on any sort of  
15 technological development that might grow that map?

16 A. No.

17 Q. All right. Back to you, Mr. Pompee. You had  
18 a dialogue with Mr. Smith about the issues that would  
19 have to be addressed to bring an undersea cable from  
20 the Kitty Hawk site to the injection point at New Bern.  
21 And you were talking with him about issues of having to  
22 cross Pamlico Sound and come up the Neuse River to the  
23 injection point.

24 And so I looked at my maps again, and I'm

1       wondering -- prompted this question.

2                       What's the landing -- proposed landing point  
3       for the undersea cable coming from the Carolina bay  
4       site?

5           A.       (Cliff Pompee) We haven't determined -- we  
6       haven't got to the point yet where we could determine  
7       where the landing points are, but there are a number of  
8       landing points along the coast from as far south as  
9       Wilmington to about north near Emerald Isle.

10          Q.       You haven't determined a preferred landing  
11       point?

12          A.       Not yet.

13          Q.       Well, if you come ashore in Brunswick County,  
14       you've got quite a long onshore transmission line going  
15       up to New Bern, right?

16          A.       That's correct. We've looked at limitations  
17       with different landing points, specifically, you know,  
18       the quickest path to get to the interconnection point  
19       with New Bern, as well as, you know, the buildability,  
20       right, executability of building in certain population  
21       centers.

22          Q.       If you come ashore at Emerald Isle, you to  
23       cross the Core sound to get to the mainland?

24          A.       Yes.

1 Q. So would it be fair, then, for me to sort of  
2 step back for a minute and say we really don't know  
3 which of the two locations, Carolina bay or Kitty Hawk,  
4 is going to be the most expensive or complicated to  
5 bring the cable ashore? We don't know that.

6 A. So the work that we did looked at potential  
7 landing points along the coast, as I mentioned. And we  
8 looked at it in a location-or-wind-energy-area agnostic  
9 way. So anything that we looked at, in terms of  
10 viability and executability, would apply to both  
11 leases.

12 As a matter of fact, when we looked at the  
13 undersea cable length for Carolina Long Bay, the  
14 location that we think -- the locations that we  
15 identified were not the shortest path to get there,  
16 because we believe that the early work that needs to be  
17 done, from a transmission perspective, at the time was  
18 not wind-energy-area specific. So any work that we had  
19 done from a feasibility perspective is transferrable to  
20 both at this time.

21 Q. That's a helpful answer, and I appreciate it.  
22 When you were trying to compare those options for the  
23 Carolina Bay site to the potential to bring wind from  
24 the Kitty Hawk site to New Bern, were you costing those

1 out?

2 A. That's correct. And if you look at  
3 Avangrid's limited comments, they actually have a  
4 figure there that shows potential landing points. And  
5 they show the cabling that we believe is most feasible  
6 landing on the north side of Emerald Isle.

7 And, you know, when we looked at it, we  
8 pretty much determined looking at something that could  
9 support both wind energy areas, what would the cable  
10 length be. And that's how we arrived at the numbers  
11 that we did where we can say that Kitty Hawk is roughly  
12 double the length of Carolina Long Bay.

13 Q. You were looking at a potential landing point  
14 on Emerald Isle?

15 A. Yes. The landing point -- the same landing  
16 point that Avangrid showed in their testimony.

17 Q. Okay. And that would not cross the Pamlico  
18 Sound or come up the Neuse River?

19 A. That's correct. That would go -- not be  
20 subject to those environmental concerns.

21 Q. Okay. Thank you. That helps me understand  
22 what I've got. Appreciate it. I'm gonna ask you a  
23 question or two about Figure J-5, which is in  
24 Appendix J of the Carbon Plan, on page 8.



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1 Do you have access to that?

2 A. I do.

3 Q. Okay. It's Figure J-5, which is the  
4 sample -- it's a sample development timeline for  
5 bringing onshore wind -- offshore wind from Carolina  
6 Long Bay. First I just want to be sure that I  
7 understand the chart correctly. You've got a series of  
8 years there, and you've got arrows running to years and  
9 arrows running away from years.

10 What are you using there; is that a  
11 beginning-of-year convention or an end-of-year  
12 convention? If the arrow goes to 2025, is that the end  
13 of 2025 or the beginning?

14 A. We're using beginning.

15 Q. So when I look at the very end and I've got  
16 my blue star at 2032, that's January 1, 2032?

17 A. That's correct.

18 Q. Okay. So for Portfolio 1, you would then be  
19 hoping, in execution, to be able to advance that blue  
20 star by one year back to 20- -- well, back to 2031?

21 A. So the --

22 Q. The end of 2030?

23 A. There are two different dates, and I  
24 apologize if this gets confusing. Please let me know

1 and I'll help to clarify.

2 Q. I'm trying to avoid being confused, so you  
3 help me out.

4 A. So for the purposes of modeling, we had to  
5 select a resource that's available at the beginning of  
6 the year in order to be selected. So in the Carbon  
7 Plan, the 2030 is January 1, 2030. In my testimony  
8 when I talk about Carolina's Long Bay being available  
9 in 2030, we're talking about end of year 2030.

10 Additionally, the timeline in J-5 represents  
11 the most conservative timeline, in terms of the maximum  
12 amount of time that BOEM allows to develop the  
13 different products. So one year for a site assessment  
14 plan, up to five years for a construction and  
15 operations plan.

16 But in reality, you can get to a construction  
17 and operations plan in three years. That's why we say  
18 we believe Carolina's Long Bay could be in operation by  
19 the end of year 2030. Again, accelerating that  
20 timeline has risks.

21 So that's kind of where, you know, you can  
22 see the timeline can collapse is really because the  
23 time to get from lease auction to COP can be three to  
24 five years. In J-5, we selected the five years to show

1 the most conservative path.

2 Q. You anticipated my question and answered it  
3 exactly. I was gonna really ask you where are the best  
4 opportunities you've got to squeeze this timeline and  
5 shorten it. So you've identified a construction and  
6 operations plan.

7 Are there any other places where you think,  
8 if you're really, really running flat out, you could  
9 squeeze -- squeeze -- your best chances for squeezing  
10 the time?

11 A. I do believe that, as the market matures --  
12 you know, even if we're talking about a 2030 operations  
13 date, we wouldn't be into construction until 2027 to  
14 2028. So I think the market could mature at that time.  
15 But again, it's hard for me to say with certainty, but  
16 that's a possibility, though not a certainty.

17 Q. All right. If you were -- if you were  
18 wanting to deliver power to the grid by the end of 2030  
19 from Carolina Bay and have it on the grid by the end of  
20 2030, when would you need to have finalized your  
21 selection of the equipment configuration: your towers,  
22 your blades, your turbine? When would you need to have  
23 that finalized?

24 A. We would look to have the -- because the

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1 engineering would have to be mostly complete by the  
2 time we submitted a COP, we would look at having that  
3 done. But I would say, you know, going back to your  
4 previous question, although not an opportunity, but it  
5 does highlight, you know, what we're asking for here,  
6 right?

7 If we're trying to get something and we want  
8 to get it in a time frame that is closer to 2030, it's  
9 critical that we, you know, get the work started and  
10 accelerated to continue the development. But I would  
11 say that, by 2027 or so, we would want to have  
12 selected -- or earlier, we'd want to have selected the  
13 technology.

14 Q. Thank you. That answers the question and  
15 sort of leads me to the next question.

16 Is -- is Duke currently following the new  
17 technology that's being developed in Norway for the  
18 spindle turbines?

19 A. I'm familiar with those, generally. I've  
20 looked at them. I think one of the areas, you know, in  
21 my role that I look at is the technology development  
22 timeline. You know, current axial offshore wind is a  
23 pretty mature technology. It's nascent in the U.S.,  
24 but it's mature globally.

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1           Tens of gigawatts installed over 20 years of  
2           operating history. So, you know, the developers know  
3           how to build these things, the operators know how to  
4           operate them. So it makes more sense for us to focus  
5           on technology that we know is executable as we continue  
6           to follow developing technologies.

7           Q.     First -- your first step -- first venture  
8           into the field you want to use the existing technology,  
9           and maybe for subsequent blocks, you might look at the  
10          newer technologies coming online?

11          A.     Yeah, right.

12          Q.     Is that fair?

13          A.     Once it becomes available and has gotten to a  
14          level of maturity.

15          Q.     Okay. I -- thank you. Those are very  
16          helpful answers. I do have another nuclear question,  
17          Mr. Nolan. You were asked a question about Public  
18          Staff Cross Examination Exhibit Number 1.

19                 Do you have that there in front of you?

20          A.     (Chris Nolan) Is it related to Centrus?

21          Q.     Yeah, it is.

22          A.     Yes.

23          Q.     I want to ask you a slightly different  
24          version of the question that you were asked. I think

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1 the question you were asked was were you aware that  
2 Centrus had gotten a license for HALEU production. And  
3 you said you were not aware of that. I have a slightly  
4 different question for you.

5 Were you aware that Centrus got a license for  
6 a demonstration project for HALEU production?

7 A. So I'm aware that Centrus' primary business  
8 is in Richmond. They have the American Centrifuge  
9 plant. They are part of the Sodium project and  
10 they've been actively involved in discussions to build.

11 Q. Do you know whether the demonstration project  
12 that they were licensed to do for HALEU has been  
13 continued after June of this year? Is that project  
14 still going on or did it terminate?

15 A. I don't know.

16 Q. Okay. Thank you. That's all.

17 CHAIR MITCHELL: Commissioner Duffley?

18 EXAMINATION BY COMMISSIONER DUFFLEY:

19 Q. So good afternoon, gentlemen. My first  
20 question is a follow-up on Commissioner Clodfelter's  
21 questions regarding the timeline and to achieve the  
22 year-end 2030 commercial operation date. At the end of  
23 page 50, as well as the middle of page 53, I just want  
24 to make sure I'm understanding the testimony.

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1           So as I understand it, the Company is saying  
2           that there would be significant increased financial  
3           risk to complete it by the end of 2030 because of the  
4           fact that equipment procurements would most likely have  
5           to be initiated prior to getting the final COP.

6           Is that an accurate characterization?

7           A.     (Cliff Pompee) Yes, that's accurate.

8           Q.     Are there other increased financial risks,  
9           besides the equipment procurements?

10          A.     I think that, you know, equipment  
11          procurements represent the bulk of the capital  
12          expenditures. I think there are certain development  
13          expenditures that would probably be increased due to  
14          the development timeline acceleration. But in  
15          relation, the procurement and the CAPEX would be orders  
16          of magnitude.

17          Q.     Thank you. And then on page 53, about middle  
18          of the page, a little higher, it says, "Projects may be  
19          completed in a shorter time period. However, this  
20          comes with increased risk and the need to perform  
21          development work as early as possible, and therefore  
22          requires regulatory certainty to proceed."

23          Can you further explain what you mean by  
24          "regulatory certainty"?

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1           A.       Yeah. I think the -- you know, one of the  
2 areas in my mind we're talking about, you know, of  
3 course the early development work that we're talking  
4 about here for long lead-time. And then I think about  
5 the Virginia CVOW project. Once they got the Virginia  
6 Clean Economy Act, Dominion was able to accelerate that  
7 project and get to a point where, you know, they'll be  
8 operational by 2026.

9           Q.       Okay. And if we could discuss the costs,  
10 these development costs that you're seeking in this  
11 case. A preapproval of, I would say.

12                   What account -- FERC account are those costs  
13 charged to?

14          A.       I'm not sure.

15          Q.       Who would be the appropriate witness,  
16 Ms. Bateman?

17          A.       (Regis Repko) I would believe so, yes.

18          Q.       Okay. Thank you. Then you had an exchange  
19 with Mr. Smith about the cost delta between the Kitty  
20 Hawk lease and the Carolina Long Bay lease, and I just  
21 want to make sure I understood your testimony. I heard  
22 that there was maybe a math error, and so instead of it  
23 being \$150 million, it was \$350 million. And then I  
24 also heard you discuss because of the longer, you know,



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1 sea -- undersea line, that was kind of the \$350 million  
2 roughly in additional cost.

3 So I guess my question is, I mean, in that --  
4 in that testimony, are you saying that with those two  
5 issues, that roughly -- they're roughly the same  
6 amount, or is there still a delta of \$350 million?

7 A. Okay. Yeah, and I apologize for the  
8 confusion. So the error in math that I was talking  
9 about was \$850 million, not 150. So Avangrid stated in  
10 their testimony that a project in Carolina Long Bay  
11 would have to be constructed for \$850 million less to  
12 make up for the net capacity factor difference.

13 But based on their numbers, that capital  
14 expenditure is actually \$350 million. So I think that  
15 was an inadvertent error on their part, but I wanted to  
16 correct it. The \$350 million less, if you assume the  
17 premises, would then be offset by, you know, roughly, I  
18 want to say, 100 miles or so of additional cabling.  
19 That comes out to, you know, around \$350 million.

20 So I was trying to illustrate that those two  
21 are offset but also that there are, you know, multiple  
22 factors that affect whether one lease area is, you  
23 know, what I would say better than another, because  
24 it's not a simple question of, you know, one has a

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1 better wind so it's a better lease area.

2 Q. Okay. Thank you for that. And then turning  
3 to page 32, and this is in the nuclear section.

4 So with -- there were some questions about  
5 the actual spend in 2022, and you stated that the  
6 actual spend was \$1 million, not \$5 million?

7 A. (Chris Nolan) That is correct.

8 Q. So what about the \$3.5 million?

9 A. Oh, it's inclusive.

10 Q. It's inclusive. So that \$1 million is not  
11 just for the --

12 A. Correct.

13 Q. -- the top, it's for the full 850 --

14 A. That is correct.

15 Q. -- or \$8.5 million? Okay. Okay. Those are  
16 my questions, gentlemen. Thank you.

17 CHAIR MITCHELL: Commissioner Hughes?

18 EXAMINATION BY COMMISSIONER HUGHES:

19 Q. Yeah. I realize we're all trying to figure  
20 out what the IRA does to everything. But I am  
21 intrigued by the calculus that you were doing where you  
22 were lumping transmission and development costs  
23 together and, kind of, doing the comparison, because  
24 the way I understand it is the IRA was a big boom for

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1 the actual development costs, but left transmission  
2 alone.

3 So does that -- have you redone that  
4 analysis, or is that changing the whole way we should  
5 be thinking about kind of where you site wind and kind  
6 of trade off between -- you know, and I'm still  
7 learning. Is there any insight on where the  
8 development costs of these wind projects actually stop?  
9 You know, like, which part of the transmission can come  
10 from that really generous tax break and which can't.

11 A. (Clift Pompee) Yeah. So thank you for that  
12 question, because it is a little bit confusing. For  
13 offshore wind project, part of the project costs  
14 includes the wind turbines, the substation, the  
15 offshore substation, and all the cabling, until you get  
16 to the point of interconnection. So that includes the  
17 subsea cabling plus the onshore from whatever landing  
18 site we select and the pathway to get to New Bern.

19 Once you get to New Bern, end of project.  
20 From New Bern, any upgrades at New Bern going into  
21 Womack to Wake, wherever the load center is, that's  
22 part of the transmission.

23 Q. We have to keep rethinking about what  
24 transmission means for --

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1           A.     Right.

2           Q.     Okay.

3           A.     You know, and the other -- sorry for  
4 interrupting. The other question you asked about --  
5 you know, I think the -- the IIJA had provisions for  
6 loan guarantees for transmission. The IRA has  
7 production tax credits for wind. So we haven't, you  
8 know, gotten to the point or -- you know, the treasury  
9 hadn't gotten to full rulemaking, but the way we  
10 understand it is some of the investment tax credits  
11 that were set to run out are now expanded through the  
12 2030s.

13          Q.     Okay. Thank you.

14                   CHAIR MITCHELL: Commissioner McKissick?

15                   COMMISSIONER MCKISSICK: Well, actually,  
16 I think virtually every question I had in the back  
17 of my mind has been clarified either by -- I know  
18 Commissioner Clodfelter asked one or two, and the  
19 rest by intervenors, so no questions at this time.

20                   CHAIR MITCHELL: Commissioner Kemerait?

21 EXAMINATION BY COMMISSIONER KEMERAIT:

22          Q.     I just have one question that follows up on  
23 questions from Commissioner Clodfelter and Commissioner  
24 Duffley, and then also the Public Staff's questions,

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1 and it's about offshore wind.

2 And in the -- your testimony, on page 45, you  
3 talk about -- excuse me, I'll go back to the page.  
4 Excuse me, page 43, talking about it takes about 8 to  
5 10 years from the time of securing a lease to reaching  
6 commercial operation for offshore wind. But then I  
7 believe you clarified that that time frame might be  
8 able to be accelerated in response to Commissioner  
9 Clodfelter's question.

10 And Public Staff's question had been -- the  
11 way that I wrote it down was, "Can't we wait just a few  
12 years to make a decision about securing the lease?"  
13 And so I think what I'd like to ask the question about  
14 is maybe not a few years, but the response was that you  
15 want to be able to maintain offshore wind as an option.

16 So can we wait two years until 2024? Or I'd  
17 like to hear the response about that, about securing  
18 the lease, because when you look at the Table 3 on  
19 page 49, the lease cost is the greatest of the  
20 procurement -- the near-term development cost.

21 So I guess my specific question is, for a  
22 two-year period of delay, would we still be able to  
23 maintain the option for offshore wind?

24 A. So when we talked about, you know, moving the

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1 schedule, getting a shorter schedule, we were talking  
2 about the eight years is the shorter schedule. That's  
3 the one that we think has executability risk. The 10  
4 years has less executability risk. If we wait two  
5 years to come back, and in 2024 the decision is that we  
6 need to get offshore wind by 2030, we will have lost  
7 two years, and then that opportunity is gone. If we  
8 decide we want offshore wind by 2032 in some of the  
9 portfolios, then we would have lost two years and would  
10 have to incur additional risk to try to do a ten-year  
11 project in eight years because we had not been  
12 expeditious with the prior two years.

13 Q. Thank you.

14 A. You're welcome.

15 CHAIR MITCHELL: Okay. Just a question  
16 or two for you.

17 EXAMINATION BY CHAIR MITCHELL:

18 Q. Following up on the conversation you had with  
19 Commissioner Clodfelter about the Lee nuclear site, I'm  
20 just curious and I'm hoping you-all can help me  
21 understand. Siting new nuclear generating facilities  
22 at existing sites, be they the Lee site, which is  
23 undeveloped to a certain extent, or other sites that  
24 the Company owns on which nuclear is operated -- help

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1 me -- is that a possibility? Is that something you all  
2 have explored? Or is it -- can you speak to that?

3 A. (Chris Nolan) I can. So we are looking at  
4 siting in North and South Carolina. We are starting by  
5 looking at water availability, transmission access,  
6 land availability, seismic and population exclusion  
7 zones. So one of the challenges with existing sites is  
8 that sometimes populations grow up around them and then  
9 that becomes less advantageous. Some of the advanced  
10 reactors are more suitable, and the NRC is revisiting  
11 its guidance on population exclusion areas.

12 So we are following that. I don't know if  
13 you saw on the news, but the Dow Chemical is looking at  
14 siting an advanced reactor in what would be normally a  
15 more populated area. So we are continuing to look at  
16 all of those. Some of our sites are candidate sites,  
17 and we are looking at retired coal facilities as well.  
18 They weren't available when we were looking at doing  
19 the siting for Lee.

20 So I think we're taking a broad look and  
21 looking at the various aspects to screen them down into  
22 a small candidate list.

23 Q. Okay. So just to make sure I understand, so  
24 the SMR -- did you -- is your testimony that the

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1 advanced nuclear reactors are more suitable for denser  
2 areas than the SMR?

3 A. Correct.

4 Q. Okay. Okay. Well -- but you-all will  
5 continue to look for every opportunity to utilize  
6 locations that you already have or efficiently develop  
7 these --

8 A. That's correct.

9 Q. -- new technologies where it's feasible to do  
10 so?

11 A. That is correct.

12 Q. Okay. Let's see. The -- I think that's all  
13 for now. Let me just check in.

14 CHAIR MITCHELL: Any additional -- okay.  
15 Questions on Commissioners' questions, we'll start  
16 over here. Let's go CIGFUR and -- actually,  
17 Avangrid, do you have questions?

18 MR. SMITH: No at this time, Chair.

19 CHAIR MITCHELL: Okay.

20 MR. BURNS: No questions from CCEBA.

21 CHAIR MITCHELL: Okay. Go ahead.

22 MS. CRESS: Thank you, Chair Mitchell,  
23 just one.

24 EXAMINATION BY MS. CRESS:



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1           Q.     You -- the panel was testifying, I believe it  
2 was in response to a question by Commissioner  
3 Clodfelter about compressing the timeline and what  
4 risks would be associated with trying to expedite the  
5 timeline.

6                     And I believe the testimony was that there  
7 would be procurement risks and financial risks; is that  
8 correct?

9           A.     (Clift Pompee) That is correct.

10          Q.     Make it two questions.

11                    Are there any other -- would there be any  
12 other consequences from trying to compress the time  
13 frame, specifically with respect to increasing total  
14 project costs or potential associated rate impacts?

15          A.     Yes. So I did mention that there would be  
16 costs associated with accelerated development. So  
17 there would be development expenditures that would go  
18 up. And the -- but as I mentioned, the largest portion  
19 of the costs would be associated with CAPEX, and those  
20 would be at risk but not necessarily inflated due to  
21 the accelerated timeline.

22          Q.     Thank you.

23       EXAMINATION BY MS. GRUNDMANN:

24          Q.     I want to follow up on some questions from

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1 Commissioners Kemerait and Clodfelter. I will start  
2 with the question you received last.

3 Mr. Pompee, I think your response to  
4 Commissioner Kemerait's question about could we wait  
5 two years was that we would have lost two years; is  
6 that fair?

7 A. (Clift Pompee) Yes.

8 Q. I guess I'm a little confused by that  
9 response, because I thought that, in response to some  
10 questions that I asked on my direct exam, that it was  
11 my impression that development activities were going to  
12 be ongoing even if they were being conducted by Duke  
13 Wind over the course of the next several years?

14 A. So the question was around -- the way I  
15 understood the question was around, you know, the 8  
16 years versus 10 years. I can't speak to the work that  
17 is happening, you know, at Duke Wind. When we put the  
18 near-term activities together, those were our estimates  
19 based on what we would do as a regulated utility. I  
20 don't know what work would happen with Duke Wind in the  
21 next two years.

22 And that's specifically why we're asking for  
23 that, is because why we're asking for approval to incur  
24 these costs is because the Commission would have

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1 maximum optionality as well as direction to direct the  
2 regulated utility in what direction they wanted us to  
3 go.

4 Q. But you agree with me, do you not, that in  
5 looking at J-5, which is on page 8 of Appendix J, that  
6 if we look at the timeline as it presently exists, that  
7 in the near term, by 2023 -- so let's say May 2023 --  
8 the plan would be to submit the SMP to BOEM, and my  
9 understanding from your direct testimony is that that  
10 process is underway at Duke Wind at this time; is that  
11 correct?

12 A. It is my understanding that it is.

13 Q. And then during that time frame, you're  
14 waiting on approval from BOEM for the SAP, which by  
15 your table at J-5 occurs in and around 2024?

16 A. So as I mentioned, the BOEM allows a maximum  
17 of five years to submit a construction operations plan.  
18 It doesn't take necessarily five years do that. So,  
19 for example, Duke Wind, as a hypothetical, could submit  
20 a SAP, as required by BOEM, within one year of  
21 acquiring the lease. And then would not necessarily be  
22 obligated to do COP work in order to meet the five-year  
23 timeline.

24 So we come back in 2024, and what I meant by

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1 losing time is we would have lost the time to have done  
2 the engineering work associated with submitting a COP,  
3 taking away the opportunity to submit a COP inside of  
4 five years, as a hypothetical.

5 Q. Okay. But -- so one of the other things that  
6 the Commission could order the Companies to do -- and  
7 this is in part a follow up to Commissioner  
8 Clodfelter's question where he asked you whether we --  
9 we don't really know whether Kitty Hawk or Carolina  
10 Long Bay are the cheapest, right?

11 One of the things the Commission could order  
12 the Companies to do, or appoint a third party to do, is  
13 to study these two projects and to develop more  
14 detailed cost estimates of these two projects, and to  
15 be able to come before the Commission in 2024 with more  
16 information about which one may or may not be cheapest,  
17 more feasible, more appropriate for the Commission to  
18 select as a resource as part of the Carbon Plan; isn't  
19 that fair?

20 A. Yes --

21 MS. LINK: Chair Mitchell, I would just  
22 say the first line of questions were legitimate  
23 based on Commission questions, but now we're going  
24 into something she could have asked him on cross.

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1 MS. GRUNDMANN: Commissioner  
2 Clodfelter's question was, "We don't know whether  
3 Kitty Hawk or Carolina Long Bay is the cheapest, do  
4 we?" I wrote it down verbatim. I'm following up  
5 on that very specific Commissioner question to seek  
6 clarity on what that means and how the Company  
7 responds to that very direct Commissioner question.

8 CHAIR MITCHELL: All right. I'm gonna  
9 overrule the objection, but I'm gonna ask you to  
10 state more succinctly your question, because it was  
11 compound and I lost it. So just please simplify  
12 the question, ask the witness so that he can answer  
13 and we can move on.

14 MS. GRUNDMANN: I'll do that. I  
15 apologize, it's late in the day, so I may be asking  
16 long questions.

17 Q. Commissioner Clodfelter, you recall when he  
18 asked whether we -- we don't know right now whether  
19 Kitty Hawk or Carolina Long Bay is the cheapest; do you  
20 recall that question?

21 A. I do.

22 Q. For purposes of the 2024 Carbon Plan, the  
23 Company or a third party could study that -- the Kitty  
24 Hawk lease and the Carolina Long Bay lease and present

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1 to the Commission more detailed information about the  
2 differences between those two parcels to decide which  
3 one is in the best interest of ratepayers; is that  
4 correct?

5 A. Mrs. Grundmann, I believe you're agreeing  
6 with my testimony here. That's exactly what -- that's  
7 why we think it's important to do the site assessment  
8 plan and start the development work, so that we can  
9 have the information to say some of the questions such  
10 as net capacity factor, wind turbine placement. All of  
11 these questions would be hypothetical and not reliable  
12 without the early work that goes into classifying the  
13 site. If we do that, then we have more optionality to  
14 be able to make an informed decision in 2024.

15 Q. But the Commission could order that that  
16 analysis work be done without the transfer of the lease  
17 to Duke Energy Progress, could it not?

18 A. I would defer that question to Mr. Repko.

19 A. (Regis Repko) I -- I'm hearing your  
20 questioning if the Commission can direct the affiliate  
21 to do the analysis work?

22 Q. No. If it could direct you to do the  
23 analysis work. And would you not be in a position  
24 where you could request information from the affiliate

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1 about the net capacity factor? Is it absolutely  
2 necessary for you to -- let me back up.

3 We've indicated, have we not -- and I  
4 understand we can't talk about the specifics, but that  
5 the Company -- that there is an agreement in place with  
6 Avangrid, is there not?

7 A. Correct.

8 Q. And without getting into the specifics of  
9 that, there is already some sort of a contractual  
10 arrangement that creates some rights among the parties.

11 You could enter similarly into some sort of  
12 an NDA with Duke Wind that would allow you to share  
13 information with them as well, would it not?

14 MS. LINK: Chair Mitchell, I think we're  
15 now getting way far afield and probably outside the  
16 scope of the expertise of this panel since we're  
17 probably wading in affiliated -- other affiliate  
18 agreements as well as code of conduct issues.

19 CHAIR MITCHELL: I'll sustain it. But  
20 I'll allow you to ask the question a different way.  
21 Simplify it. Ask the question so he can answer it.

22 Q. Is it your position that the only way for  
23 Duke Energy Progress to be able to study the cost  
24 differences between the Kitty Hawk and Carolina Long

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1 Bay parcels is for Duke Energy Progress to own the  
2 Carolina Long Bay parcel?

3 A. That's our position, that it's the most  
4 efficient. And I'm not aware of other potential  
5 arrangements.

6 MS. GRUNDMANN: Since I think any  
7 follow-up questions would involve confidential  
8 information, I'll defer those questions until the  
9 rebuttal testimony. Those are all the questions  
10 that I have.

11 CHAIR MITCHELL: Go ahead.

12 EXAMINATION BY MR. FREEMAN:

13 Q. Panelists, thank you for your attention  
14 again.

15 Have we considered siting the new nuclear at  
16 some of these coal plants that are either retired or  
17 being retired?

18 A. (Chris Nolan) Yes.

19 Q. Did I understand -- in following up on the  
20 question about what would happen if we push this off  
21 for two years, did I understand, Mr. Pompee, your  
22 testimony earlier was that, unless you take certain  
23 steps, Duke Wind must take certain steps, or else the  
24 oceanic -- the BOEM people can say you're resting on



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1 your laurels, we're gonna lapse the lease; is that a  
2 risk if they don't move forward with certain actions?

3 A. (Clift Pompee) It is, insomuch as the  
4 maximum allowable time. And Mr. Repko testified  
5 earlier that, you know, BOEM has made exceptions to the  
6 timelines in the past. And my testimony was that, you  
7 know, the SAP has a one-year and the COP has a  
8 five-year. So, you know, in between there, you know,  
9 you've got some time, whether you choose to accelerate  
10 or not.

11 Q. So I know Duke Wind isn't here today, but we  
12 can make an educated guess that Duke Wind is not gonna  
13 want to lose its \$155 million lease and we'll move  
14 forward with the SAP at least, right?

15 A. I think that's a fair assessment.

16 Q. Thank you. I don't have any more questions.  
17 Thank you-all.

18 MS. LINK: I have no redirect.

19 CHAIR MITCHELL: Questions on  
20 Commission's questions? No questions on  
21 Commission's questions? Just being clear.

22 MS. LINK: I apologize. I have no  
23 questions on Commission questions.

24 CHAIR MITCHELL: Okay. Just being

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1 clear. All right. Okay. With that, I'll  
2 entertain motions. You-all may step down. Thank  
3 you for your testimony today. You are done for  
4 today. Counsel, anybody need to move documents  
5 into the record?

6 MS. LINK: Chair Mitchell, we don't have  
7 any exhibits to the testimony.

8 MS. CRESS: Chair Mitchell, at this  
9 time, CIGFUR II and III would move its Long  
10 Lead-Time Panel Direct Cross Examination Exhibits 1  
11 and 2 be entered into the record.

12 CHAIR MITCHELL: All right. Hearing no  
13 objection, motion is allowed.

14 (CIGFUR II and III Long Lead-Time Panel  
15 Direct Cross Examination Exhibits 1 and  
16 2 were admitted into evidence.)

17 MR. SNOWDEN: Chair Mitchell, at this  
18 time, CPSA would move that CPSA Duke Long Lead-Time  
19 Resource Panel Direct Cross Exhibit 1 to be entered  
20 into the record.

21 CHAIR MITCHELL: Motion's allowed.

22 (CPSA Long Lead-Time Panel Direct Cross  
23 Examination Exhibit 1 was admitted into  
24 evidence.)

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1 MR. FREEMAN: Chair, the Public Staff  
2 would move its exhibit Long Lead-Time Resource  
3 Panel Direct Cross Examination Exhibit 1, which was  
4 "Centrus Becomes first U.S. Licensed HALEU  
5 Production Facility," into evidence.

6 CHAIR MITCHELL: All right. Motion is  
7 allowed.

8 (Public Staff Long Lead-Time Panel  
9 Direct Cross Examination Exhibit 1 was  
10 admitted into evidence.)

11 CHAIR MITCHELL: All right. At this  
12 point in time, what I'd like for, Duke, for you-all  
13 to do is recall Mr. Roberts and Ms. Farver to come  
14 up and take questions from the Commissioners. I'm  
15 hoping that we could get through that -- questions  
16 from Commissioners and questions on Commissioners'  
17 questions today.

18 MR. JIRAK: Thank you, Chair Mitchell,  
19 give us a couple of seconds to get organized.

20 (Pause.)

21 Whereupon,

22 SAMMY ROBERTS AND MAURA FARVER,  
23 having previously been duly sworn, were examined  
24 and testified as follows:

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1 CHAIR MITCHELL: All right. Let's go  
2 ahead and get started with questions from  
3 Commissioners. Just a reminder, y'all are still  
4 under oath. Commissioner Clodfelter, why don't you  
5 start.

6 EXAMINATION BY COMMISSIONER CLODFELTER:

7 Q. Ms. Farver, one question for you. I don't  
8 remember whether you were here for the testimony by the  
9 Modeling Panel. I'm not sure you were.

10 A. (Maura Farver) I've heard a fair portion of  
11 it.

12 Q. You heard a fair portion of it. I asked the  
13 Modeling Panel to respond to the suggestion that had  
14 been made by one of the consultants for one of the  
15 intervenors. And again, I'm not sure I remember  
16 exactly which one it was. But the suggestion was that  
17 Duke should consider testing the waters with a 2023 RFP  
18 for onshore wind just to see what you got back and how  
19 ready people were maybe to proceed with that. And that  
20 question was referred to you.

21 So I put the question to you. Will you -- do  
22 you want to comment on that suggestion?

23 A. Sure. I'm happy to. So we are excited about  
24 the opportunity for onshore wind, but recognize that

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1     there are challenges, particularly with siting of  
2     onshore wind. So we are working on ramping up internal  
3     preparations and capabilities for self-development, but  
4     also starting informal conversations with the onshore  
5     wind development community.

6             Obviously it's very nascent in North  
7     Carolina, and so we're trying to get more information,  
8     take the temperature; is there a pipeline of projects  
9     that would even be interested in a 2023 RFP opportunity  
10    for acquisition. So we haven't had formal stakeholder  
11    meetings on the topic yet, but that's sort of where  
12    we're headed. We want more information from the market  
13    to see if it is -- if there is even a pipeline that  
14    would be prepared as early as 2023 for an RPF. It  
15    might just take longer.

16        Q.     You don't have enough market intelligence now  
17    to be able to even think that the expense of an RFP  
18    would be worthwhile?

19        A.     Not yet.

20        Q.     Okay. That's a fair answer. Let me stay  
21    with onshore wind for just a minute but shift over to  
22    you, Mr. Roberts. I feel like -- I feel like I can see  
23    the red zone map in my dreams now. And every time I  
24    call it up in my head, I see that Carteret County and

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1 Hyde County are not in the red zone, and then I look at  
2 the NREL map on wind potential in North Carolina and lo  
3 and behold, there they are. So, you know, that's where  
4 it is, Carteret and -- well, we're not gonna talk about  
5 the ridge law, I'm not gonna talk about the ridge law.

6 But the wind potentials in Carteret and Hyde  
7 Counties, is there any transmission constraints that I  
8 need to worry about in connection with those locations?

9 A. (Sammy Roberts) Yes. You know, I think when  
10 you start looking at the aggregate resources that could  
11 influence the power flows coming in that area; i.e.,  
12 solar, offshore wind, and onshore wind, there will be  
13 some transmission constraints that result that need  
14 resolving.

15 Q. Are you able to identify what those might be?  
16 I mean, you've got a 230 kV line running from Havelock  
17 down east to Carteret County. Is that gonna be the  
18 likely point of interconnection for most onshore wind?

19 A. For onshore wind, if it's located in Carteret  
20 County, yes. It will probably be utilizing that 230 kV  
21 line.

22 Q. Are you aware of whether that's a constrained  
23 line now? Is it operating close to thermal load  
24 capacity?

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1           A.     Right. To my understanding it's not a  
2     constrained line currently.

3           Q.     Do you know how much headroom there is?

4           A.     I do not.

5           Q.     Don't know.

6           A.     And, I mean, with the interconnection studies  
7     that we perform that are in a TPL-001-like manner, you  
8     look at a loss of generator. So that would probably be  
9     Harris that would carry more of that load to the west,  
10    or more of that power to the west, and then you would  
11    look at loss of a worst-case line. So loss of a  
12    worst-case line would probably be that  
13    Havelock/Morehead line, unless you did a parallel line  
14    or upgraded to 115 line.

15          Q.     That's fair. Let me -- I don't know if you  
16    still have the exhibits from your -- when your panel  
17    was up. So I'm looking at Public Staff Transmission  
18    Panel Cross Exhibit 3. Is that one still around up  
19    there, floating around anywhere?

20          A.     I don't have numbers.

21          Q.     Perhaps your counsel can help you.

22          A.     (Maura Farver) We have the documents, we  
23    just don't know which one is which.

24          Q.     It's the 2022 NCTPC study scope document.

1           A.       (Sammy Roberts) Yes.

2           Q.       Okay. And you were asked some questions  
3 about the Document. One of the things that I wanted to  
4 ask you about is on page 6. So the scope of study here  
5 will model the system, assuming the retirement by the  
6 summer peak of 2027 of a number of CT units at  
7 Darlington and Blewett and Weatherspoon. It looks to  
8 be -- the total is just right at 750 megawatts of CTs.

9                   Those are essentially being retired because  
10 they're at the end of economic life; is that correct?

11          A.       So subject to check, I believe Darlington  
12 County 1, 2, 3, 4, 6, 7, 8, and 10 are already retired.

13          Q.       Already retired?

14          A.       Yeah. So it would just be captured in the  
15 study. And Blewett CTs 1 through 4 and Weatherspoon  
16 CTs 1 through 4 are not retired, so that would be new.

17          Q.       Those would be new retirements?

18          A.       That's correct.

19          Q.       Well, let me tell you where I'm -- I want to  
20 explore what you can tell me about it is because, I  
21 mean, Darlington, Blewett, and Weatherspoon sit right  
22 in the center of the red zone.

23                   And I was wondering whether or not, when  
24 you've done the supplemental studies and the other work



1 you've done on the red zone, whether you were taking  
2 these retirements into account already or whether these  
3 retirements might create some additional transmission  
4 headroom.

5 A. Right. So if these retirements are in an  
6 approved Carbon Plan, then we will take those into  
7 consideration for the time -- projected timing  
8 associated with the retirements. The Darlington units,  
9 my understanding is that generation has already been  
10 retracted from prior models, taken out of prior models,  
11 and thus, that space has already been used up.

12 Q. So your red zone identification of the 18  
13 projects in the red zone already assumed the Darlington  
14 retirements?

15 A. Yes, that's correct.

16 Q. Did it -- did your analysis assume the  
17 Blewett and Weatherspoon retirements?

18 A. Subject to check. If it was an approved IRP,  
19 2020 IRP, then yes, it would have considered that.  
20 That's subject to check.

21 Q. Okay. That's good. I can look at the IRP  
22 later. Thank you. Is there -- this is sort of for my  
23 general education but it also goes to some of the  
24 issues we're talking about.

1           So is there a sister or a brother  
2 organization to the NCTPC in South Carolina to do local  
3 transmission planning in South Carolina?

4           A.     They don't perform the same functions, but  
5 the CTCA, the Carolinas Transmission Collaborative  
6 Agreement or Association -- I can't remember what the A  
7 stands for -- CTCA.

8           Q.     CTCA?

9           A.     That's correct.

10          Q.     It performs the same function as the local  
11 transmission planner --

12          A.     Somewhat similar. They just primarily do  
13 reliability studies.

14          Q.     Do they do any public policy studies?

15          A.     I have not heard from the transmission  
16 planners that participate in that group that they've  
17 done public policy request studies.

18          Q.     Who are the participants in the CTCA?

19          A.     So it's DEP, DEC, South Carolina Public  
20 Service Authority, Sandy Cooper, and Dominion Energy  
21 South Carolina.

22          Q.     Organized very similarly to the  
23 North Carolina collaborative? Similar decision-making  
24 process?

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1           A.       I'm not sure what their organizational  
2 structure or decision-making process is.

3           Q.       Okay. Let me tell you what I want to ask you  
4 about there is -- I don't recall, but I think there's  
5 either four or five of the 18 red zone projects that  
6 are in South Carolina. I only know that by looking at  
7 the names of the projects and knowing where those  
8 places are.

9                   How many -- can you correct me on the exact  
10 number, how many of the 18 are in South Carolina?

11          A.       I'll have to look at the map, I'm sorry.

12          Q.       Okay.

13          A.       I know four -- the four in DEC are in  
14 South Carolina.

15          Q.       All four?

16          A.       Yes. And then I believe a portion of the  
17 Robinson Rockingham 115 is in South Carolina, and  
18 the -- or 230, 230. And then the Weatherspoon-Marion.

19          Q.       That would be a South Carolina -- between the  
20 Weatherspoon plant and Marion?

21          A.       Yeah. Of course, the Weatherspoon end is in  
22 North Carolina. I believe the Marion end would be  
23 impacting South Carolina.

24          Q.       Do you know whether those projects have been

1 reviewed by the CTCA and put into any transmission  
2 plants in South Carolina?

3 A. No, I don't believe they have been included  
4 in CTCA's reliability study.

5 Q. Is there any plan to submit them for  
6 reliability study in South Carolina?

7 A. Not to my knowledge.

8 Q. Is there some other approval process that  
9 those transmission projects in South Carolina need to  
10 go through in order to get you into a position where  
11 you can start construction?

12 A. My understanding --

13 Q. Or right-of-way acquisition and construction.

14 A. My understanding -- so these are just true  
15 upgrades to existing lines; however, with Robinson  
16 Rockingham being at 230 line, I believe there's a  
17 stipulation in the South Carolina statutes that a CPCN  
18 would be required, even though it's just an upgrade.

19 Q. What happens if you don't secure the  
20 necessary approvals for those South Carolina lines?

21 A. Right. So we would continue to pursue that  
22 approval to try to persuade the South Carolina Public  
23 Service Commission of the need for that upgrade in  
24 order to locate more solar, even if, you know,

1 South Carolina in the hot solar viability areas, upper  
2 PD area.

3 Q. Are those projects in your most recent  
4 South Carolina IRP?

5 A. So there is quite a bit of solar in the  
6 South Carolina IRP.

7 Q. What about the transmission projects that are  
8 in the red zone?

9 A. No, that wasn't included in the modified IRP  
10 that was submitted in 2021.

11 Q. Okay. I want to ask you a question about  
12 your testimony on page 39, and it's -- I'll tell you  
13 where the question is going is I'm just not sure I  
14 understand it. So I'm looking really for basic  
15 understanding here. Starting on line 15, you have a  
16 sentence that says, "The Commission's acknowledgement  
17 of the need for the RZEP projects to interconnect new  
18 solar generation and meet the objectives of the Carbon  
19 Plan will provide strong evidence to the NCTPC that  
20 approval of the projects in the 2022 transmission plan  
21 is a reasonable and prudent step."

22 And then this is where I got lost. It then  
23 says, "In the alternative, based on the results of  
24 supplemental studies, the Commission should acknowledge

1 the need for the 15 RZEP projects identified in those  
2 studies."

3 What's the altern- -- what's the choice I'm  
4 being asked to make there in the alternative?

5 A. So the original red zone expansion plan  
6 consisted of --

7 Q. Eighteen.

8 A. -- eighteen projects. Yes. And so the time  
9 this direct testimony was written, we were requesting  
10 acknowledgement that all 18 were needed. But, you  
11 know, based on other studies, the supplemental studies,  
12 where it showed that the Erwin-Milburnie 230, the  
13 Sutton Wallace 230, and the Rockingham West End 230  
14 west line upgrades were not needed, or didn't show up  
15 at that point in time in those supplemental studies.  
16 Based on those three lines showing up, the alternative  
17 would be to acknowledge those 15 -- the remaining 15.

18 Q. So that's -- the alternative is either  
19 endorse 18 or endorse the 15?

20 A. That's correct.

21 Q. Thank you. I just wasn't sure how I should  
22 be reading that. I want to ask you some questions  
23 about the discussion of the potential transmission  
24 upgrades related to the retirement of the Marshall coal

1 units, and I think you talk about that on page 53 of  
2 your testimony.

3 A. Okay.

4 Q. Tell me again what -- what is the need, the  
5 system need that has to be addressed when you retire  
6 those Marshall units? What's the transmission need?  
7 What occasions that need?

8 A. Right. So at certain load levels, you've got  
9 McGuire plant, 20 -- about 20 -- close to 2,300  
10 megawatts to the south, and you've got Marshall plant  
11 to the north, and you've got two 230 cable lines in  
12 between, we call them our west lines, or bus to bus it  
13 would be the Marshall/McGuire 230 lines. And so at  
14 certain load levels, if you don't have enough Marshall  
15 generation on the McGuire generation to the south, we  
16 influence the power flow on those lines such that, if  
17 you lose one of the 230 lines, the other one will  
18 overload. And that's why the Marshall must-run --  
19 reliability must-run procedure is documented to that  
20 effect.

21 Q. So it's a contingency to keep the load in  
22 balance between those two 230 Ks? Are there any  
23 solutions to that, other than an upgrade to the two  
24 lines?

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1           A.       Yeah. So we have looked at other solutions  
2 associated with that; just in concept, not a study.  
3 But anyway, such as series reactor, and that's still on  
4 the table. So it's not -- if that will work for all  
5 circumstances, then we could possibly do that. But  
6 right now it's looking like we would have to upgrade  
7 the two lines.

8           Q.       Say again what that solution was. Call it  
9 again, the name.

10          A.       The series reactor.

11          Q.       A what?

12          A.       Series reactor.

13          Q.       A series reactor.

14          A.       Yes.

15          Q.       Describe what that piece of equipment does,  
16 what its function --

17          A.       It just introduces impedance and series to  
18 the line. So it impedes flow on the line.

19          Q.       Is there -- is there a solution that involves  
20 perhaps operating one of the Marshall units as a  
21 synchronous condenser? Could that be a possible  
22 solution?

23          A.       So synchronous condensers are primarily  
24 associated with providing dynamic VARs, reactive



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1 support. So if it was a voltage issue, a synchronous  
2 condenser, you know, that's a good thought, if it's a  
3 voltage issue, to resolve.

4 Q. But your issue is not a voltage issue?

5 A. That's correct.

6 Q. At Marshall?

7 A. That's correct.

8 Q. Okay. If Marshall were to convert to another  
9 fuel source -- and I'll ask the Modeling Panel about  
10 that, I'm not asking you about that. But that would  
11 not require a transmission upgrade? If you were to  
12 convert Marshall 3 and 4 to a higher percentage of --  
13 or to 100 percent gas firing, you wouldn't have to do  
14 those transmission upgrades, would you?

15 A. So my understanding is that certain load  
16 levels, like in the 18,000 range, subject to check, you  
17 would need all four units online. And that's to  
18 protect against one contingency. If one of the units  
19 trips, which is that one contingency, and you lose one  
20 of the 230 lines, you still have enough generation to  
21 provide pushback.

22 Q. Okay. So the need is triggered by the  
23 retirement of 1 and 2; even if you're still operating 3  
24 and 4, you're still gonna have that need?

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1 A. That's correct.

2 Q. Okay. On page 53 -- I'm staying with  
3 Marshall for a minute -- let's see if I can find the  
4 sentence here. Mr. Roberts, I obviously have lost the  
5 place where the sentence is used. I think it's in the  
6 Carbon Plan, itself, and not on page 53. I think it's  
7 the sentence in the Carbon Plan that follows the  
8 sentence you quoted there on lines 9 through 13.

9 The sentence says something to the effect of  
10 these transmission upgrades would also earlier, while  
11 Marshall 1 and 2 are still running, permit you to  
12 operate them in something other than a must-run  
13 fashion.

14 A. At those load levels, correct. I mean,  
15 usually at those high load levels, if we don't have  
16 replacement generation elsewhere that can provide those  
17 megawatts, at those load levels we're gonna need those  
18 megawatts to serve the customer demand anyway.

19 Q. And so you might need that even before you  
20 retire 1 and 2?

21 A. That's correct.

22 Q. Is that being studied?

23 A. With respect to replacement generation?

24 Q. No, with respect to the upgrades to the

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1 McGuire to Marshall 230s; whether you need to bring  
2 those online sooner than the retirement dates of  
3 Marshall 1 and 2.

4 A. Yes. That's -- that project has been looked  
5 at with respect to timing.

6 Q. In the collaborative? Has it been looked at  
7 by the collaborative?

8 A. It hasn't been incorporated into the  
9 collaborative study yet.

10 Q. Okay. I think I'm gonna leave Marshall alone  
11 for now, but I want to move to Roxboro.

12 A. Okay.

13 Q. So as I recall your testimony yesterday, and  
14 be sure I got it right, I think the gist of the  
15 testimony was that once the Roxboro units are retired,  
16 all four are retired, that if you didn't have  
17 replacement generation at the Roxboro location  
18 interconnecting at the point where the Roxboro 1  
19 through 4 now connect, that you might still have to  
20 install a static VAR compensator?

21 A. Yeah. There would be a couple of  
22 modifications that would need to occur before then.  
23 And even then, we would need to conduct a pretty  
24 sophisticated or thorough study to determine exactly

1 what upgrades. But right now we're seeing a  
2 300-megavar static VAR compensator would be required,  
3 and you would need to install auto load tap changing  
4 transformers at our Harris plant.

5 Q. Okay. Well, that is a -- that is a VAR issue  
6 you're addressing.

7 A. That's correct.

8 Q. So is that -- so is operating one or more of  
9 the Roxboro units as synchronous condensers, is that an  
10 option to avoid having to do the VAR upgrade?

11 A. So that could be an option. The advantage of  
12 the static VAR compensator is it would be located  
13 closer to where the VARs are needed. If you try to  
14 transfer VARs a long way over the transmission system,  
15 the transmission system just sucks them up for the  
16 power flow.

17 But without that amount of megawatts there at  
18 Roxboro trying to move across that transmission system,  
19 a static VAR compensator may -- may help. Excuse me,  
20 I'm sorry, a synchronous condenser may help.

21 Q. What's the range of cost of an SVAR  
22 compensator, SVC?

23 A. A static VAR compensator?

24 Q. Yeah.

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1           A.       For 300 megavars, subject to check, around  
2       50- to \$100 million. I can't -- I'll have to look.

3           Q.       And what would the cost be to operate one of  
4       the units at Roxboro as a synchronous condenser?

5           A.       I don't know that cost.

6           Q.       That is something the Company's willing to  
7       explore and investigate?

8           A.       Yes.

9           Q.       I mean, the SVC would go into rate base, but  
10       Roxboro is close to be being fully depreciated. I  
11       understand that difference, but I'm not really asking  
12       about that.

13          A.       Right.

14          Q.       All right. Give me just a second. I think I  
15       may have -- thank you for your help, by the way. I  
16       want to go back and ask you a question on page -- well,  
17       it's not in your testimony, but you'll know the answer.  
18       I think there is -- let me just ask the question and  
19       see if you could answer it. If not, I'll leave it  
20       alone.

21                   In the testimony of the Modeling Panel, there  
22       was a -- there were multiple maps of the red zone.  
23       They're everywhere. They're all over the place. And  
24       there is one map in which the DISIS projects are

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1 overlaying with the red zone map. And I was just  
2 curious as a matter of information, two -- there are  
3 two large -- fairly large battery projects in the DISIS  
4 cluster that are right around Charlotte.

5 What are those projects, do you know?

6 A. So just to give you a page number here, on  
7 page 35, Figure 2, I believe, is --

8 Q. Oh, it's -- it's in yours as well as in  
9 theirs? Okay.

10 A. Yes.

11 Q. Like I say, the red zone is everywhere.

12 What are those two projects? Can you tell me  
13 more about them?

14 A. Is one of them Allen?

15 A. (Maura Farver) I don't know.

16 A. (Sammy Roberts) I'm not sure what those two  
17 battery projects are. I would have to look at the  
18 DISIS queue and see.

19 Q. I tell you what, I can do that or have  
20 Commission staff do that later. I just thought you  
21 might know here today off the top of your head and I  
22 could check that off my worry list. That's fine.  
23 That's all I have.

24 CHAIR MITCHELL: Commissioner Duffley?

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1 COMMISSIONER DUFFLEY: (No response.)

2 CHAIR MITCHELL: Okay. Commissioner

3 Hughes?

4 EXAMINATION BY COMMISSIONER HUGHES:

5 Q. Yeah, I have a question, but it might be more  
6 appropriate to witness Roberts on the Reliability  
7 Panel. So given where we are, yeah, I'm willing to  
8 defer to him. But if you -- Ms. Farver, if you have a  
9 quick answer, I just want to understand a little bit  
10 about resiliency versus reliability. We've talked a  
11 lot about reliability, the modelers talked about  
12 reliability, your testimony is full of reliability.  
13 But you also talked about expanding, planning, and  
14 becoming more integrated.

15 Should we be thinking about resiliency? Some  
16 of the intervenors have brought it up. Do these  
17 transmission projects, the portfolios combinations, if  
18 we started looking at them with the resiliency lens, do  
19 they look different?

20 A. (Sammy Roberts) Yeah, absolutely. The cost  
21 benefit analysis showed that, with respect to replacing  
22 these old assets, transmission assets with newer  
23 equipment, with replacing wood poles with steel poles,  
24 new structures and new conductors, that you would see

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1 resiliency improvements. That's, kind of, how the  
2 model looks -- the probabilistic model looks at it that  
3 way with respect to failure and influencing customer  
4 outage.

5 And the other thing, if you're think about  
6 resiliency with respect to restoration for storms,  
7 those structures have been shown through hurricane that  
8 we've had to greatly accelerate restoration. And by  
9 that, I mean now you have trees leaning on lines that  
10 you take a clearance and you cut off, versus in the  
11 past, tree hit a line, the wood structure would break  
12 and then you're replacing -- it usually takes down a  
13 few spans, and then you're replacing all those spans  
14 with new structures.

15 Q. Okay. Again, so it's mainly when you're  
16 doing these replacements.

17 But when you're talking about full-out  
18 combinations or lines you work on or different parts of  
19 the state locational kind of issues that might have a  
20 resiliency impact, distance to load centers, that kind  
21 of thing, should we be talking more about that or will  
22 we be talking more about that in the future as  
23 supposedly -- you know, as the world gets to be a more  
24 dangerous place?



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1           A.       Yeah. I think resiliency and reliability  
2       kind of go hand in hand. And yeah, I think we need to  
3       keep our focus on that. The House bill requires us to  
4       focus on reliability piece. I don't know that the word  
5       "resiliency" is in the House bill, subject to check.  
6       But I think that is an important point. We do need to  
7       look at resiliency benefits as well, as we're going  
8       through this holistic proactive transmission planning  
9       process.

10          Q.       Okay. So in the future we can do that?

11          A.       Yes.

12          Q.       All right. In the interest of time, that's  
13       good.

14                   CHAIR MITCHELL: Okay. Commissioner  
15       Duffley?

16       EXAMINATION BY COMMISSIONER DUFFLEY:

17          Q.       Commissioner Hughes' questions sparked a  
18       question in my mind. You mentioned and testified  
19       earlier, you stated that there was a net benefit of  
20       these large projects based upon a cost benefit  
21       analysis.

22                   Where can the Commission find the inputs or  
23       review that cost benefit analysis? Is did in the NCTPC  
24       or is it in something you filed in the Carbon Plan?

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1 A. Yes. It's described in the testimony.

2 Q. Okay.

3 A. The tool that was used, and it's a common  
4 industry tool, and it has a reliability component and  
5 it has an asset replacement component. We used the  
6 asset replacement component in this testimony, and it  
7 showed an average CBA of 15-plus.

8 Q. And so the information that I have is within  
9 this testimony, just limited to what -- if I wanted to  
10 dig down further, where would I go?

11 A. So you could review the information in the  
12 testimony, and if that's not sufficient, you need more  
13 information, you can send a question and we'll answer  
14 that.

15 Q. Okay. Thank you.

16 A. You're welcome.

17 CHAIR MITCHELL: Commissioner McKissick?  
18 Commission Kemerait?

19 EXAMINATION BY COMMISSIONER KEMERAIT:

20 Q. Mr. Roberts, I have just a couple of  
21 questions. First one is you talked about the  
22 transition cluster study, and I believe you said that  
23 there were only about 180 megawatts left still being  
24 studied in the transition cluster.

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1 Did I get that number right?

2 A. Subject to check, yes.

3 Q. And do you recall offhand how many megawatts  
4 for projects that initially entered the transition  
5 cluster?

6 A. That information is actually in the  
7 testimony. I'll just have to find the page.

8 (Witness peruses document.)

9 Actually, I think it's in Appendix P.

10 (Witness peruses document.)

11 Okay. So for DEP in the transitional cluster  
12 study -- sorry, in DEP in the transitional cluster  
13 study, there were 1,445.9 megawatts that showed  
14 dependency on the Friesian upgrades.

15 Q. Okay.

16 A. I don't see a total number. Oh, okay.  
17 Thirty projects requesting 1,860 megawatts of  
18 interconnection service withdrew after receiving phase  
19 1 transitional cluster study results that showed an  
20 average network upgrade cost of around \$0.17 per watt.

21 Q. Thank you. I just have a couple of questions  
22 that I think what I'm trying to get some clarification  
23 about is allocation of cost and really who pays for  
24 transmission upgrades when those upgrades would be --

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1 you know, if they are ultimately included in the  
2 NCTPC's local transmission plan.

3 And so for interest of time, I'll tell you  
4 what my understanding is, and then please correct me if  
5 I'm not correct so that -- so that just to keep it  
6 moving along. But currently these red zone upgrades  
7 are not included in the NCTPC's local transmission  
8 plan. So I think that we all heard a lot of testimony  
9 about that. But I think the importance of that is that  
10 means that those upgrades are not included in DEP's or  
11 DEC's baseline; is that correct?

12 A. That's correct.

13 Q. Okay. And then if they -- if these upgrades  
14 are to be included in the NCTPC's transmission plan,  
15 they would be these public policy projects that would  
16 be, I think, the first time that would be considered  
17 upgrades as public policy projects; is that correct?

18 A. That's correct. I mean, you could also state  
19 that they're for generation additions as well.

20 Q. Right. And I think there was also a little  
21 bit of testimony about they potentially could be  
22 considered to be reliability projects as well. But if  
23 they are included in the local transmission plan, or I  
24 should say approved in the local transmission plan,

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1 that means that, for purposes of later studies, like  
2 the 2023 DISIS cluster study, that they would then be  
3 in the baseline; is that -- is that -- is my  
4 understanding correct?

5 A. That's correct.

6 Q. And if they're in the baseline, then what I  
7 think that means is that, during the DISIS study, the  
8 cost of those upgrades would not be assigned to any of  
9 the projects in DISIS that otherwise might have -- that  
10 would have triggered previously those transmission  
11 upgrades?

12 A. That's correct. I mean, either you go  
13 through the process of your interconnection request,  
14 studying that, you get to an interconnection agreement,  
15 and the resulting upgrades the customer would pay for  
16 up front, if it's for a project they get reimbursed.

17 Q. Right. And then for the solar procurements  
18 that we'll be dealing with if -- for these projects  
19 that would have the red zone upgrades in the baseline,  
20 then those transmission cost upgrades would not be --  
21 would not be assigned to those projects, or I should  
22 say would not be included in their bids for solar  
23 procurements.

24 Is that a fair way to consider it?

1           A.       So I'll let Ms. Farver speak to what a  
2 potential 2023 procurement and selection basis would  
3 be, if that's been considered.

4           A.       (Maura Farver) I don't know that we have all  
5 the details worked out. But typically, if the cost of  
6 a transmission upgrade is in the baseline and the cost  
7 is not assigned to the generator, then that would not  
8 be considered part of the evaluation of the cost of  
9 that generator. However, for this 2022 RFP, the  
10 Commission specifically directed us to not include  
11 those upgrades. And so the current thinking is that  
12 that cost would be included in the evaluation for the  
13 2022 RFP.

14          Q.       Okay. And then just, I guess, one final  
15 question that doesn't really deal with solar  
16 procurement.

17                   But if a project can still interconnect or  
18 enter into interconnection agreements outside of the  
19 solar procurements currently, and if a project that was  
20 going through DISIS is looking to interconnect and  
21 enter into an IA, and those red zone upgrades are part  
22 of the baseline, then that project would not have to  
23 pay for any of the transmission cost to upgrade. Is my  
24 understanding about that correct as well?

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1           A.       (Sammy Roberts) Yes, that's my understanding  
2 as well.

3           Q.       Okay. Thank you. I think that was good  
4 clarification for the way that I understood it to work.

5                   CHAIR MITCHELL: Commissioner McKissick?  
6 EXAMINATION BY COMMISSIONER MCKISSICK:

7           Q.       Well, just one point of clarification. And  
8 this goes back to the testimony that was being provided  
9 about getting -- bringing in Midwest wind. And the  
10 thing I was curious about, apparently back in 2019,  
11 there was the study with PKM where they provided the  
12 estimates that came in about \$411 million.

13                   Now, as I recall, you said that there were --  
14 request is now in the queue, or more information would  
15 be provided at some point in the future, or there'd be  
16 more clarity about what could be done?

17                   But I guess put a marginal note here. So I  
18 just want to get some clarification about what that  
19 time frame would be or what you were waiting on, in  
20 terms of additional information that could be provided  
21 at a future date.

22           A.       (Sammy Roberts) So the 300 megawatts in 2019  
23 was associated with a feasibility study. And once  
24 again, just like you said, \$411 million and 84 months

1 for upgrades to be completed associated with that  
2 request. And that -- the sink for that feasibility  
3 study was Duke Energy Carolinas.

4 The Commission directed us to look at the  
5 potential for a capacity purchase from PJM,  
6 specifically for Duke Energy Progress. And so that's  
7 what we analyzed in the study. And we just want to get  
8 validation associated with that study with respect to  
9 the 1,000-megawatt TSR. And it's -- the results of  
10 that TSR will probably be valid with the exception of  
11 the network upgrades on the Company side. It'll  
12 probably be valid for either area.

13 Q. Be valid for either area?

14 A. That's correct.

15 Q. And when do you anticipate you'd receive some  
16 validation?

17 A. So PJM processes TSRs in parallel with the  
18 generator interconnection request, and so I'm not sure  
19 if their current queue reform will impact the timeline  
20 associated with receiving the information from that  
21 transmission service request, so I can't give you a  
22 definitive time.

23 Q. Okay. And I'd like to switch gears a little  
24 bit. I'm sure you heard the preceding panel. You were



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1 here, weren't you, during that time frame? Or maybe  
2 you were not.

3 A. So as far as the Long Lead Panel?

4 Q. Yes.

5 A. I was trying to recover a little bit.

6 Q. You were going through some food poisoning.  
7 In that case, don't worry about it, sir. I guess it  
8 didn't work. Thank you.

9 CHAIR MITCHELL: All right. We've come  
10 to the end of the day. Unfortunately, we did not  
11 complete the process with the Transmission Panel,  
12 so we will resume tomorrow with y'all on the stand  
13 to complete questions -- Commissioners' questions  
14 and questions on Commissioners' questions. We will  
15 be back on the record tomorrow at 9:30. So let's  
16 go off the record, please.

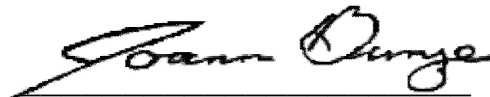
17 (The hearing was adjourned at 4:58 p.m.  
18 and set to reconvene at 9:30 a.m. on  
19 Wednesday, September 21, 2022.)  
20  
21  
22  
23  
24

## CERTIFICATE OF REPORTER

STATE OF NORTH CAROLINA )  
COUNTY OF WAKE )

I, Joann Bunze, RPR, the officer before whom the foregoing hearing was conducted, do hereby certify that any witnesses whose testimony may appear in the foregoing hearing were duly sworn; that the foregoing proceedings were taken by me to the best of my ability and thereafter reduced to typewritten format under my direction; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this hearing was taken, and further that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.

This the 24th day of September, 2022.



JOANN BUNZE, RPR

Notary Public #200707300112

