

PLACE: Dobbs Building, Raleigh, North Carolina

DATE: Wednesday, September 21, 2022

TIME: 1:47 p.m. - 4:32 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. Kemeraйт

IN THE MATTER OF:

Duke Energy Progress, LLC, and

Duke Energy Carolinas, LLC,

2022 Biennial Integrated Resource Plans

and Carbon Plan

VOLUME: 20

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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

RELIABILITY PANEL OF  
JOHN SAMUEL HOLEMAN, III AND SAMMY ROBERTS

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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. Mr. Snowden, I believe we were with you.

MR. SNOWDEN: Yes, ma'am.

Whereupon,

JOHN SAMUEL HOLEMAN, III AND SAMMY ROBERTS,  
having previously been duly sworn, were examined  
and testified as follows:

CONTINUED CROSS EXAMINATION BY MR. SNOWDEN:

Q. Good afternoon again, Mr. Holeman, Mr. Roberts. Mr. Holeman, I spent the lunch break trying to paraphrase as best I could your response to my question. You tell me if this is right.

One of the principal objections that you have to the modeling of storage is that energy storage is energy limited; is that right?

A. (John Samuel Holeman, III) It's energy limited and it's an energy taker. Energy limited energy taker.

Q. Okay. So when you say an energy taker, it can store energy but it doesn't generate it, right?

A. When I say energy taker, it takes -- it's not 100 percent efficient. It's 75 -- between 75 and

1 85 percent efficient. So it consumes more energy in  
2 charging than it's gonna discharge.

3 Q. Thank you for clarifying that.

4 So if you are charging batteries from just  
5 wind and solar, is it your testimony that, in an  
6 extreme winter event, you might have an energy  
7 shortfall?

8 A. What I said in my testimony was that that  
9 could well be the case. You could be in a weather  
10 pattern where there's little wind, you could be in a  
11 weather pattern where there's intermittent sun so you  
12 don't have the solar resources, and with a four-hour  
13 battery, that makes planning over the window of time  
14 you're gonna have you to deal with, it may be a three-,  
15 four-, five-day winter weather or some weather  
16 condition, it makes it difficult.

17 And that's where, from a capability  
18 perspective, I think you've got to model that  
19 characteristic of battery storage in your selection  
20 process as you look forward. As you try to make sure  
21 you've got enough tools in the system operator's  
22 toolbox.

23 Q. Okay. And so the tools that Duke would rely  
24 on, I guess, in addition to any available solar or wind



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1 to charge battery storage in an extended weather event  
2 would primarily consist of gas-fired generation; is  
3 that fair to say?

4 A. Let me ask a clarifying question. Are you  
5 talking about in current state or future state?

6 Q. In the future state, sort of, across the --  
7 well, let's say until 2030.

8 A. So if you look -- if you look at -- if you  
9 look at what resources we have over that window of  
10 time, all of it enables charging or pumping or whatever  
11 you're doing to get capability back into the upper pond  
12 or back into a battery. So as I look at the mix  
13 between today, and I think you said 2035; is that --

14 Q. We'll say 2035. That's fine.

15 A. So I look at the mix there, nuclear enables  
16 that pumping. Nuclear is rock solid bottom, it's the  
17 foundation generally of our day-to-day ability to meet  
18 our customers' load. Then you'd have natural gas.  
19 Then depending on the sun and the wind, potentially  
20 you'd have solar -- solar and wind. It's kind of a --  
21 I mean, the point of the Carbon Plan, it's an  
22 all-of-the-above option.

23 Q. Thank you. And so when you talk about that  
24 rock solid nuclear, you are referring to the Companies'

1 existing nuclear fleet, aren't you?

2 A. Yes, I am.

3 Q. Okay. Thank you. So in terms of resource  
4 additions, is it your view that the solution -- the  
5 primary solution for storage being energy limited is to  
6 add more dispatchable gas-fired generation?

7 A. I think it's all of the above. I think if  
8 you look at -- and I believe it's in the Carbon Plan,  
9 page 14, it shows, between now and 2035, additional  
10 gas -- I think it's depending on portfolio combined  
11 cycle and combustion turbine -- additional solar,  
12 additional storage. It's all of the above. Building  
13 on the capabilities that we would have with our  
14 nuclear. Keeping in mind -- there's a lot of moving  
15 pieces here, moving parts. Keeping in mind we're gonna  
16 be retiring approximately 8,000 megawatts of coal and  
17 its associated capability.

18 The system operator, I'm agnostic about the  
19 fuel and the technology. I mean, it's a fact in this  
20 situation. But I'm not agnostic about capability.  
21 We're gonna be retiring that, so you've got to replace  
22 that capability. So as I look at the mixes on slide --  
23 let me get my glasses on here. Look at the portfolios  
24 on slide -- page 14 of the execute summary of the

Page 19

1 Carbon Plan, I see all of the above. We will be able  
2 to charge, to pump based on the capabilities in that  
3 integrated plan.

4 Q. Okay. So --

5 A. (Sammy Roberts) And I would add, we have to  
6 go back to House Bill 951. And I'll read verbatim.  
7 "Ensure any generation and resource changes maintain or  
8 improve about adequacy and reliability of the existing  
9 grid." And then later, in Section 4 below that, that  
10 was Section 3. "The Commission shall not exceed the  
11 date specified to achieve the authorized carbon  
12 reduction goals by more than two years except in the  
13 event necessary to maintain the adequacy and  
14 reliability of the existing grid."

15 So what we're trying to do with each of these  
16 portfolios is ensure that it can maintain or improve  
17 reliability. So one of the things have you to consider  
18 with that is where your energy is gonna come from to  
19 charge those four-hour duration batteries.

20 Q. Understood. Thank you. And we will  
21 stipulate that the statute does require Duke to  
22 maintain the reliability of the grid. I guess what I  
23 am trying to identify here is what -- with respect to  
24 CPSA's portfolios, why you believe they have less

1 capability than Duke's portfolios?

2 A. So I believe what I stated -- and I was gonna  
3 say morning, but I believe it was afternoon -- earlier  
4 in testimony is that the -- we had a concern that the  
5 Brattle portfolios, there was no information indicating  
6 that they tested these portfolios against an extreme  
7 cold weather duration event similar to 2018.

8 Q. Did Duke test these portfolios against an  
9 extreme weather event?

10 A. So we subsequently did run the Brattle  
11 portfolio through the reliability validation model, and  
12 I can let the modeling group speak to the results of  
13 that.

14 Q. Is that reflected in your testimony anywhere?

15 A. No, it's not.

16 Q. Okay. When was that modeling done?

17 A. It was after -- it was during the -- I think  
18 it was actually after the rebuttal testimonies were  
19 submitted.

20 Q. Okay. So that hadn't --

21 A. Subject to check.

22 Q. To your knowledge, that has not been included  
23 in any testimony provided in this case?

24 A. That's correct.

1 Q. Okay. Thank you. Now, you mentioned extreme  
2 weather events.

3 What -- and maybe you've already answered  
4 this question, Mr. Holeman, but what resources that are  
5 not currently on Duke's system would the Company be  
6 seeking to add to its portfolio through 2035 that it  
7 would foresee using to charge batteries during extreme  
8 weather events?

9 A. (John Samuel Holeman, III) So as I look at  
10 portfolios that Duke has offered, I see new gas. And  
11 new gas, again, it's a fact it's gas, but it's the  
12 capabilities, it's the opportunities to run the long  
13 duration, it's the opportunities the dispatch bring it  
14 online, offline, the ability to load follow. It's  
15 known, predictable, dependable capability that we've  
16 used in the past, and we use effectively now, not just  
17 in the past. I would say that.

18 Q. Okay. And would you agree that CPSA's  
19 proposed portfolios add either exactly the same amount  
20 of gas that Duke has proposed or just slightly less, in  
21 terms of CTs, over the planned period?

22 A. Subject to check.

23 Q. Okay. So presumably, those portfolios would  
24 have very similar capabilities to Duke's portfolios to

1 maintain system reliability during those long duration  
2 weather events?

3 A. I don't know that I fully agree with that. I  
4 think one of the other things, as I screened the  
5 proposals, Brattle being one of them, and I looked at  
6 what we did in the Carbon Plan, we explicitly talk  
7 about the obligation of system operators to comply with  
8 NERC operating standards. And it drives a different  
9 look. It drives the look of number of hours you have  
10 unstirred energy. It drives the look at, okay, how  
11 many starts are you having amongst the resources that  
12 you currently have.

13 It's recognition, both in words and results,  
14 that our operators are gonna be in a world where they  
15 have mandatory reliability standards they have today.  
16 And for balancing, and that's generally what we're  
17 talking about here, is the BAL standards within the  
18 NERC parameters, the balancing standards.

19 And I don't see those changing, but there  
20 will be others added on. Standards around energy  
21 adequacy, standards around cold weather prep. And  
22 because we have to, we're in the unique position of  
23 having to comply and deliver on our obligation to serve  
24 and be compliant right now, we have the unique

1 opportunity to inform the plans of these operational  
2 realities.

3 And I think if you look at what EPRI's doing  
4 a lot now, they're trying to find those ways to  
5 operationalize these longer term plans that have  
6 historically depended on planning reserve margin --  
7 capacity, energy, megawatts, megawatt hours -- which  
8 you need do that but, it's not sufficient. You've got  
9 to dig into the capabilities that translate directly to  
10 operations: load following, regulation, the ability to  
11 run long hours, the ability to have known performance,  
12 the ability to deal with the operational  
13 characteristics of some of these new tools. Not new  
14 tools, but tools that we're continuing to learn from  
15 like solar and batteries. You need that dependable  
16 capability.

17 Q. Thank you, Mr. Holeman. With respect to  
18 CPSA's portfolios, did you do that digging into those  
19 things that you said is necessary?

20 A. It's subject to check, but I did look through  
21 there. I saw very little, if any, references to NERC  
22 or compliance.

23 Q. Okay. Did you investigate whether CPSA's  
24 portfolios would be consistent with the NERC BAL

1 standards?

2 A. As I look at it, I look at the results, and I  
3 look at consideration for operating reserves and the  
4 tools that our operators need, and I did not see it.

5 Q. Okay. Did you look at the level of operating  
6 reserves that would be available in CPSA's proposed  
7 portfolios?

8 A. I did not see any reference to operating  
9 reserves.

10 Q. Okay. But you didn't -- but you didn't  
11 consider that question, you just didn't see the  
12 reference there?

13 A. Ask me that again. I'm sorry.

14 Q. What I think I heard you say is that you  
15 didn't see any reference to operating reserves in  
16 CPSA's portfolios, not that you independently looked at  
17 that issue.

18 A. Well, in preparation for our time here, I  
19 looked at all the plans that came in from the  
20 intervenors, and I saw little, if any, reference to  
21 compliance, to NERC, to the burdens of operators, and  
22 operating reserves. I guess that's my answer.

23 Q. Do you know what level of operating reserves  
24 would be maintained in CPSA's portfolios?



1 A. I did not do that analysis.

2 Q. Okay.

3 A. I would defer that question to the modeling  
4 team.

5 Q. Okay. So let me ask you this.

6 Did you identify any point during the  
7 planning period where you would anticipate reliability  
8 issues would arise if one of CPSA's proposed portfolios  
9 were to be executed on?

10 A. Ask me that again. I'm sorry.

11 Q. Did you identify any particular point or year  
12 over the course of the planning period where you would  
13 expect reliability issues to arise if one of CPSA's  
14 portfolios were to be implemented?

15 A. So our challenge -- or not our challenge.  
16 This near-term opportunity or near-term window when  
17 we're gonna be retiring 8,000 megawatts of coal between  
18 now and 2035 is a very important window. And that's  
19 what I talked about earlier. The ability to add  
20 capability before you retire capability.

21 And that's why some of the changes,  
22 especially in the near-term requests that we're making  
23 of the Commission, are so important. We've got to get  
24 ahead of this. We've got to make sure we've added it

1 before we retire it. And I think, as I look at the  
2 plans, I look at the Duke Carbon Plan, that clearly is  
3 a message there. It's clearly a part of the core  
4 component of our Carbon Plan.

5 Q. Mr. Holeman, I didn't ask anything about  
6 Duke's proposed execution plan --

7 A. I did not see that.

8 Q. Okay. All right. Thank you very much.  
9 Those are all my questions.

10 CHAIR MITCHELL: Go ahead.

11 CROSS EXAMINATION BY MR. QUINN:

12 Q. Good afternoon, Mr. Holeman and Mr. Roberts.  
13 My name is Matthew Quinn. I am the lawyer for NC WARN  
14 and Charlotte-Mecklenburg NAACP, and I have a few  
15 questions for y'all this afternoon. And my questions  
16 are kind of a mix between the both of you. So if I  
17 make a mistake in who I pose them to, just correct me,  
18 and I apologize. I promise we'll get that right.

19 Mr. Holeman, I have some level of confidence,  
20 however, that my first question is going to go to you.  
21 In your direct testimony, you spent a great deal of  
22 time discussing the importance of meeting NERC's  
23 reliability standards; is that -- just to give us  
24 context, is that fair to say?

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1           A.       (John Samuel Holeman, III) I think generally  
2       that is correct. If you have a place you want to point  
3       me to, I'll be happy to turn to it.

4           Q.       Well, we can start at page 10 of your direct  
5       testimony, but honestly, sir, I don't think that's  
6       necessary.

7           A.       It's a central theme throughout.

8           Q.       Yeah, it's a central -- that's fair enough.  
9       So -- and my understanding from sitting in the  
10      courtroom or the Commission room this morning and  
11      listening to your biography is that you're responsible  
12      for compliance.

13                You're responsible on behalf of Duke for  
14      compliance with NERC standards; is that right?

15          A.       That is correct. As a NERC-certified system  
16      operator, I'm obligated to comply with the standards.  
17      I don't do that work anymore, but the people on my team  
18      that are in the control centers 24 by 7 by 365, that is  
19      their obligation.

20          Q.       Okay. And just, you know, for the record,  
21      NERC stands for North American Electric Reliability  
22      Corporation?

23          A.       That's correct.

24          Q.       And among other things, NERC is responsible

1 for developing and enforcing reliability standards; is  
2 that right?

3 A. That is correct.

4 Q. Okay. And I think you use some language in  
5 your testimony that shouldn't be controversial, but I  
6 think you said something to the effect of compliance  
7 with NERC is not optional, it's mandatory; is that fair  
8 to say?

9 A. That the standards are mandatory; that's  
10 correct.

11 Q. So NERC, it's a pretty influential  
12 organization when it comes to the reliability of public  
13 utilities in our nation?

14 A. I would say it's influential on the  
15 reliability of the electrical grid above 100 kV in  
16 North America.

17 Q. Okay. Understood. I would like to use an  
18 exhibit that was previously marked and put into  
19 evidence. I don't expect, Mr. Holeman, that you came  
20 into this Commission room with every exhibit that's  
21 been marked.

22 MR. QUINN: So I brought some extra  
23 copies for the witness, if I may approach?

24 CHAIR MITCHELL: Go ahead.

1 MR. QUINN: Thank you.

2 (Pause.)

3 MR. QUINN: And this document was  
4 previously marked as NC WARN, et al.'s Modeling and  
5 Near-Term Actions Panel Cross Examination Exhibit  
6 Number 8. And if the Commission needs any extra  
7 copies, I certainly have some.

8 Q. Have -- Mr. Holeman, were you familiar --  
9 were you aware of my discussion with Mr. Snider on the  
10 Modeling Panel about this particular exhibit?

11 A. I was listening; yes, sir.

12 Q. Okay. Now, my understanding is that Duke  
13 Energy Carolinas and Duke Energy Progress are both  
14 within SERC East; is that correct?

15 A. That is correct.

16 Q. Okay. And with Mr. Snider, I bungled the  
17 next question. I will try to do better this time.

18 But my understanding is that SERC East is  
19 under NERC in some way; is that correct?

20 A. So SERC East -- if you look at the structure  
21 in the industry right now, NERC is the electric  
22 reliability organization empowered by FERC. Underneath  
23 them is the Regional Reliability Organization, RRO,  
24 that is SERC. SERC doesn't stand for anything, it's

1 just the SERC Reliability Corporation. It covers --  
2 it's the largest of the subregions -- or the regions  
3 within NERC. And then within that, geographically, you  
4 have SERC East, which is basically North and  
5 South Carolina.

6 Q. Okay. And for SERC East, NERC will establish  
7 reference reserve margins; is that right?

8 A. No, that's not the way it works. There  
9 are -- NERC, through its standards, BAL 2, for example,  
10 contingency reserves, which are the reserves that you  
11 use when you lose a unit, NERC will tell you you have  
12 to comply post loss of unit -- confirmed loss of unit,  
13 you have to return your area control error, ACE, to its  
14 precontingency or zero positions within 15 minutes of  
15 the event. You have to do that for any units  
16 80 percent or above your largest single contingency.

17 So NERC does not define the amount of  
18 reserves you have to carry, it defines the performance  
19 you have to deliver under certain situations.

20 Q. Okay. Sir, if you could turn to page 2 of  
21 this exhibit.

22 A. Yeah, I'm there.

23 Q. Okay. And this -- now, just to give you full  
24 disclosure here, this is two pages out of a much larger

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1 document. I think you can see that. I don't think  
2 it's necessary to go through the whole document, just  
3 for paper's sake.

4 But this second page of this exhibit is for  
5 SERC-E or SERC East, correct?

6 A. Correct.

7 Q. Okay. And again, just for clarity, both DEC  
8 and DEP are within SERC East, right?

9 A. That is correct.

10 Q. Okay. And you'll see, at the bottom of this  
11 chart, there is a reference reserve margin level  
12 percentage, correct?

13 A. That is correct.

14 Q. And for 2020 through 2029, for SERC East the  
15 reference reserve margin percentage is 15 percent; is  
16 that correct?

17 A. As I'm reading this document, that is  
18 correct.

19 Q. Does that sound right to you?

20 A. I'm reading it. It's what it says,  
21 15 percent.

22 Q. Okay. I mean, is that consistent with your  
23 understanding, I guess is what I meant to ask?

24 A. It is the reference reserve margin per this

1 sheet of paper.

2 Q. Now, my understanding, and tell me if I'm  
3 wrong, but if a utility's planning reserve margin meets  
4 SERC East's reference reserve margin, then NERC will  
5 assume that that utility's planned resources are  
6 adequate to manage the risks of capacity deficiency; is  
7 that correct?

8 A. No. This is just the first part of that.  
9 This information on the 2019 long-term reliability  
10 assessment is what it says it is, it's a long-term  
11 assessment. It's looking at things from a very  
12 generalized perspective. You know, if there was a  
13 really low number on there, I think NERC would -- we  
14 would have to explain that to NERC -- or SERC in this  
15 case.

16 But what really counts for operating  
17 standards, operating mandatory standards, is what you  
18 have in the hour you're in or the day you're in. What  
19 you do have today? When it's 90 degrees in the  
20 Carolinas, really hot, you're already into September,  
21 you're already in the outage season, what do you have  
22 today for your operating reserves? What do you have  
23 today for your contingency reserves? What do you have  
24 today for the reserves you're gonna put on load



1 following so you can keep track of the variations  
2 within your customer demand?

3 And all three of those components factor in  
4 to balancing standard 1, balancing standard 2, and  
5 balancing standard 3, which has to do with frequency  
6 response. So this is a checkpoint for our regulators,  
7 whether it's SERC or NERC, to look at and say, yeah,  
8 that's -- okay, they're -- they're near what they said  
9 they would like to be, the reference number, but this  
10 does not translate into real-time operations. There's  
11 too many variables, forced outages, load forecast error  
12 to say that you're adequate based on this number.

13 Q. And is it fair to say that if the Companies  
14 were operating at least at that 15 percent reference  
15 reserve margin level, that's gonna be sufficient for  
16 NERC purposes?

17 A. I don't know that I can say yes to that,  
18 because what the balancing standards say are you will  
19 perform to a certain characteristic. And the  
20 characteristics are more based on performance, not on a  
21 number that's on a long-term assessment. Remember, I'm  
22 an operator. I represent men and women that sit in a  
23 control center 24 by 7 by 365 making sure that we're  
24 reliable for our customers in North Carolina and

1 South Carolina here in the Carolinas.

2 And this number here may give an operator  
3 some certainty that, hey, we've planned the system in  
4 the right way, but they go into real-time operation  
5 mode. They're going, okay, what do I have right now.  
6 You know, we talked about earlier the Carbon Plan has  
7 over 200,000 hours of numbers like this. To an  
8 operator, it's what's in front of me right now. What's  
9 online right now? What's offline right now? What's  
10 the load doing right now? What's the cloud cover right  
11 now?

12 You know, that's what an operator is worried  
13 about, because they're the ones that have the unique  
14 responsibility to make decisions for the reliability  
15 and security in the system. They're one of the few  
16 employees I know in Duke Energy who have a document in  
17 their control center signed by me in my current role  
18 that says you don't have to ask a sole to make sure  
19 you're making sure the system's reliable. You don't  
20 have to ask me, you don't have to ask my boss, you  
21 don't have to go up the chain. They have the unique  
22 unilateral authority to make decisions in the interest  
23 of our customers and the interconnection. And that's  
24 what counts to me.

1           This is good. I mean, I'd rather have more  
2   than 15 than less than 15, but this is more of a  
3   checkbox. Yeah, we're looking pretty good looking  
4   forward. What I care about is what's happening now.

5           Q.     You mentioned the operational perspective,  
6   and I do -- I'm glad you mentioned that, because I do  
7   want to bring our conversation around to the  
8   operational issue. In that vein, there's a part of  
9   your testimony I want to ask you about, I think it  
10   would it be a good idea for you to turn to it.

11          A.     Yup.

12          Q.     This is Reliability Panel Direct Testimony  
13   page 25.

14          A.     Give me just a second. I'm there.

15          Q.     And I want to talk about a sentence that  
16   appears between lines 3 and 7, okay?

17          A.     I'm there.

18          Q.     All right. Now, this sentence -- and just  
19   for the record, Mr. Holeman, I'm gonna read it. Just  
20   let me know if I read it incorrectly. What the  
21   sentence says is, quote, extreme weather scenarios in  
22   2021, both in summer and winter, set up for extreme  
23   operating conditions that stressed what have been  
24   historically adequate planning reserve margins, thus

1 exposing a potential incomplete picture for real-time  
2 operations when looking at capacity reserve margins in  
3 isolation, end quote.

4 Did I read that sentence correctly?

5 A. That is correct.

6 Q. And my understanding is basically what you're  
7 talking about there is extreme weather scenarios in  
8 2021 may have an impact on what -- our deliberations  
9 over the planning reserve margin; is that correct?

10 A. I'll give you an example. So --

11 Q. Well, I just -- sorry, just if that's  
12 correct, let me know.

13 A. Repeat what you said, please.

14 Q. I mean, I'm just trying to basically  
15 summarize what your testimony was on page 25, lines 3  
16 through 8.

17 I mean, my understanding is what you're  
18 saying is that extreme weather scenarios in 2021,  
19 specifically, in both summer and winter, set up extreme  
20 operating conditions that are relevant to  
21 reliability -- and that's relevant to reliability  
22 purposes; is that right?

23 A. That is a reasonable summary of what I said.

24 Q. Okay. So I'd like to then talk a little bit

1 about these weather conditions in 2021. And we had  
2 propounded some data requests on this topic that might  
3 be relevant to this discussion. And we previously  
4 marked them and had them admitted into evidence.

5 MR. QUINN: So again, if I may approach  
6 the witness, I would like to provide a copy of this  
7 exhibit, which for the record, was NC WARN, et al.  
8 Modeling Panel Direct Cross Examination Exhibit 2.

9 CHAIR MITCHELL: All right. You may  
10 approach. And counsel for Duke, do you want to  
11 take a look at the document first real quick?

12 (Pause.)

13 MS. DEMARCO: And Chair Mitchell, can I  
14 just -- we're now on the second exhibit that has  
15 been shown to the Modeling Panel, and I'd just ask,  
16 for expediency issues, if we could keep -- if we  
17 could not rehash questions the Modeling Panel has  
18 already addressed, I would appreciate that.

19 MR. QUINN: I will not be rehashing  
20 questions that the Modeling Panel has addressed;  
21 however, I think this data request, as we're gonna  
22 talk about, goes directly to the quote in  
23 Mr. Holeman's testimony on page 25, lines 3 through  
24 8. I mean, it goes directly to that issue.

1 CHAIR MITCHELL: All right. Go ahead,  
2 Mr. Quinn, I'll allow you to proceed. Just do your  
3 best to avoid redundancy.

4 MR. QUINN: All right. Very good.

5 Q. Now, Mr. Holeman, have you ever seen this  
6 data request before?

7 A. Yes. I saw it when you provided it to the  
8 modeling.

9 Q. Okay. And my -- tell me if you disagree, but  
10 this -- Duke's response to this data request listed the  
11 peak days in 2021 and 2022 for both DEC and DEP, and  
12 set out the operations of coal units -- certain coal  
13 units during those peak days; is that correct?

14 A. That's correct.

15 Q. Okay. And if you look at this data -- Duke's  
16 response to this data request, would you agree with me  
17 that, in 2021, on these peak days indicated in this  
18 data request, multiple of DEC's coal units were not  
19 operating; is that correct?

20 A. I'm going to defer this to Mr. Roberts.

21 A. (Sammy Roberts) Yes. I'll agree they're --  
22 on these peak days, there were coal units that weren't  
23 in operation.

24 Q. Okay. Very good. And this is -- just to be

1 perfectly clear about this, your testimony as a panel  
2 mentioned the extreme weather scenarios in 2021, right?

3 A. Yeah. But I think that was primarily  
4 referring to the Texas cold weather event in  
5 February '21. If you look back at -- if you look back  
6 at the weather and loads in DEC and DEP for like  
7 January of '21, it was kind of a mild weather winter.

8 Q. Okay. So I do want to go into that,  
9 actually, so -- but before we get there, I do want to  
10 just talk about a related subject to this exhibit. I  
11 am mindful of Chair Mitchell's excellent admonition  
12 that I not repeat questioning that has been done  
13 before. So I'm going to attempt to do the following  
14 question without going to another exhibit that I  
15 previously marked. I'm going to attempt.

16 But were you both present or observing my  
17 examination of Mr. Snider on the Modeling Panel?

18 A. Yes.

19 Q. Okay. And so are you aware that I showed  
20 Mr. Snider a similar to exhibit -- exhibit to what we  
21 just looked at, except it dealt with natural gas-fired  
22 plants?

23 A. Yes.

24 Q. Okay. And for the record, I believe this was

1 NC WARN Modeling Panel Direct Cross Examination  
2 Exhibit 4, just for the record.

3 So without us having to wheel that exhibit  
4 out and talk about it, would you admit here for the  
5 record that, similar to coal plants, on peak days  
6 during 2021 and 2022, there were multiple natural  
7 gas-fired units which were also not operating?

8 A. There were some gas units that were not  
9 operating.

10 Q. Okay. And that is true for both DEC and DEP,  
11 correct?

12 A. Yes.

13 Q. Okay.

14 A. (John Samuel Holeman, III) Could I add one  
15 thing there?

16 Q. Please.

17 A. So as you look at natural gas, this is an  
18 example of morphing from the planning world to the  
19 real-time operations world. Some of those units on  
20 that list are latent CTs. Latent CTs are quick-start  
21 capable. They can start -- they can go from zero load  
22 to full load in less than 15 minutes, thus qualifying  
23 for contingency reserve status. So when they're  
24 offline, that doesn't mean they're not needed, that



1 doesn't mean they're in excess, it means they're used  
2 for another capability that's needed for essential  
3 reliability services.

4 We can start those in 15 minutes when we lose  
5 a unit and we can recover in a compliant way. So when  
6 I look at that -- looked at that data set and saw them  
7 out there, my first response was, well, they're in  
8 contingency reserves, those Mill Creek units, they're  
9 in operating reserves. They're there if we need them.  
10 They can be started in 30 minutes.

11 That's the -- that's that capability  
12 component that much of the longer term planning tools  
13 don't capture. And that's what we've attempted to  
14 capture in our Carbon Plan. It's more than megawatts.  
15 It's more than megawatt hours. It's capability. And  
16 both of these exhibits show that perfectly. These  
17 units -- as Mr. Roberts said, these units that weren't  
18 running on 1/21, some of them were offline for economic  
19 reasons, it was a mild winter, it was COVID, as witness  
20 Snider spoke, so load was generally down, but these  
21 were available to us if we needed them.

22 I think the Commission wants us to have  
23 margin. You know, you read -- you read some of the  
24 language and some of the recanting or the description

1 of what happened in California earlier this month, the  
2 CEO of Cal ISO spoke about we were on the bottom of the  
3 reserve tank when they made the plea for public -- when  
4 they made the plea for public response. They were  
5 within 30 minutes of firm load shed once again.

6 And I'll tell you the truth, the heroes in  
7 all that were the citizens of California and the  
8 operators that had to make that tough call. But our  
9 ability to operate like this and have units offline and  
10 available to us to help us in these contingency events,  
11 they provide margin between what we have in  
12 North Carolina right now and what's happening in  
13 California right now.

14 So I think they illustrate the point.  
15 Operations -- operational capability is vital through  
16 this massive transformation we're gonna be going  
17 through. Not just us but everybody in the industry.  
18 We're rewiring the house while we're living in it. And  
19 if any of y'all have ever done that, you know how hard  
20 that is. And, unfortunately -- well, reality, it's not  
21 fortunate or unfortunate -- we can't say, okay, all the  
22 customers in North Carolina just, okay, wait for two  
23 years, we'll wait make this transition, we'll come back  
24 and hook you up. We don't have that luxury.

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1           We've got to delivery based on the language  
2   in House Bill 951 adequacy and reliability, maintaining  
3   what we have, if not improving it, not baselined in  
4   California but baselined in North Carolina. So I don't  
5   want to be in that place of having to explain to you  
6   why we were on the bottom of our reserve tank. I don't  
7   want to be sitting in front of you saying we can't do  
8   this again. Those are direct quotes from the CEO of  
9   Cal ISO.

10           I want that margin. I want that flexibility  
11   so I can deliver for my customers and communities. I  
12   mean, that's the purpose of Duke Energy, powering the  
13   lives of our customers and vitality of our communities.  
14   That's challenged if I don't get my operators a good  
15   toolbox full of good operational capabilities.

16           Q.     So I think this question might be directed,  
17   Mr. Roberts, to yourself.

18           You mentioned earlier in order to explain  
19   what some of these units not being operational during  
20   these peak events, you mentioned how -- I think you  
21   said the winter, maybe the winter and summer of 2021 or  
22   2022 was, I think, mild I think is the word you used;  
23   is that correct?

24           A.     (Sammy Roberts) For these peak loads, one of

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1 the things I will say is I can guarantee you our system  
2 operators were ensuring single contingency operation at  
3 all times. Meaning that they could take the loss of  
4 any element and they had a plan to recover and ensure  
5 reliable service.

6 And so there are must-run conditions, as you  
7 talked to with Mr. Snider, associated with these units.  
8 They were following those must-run conditions. There  
9 may have been substitute units on; i.e., substituting  
10 Rockingham CTs for Belews Creek -- a Belews Creek coal  
11 unit, et cetera. So I can guarantee you they were  
12 maintaining single contingency operation at all times.

13 MR. QUINN: Okay. So I'd like to  
14 identify an exhibit, with the Commission's  
15 permission, as NC WARN, et al. Reliability Panel  
16 Direct Cross Examination Exhibit 1.

17 (Pause.)

18 CHAIR MITCHELL: All right. Document  
19 will be marked for identification as NC WARN  
20 Reliability Panel Direct Cross Examination  
21 Exhibit 1.

22 (NC WARN Reliability Panel Direct Cross  
23 Examination Exhibit 1 was marked for  
24 identification.)

1 Q. All right. So I'm gonna have to do just a  
2 little explanation for why this document is set up the  
3 way it is.

4 So you'll see, on page 1, 2, 3, and 4, it's  
5 the Public Staff's fourth set of data questions, right?

6 A. Yes.

7 Q. All right. And then what I want to talk to  
8 you about is Data Request Number 4-2. You see 4-2?

9 A. Yes.

10 Q. Okay. And it's a large -- it's a long  
11 paragraph. I think it'll be sufficient for me to just  
12 read the first sentence, though. It says, quote,  
13 please identify the Companies' 10 highest winter daily  
14 loads for the period from December 1, 2021, through  
15 March 31, 2020 [sic].

16 Did I read that correctly?

17 A. Yes.

18 Q. Okay. If you could flip to Duke's response.

19 A. Last page?

20 Q. Second-to-last page.

21 A. Second-to-last.

22 Q. All right. And I see some confusion. I  
23 think I know why you're confused, maybe.

24 A. (John Samuel Holeman, III) Okay. I'm often

1 confused, but go ahead.

2 Q. Get in line, me too. So for 4 dash -- the  
3 second-to-last page has Duke's response to the Public  
4 Staff's data request. And the text of the response  
5 mentions summer daily loads. Do you see that? I  
6 believe that was just a typographical mistake, which is  
7 not a criticism. Just when I -- all the documents I  
8 see on the data site and everywhere else, Duke's  
9 response to 4-2 gives this summer daily loads  
10 narrative.

11 But then if you flip to the very last page of  
12 this exhibit, you'll see the spreadsheet which corrects  
13 that error and clarifies what we're talking about. Are  
14 you with me so far?

15 A. (Sammy Roberts) Yes.

16 Q. Okay. I know that was a long explanation. I  
17 did not know another way to do it. And I'm sorry about  
18 that long explanation.

19 But you'll see at the top -- very last page  
20 of this exhibit, you'll see at the top it has the same  
21 sentence we quoted before in Data Request -- Duke's  
22 response to Public Staff's Data Request 4-2, right?  
23 It's talking about the 10 highest winter daily loads,  
24 correct?

1 A. Yes.

2 Q. Okay. Thank you for bearing with me through  
3 that.

4 So in this -- in Duke's response, what we see  
5 is it lists DEC's top 10 highest 2021/2022 winter daily  
6 loads, and then DEP's top 10 highest 2021/2022 winter  
7 loads; is that correct?

8 A. That's correct.

9 Q. Okay. Now, I want to now compare those to  
10 Duke's historical winter loads before 2022 and 2021.  
11 So in order to do that, if you can please -- if you  
12 have it, hope you do, Carbon Plan Appendix F; do you  
13 have that in front of you?

14 A. I do not.

15 Q. Okay. I can provide a copy if it's needed.

16 A. I think Mr. Holeman has a copy.

17 Q. There you go. If y'all don't mind sharing.

18 A. (Witness peruses document.)

19 A. (John Samuel Holeman, III) Not at all.

20 Which Carbon Plan did you say?

21 Q. Appendix F.

22 A. I do not have that.

23 Q. Okay. I can provide you with a copy. And I  
24 would like to go to page 18, which I'm going to now

1 hand to you.

2 MR. QUINN: If I may approach the  
3 witness, please.

4 Q. This is the entirety of Appendix F. This is  
5 the page I want to talk about, page 18.

6 Now, so what I want to do is compare the  
7 charts on page -- the bar charts on page 18 to Duke's  
8 data request, okay?

9 A. (Sammy Roberts) Yes.

10 Q. Now, my understanding is two charts or  
11 tables, however they're labeled -- again, I don't have  
12 it in front of me because I just handed them to you --  
13 they provide Duke's winter peaks going back in time for  
14 several years.

15 If memory serves, it's like 10 years; is that  
16 correct?

17 A. Yes, it goes back to 2012.

18 Q. All right. Very good. Now, first let's talk  
19 about DEC.

20 So if we look at Duke's response to the  
21 Public Staff's Data Request 4-2, the highest peak load  
22 event for the 2021/2022 winter is 16,282 megawatts; is  
23 that correct?

24 A. Yes, that's correct.



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1 Q. Now, I want to now compare that to the table  
2 that you're looking at in Appendix F, page 18, the  
3 table that deals with DEC, okay?

4 Duke -- DEC's peak load event for the  
5 2021/2022 winter, it was higher than it was in 2012; is  
6 that correct?

7 A. That's correct.

8 Q. It was higher than in 2013; is that right?

9 A. That's correct.

10 Q. Higher than 2020, right?

11 A. That's --

12 Q. Or it's comparable, at least?

13 A. Comparable, yes.

14 Q. Okay. In my notes, I show it's higher, but  
15 again, I'm not looking at it. I know it's at least  
16 comparable. I hopefully didn't mess up that bad.

17 And it's also higher than 2021, correct?

18 A. That's correct.

19 Q. Okay. And it's comparable, furthermore, is  
20 it not, to 2017 and 2019?

21 A. That's correct.

22 Q. Okay. Now, similar questions but for DEP.

23 So if we look at the exhibit that's in front  
24 of you, this is NC WARN's Reliability Panel Cross

1 Exhibit 1, it reflects that DEP's highest winter load  
2 event for 2021/2022 is 13,148; is that right?

3 A. That's correct.

4 Q. Now, I want to compare that number to the  
5 second chart on Appendix F, page 18, okay?

6 A. (No verbal response.)

7 Q. Sorry, just for the record, I need a "yes."

8 A. Yes.

9 Q. Okay. So for 2021/2022 we were higher than  
10 DEP's peak in 2012; is that right?

11 A. Correct.

12 Q. Also 2013, right?

13 A. Correct.

14 Q. Also higher than 2020, right?

15 A. Correct.

16 Q. Okay. And also higher than 2021, correct?

17 A. Correct.

18 Q. Okay. And it's comparable to 2016 and 2019,  
19 correct?

20 A. Comparable, yes. They're a little bit  
21 higher.

22 Q. The point I'm trying to make is the 2021/2022  
23 winter was a fairly typical peak event, was it not?

24 A. I just remember January 2021 being kind of

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1 mild. But anyway, if you talk about weather normal, we  
2 don't always have weather normal. We rarely have  
3 weather normal. And so if you look back at 2018 with  
4 extreme cold weather, we can't just flip a switch and  
5 say I don't want this extreme cold weather, I want  
6 weather normal.

7 We have to plan for and operate to that  
8 extreme cold weather event, and we have to ensure we  
9 have adequate resources to cover our customers' energy  
10 needs through that extended cold weather event.

11 Q. Mr. Holeman, I think this next line of  
12 questions is gonna go to you, I think. You understand  
13 that it's common for Duke to rely upon imported energy  
14 in order to meet winter peak, correct?

15 A. (John Samuel Holeman, III) As it's  
16 available.

17 Q. As it's available. Right.

18 And it's commonly available, right?

19 A. For an operator, "commonly" doesn't have much  
20 meaning. I mean, if you need it and you don't have it,  
21 it's really not worth anything. For an operator it is  
22 either is or is not. Give you an example, this week,  
23 90-degree weather, September, outage season, we're  
24 running every available generator we have. And to the

1 extent that we can purchase to support that, we're  
2 doing it.

3 But it's -- you know, in the eyes of an  
4 operator, weather normal, average weather, that doesn't  
5 mean anything to them. They're dealing with what's in  
6 front of them in the window, what's the temperature,  
7 what's the load, what capabilities I have.

8 Your question may be better suited for the  
9 modeling group, because they're in that planning space.  
10 But to an operator, okay, so 2021 was a mild winter.  
11 I'll grant you that. But what if it wasn't? What if  
12 2020 -- 2023 isn't? We've got to be prepared for the  
13 average, the below average, and the extreme. I think  
14 the Commission wants us to be in that kind of zone,  
15 because we don't control the weather.

16 And I'll give you another example.  
17 October 3, 2019, hottest day of the year. 96 degrees,  
18 system average across the Carolinas. 19,100 megawatts  
19 of load in DEC. We were running every single generator  
20 we had. I think in the discussion earlier, you  
21 referenced Allen 1 through 5. We were running all of  
22 those units. Since then, three of them have been  
23 retired.

24 So in an operator's world, average doesn't

1 mean anything. It may inform them a little bit, but  
2 they're dealing with what's happening now. They're  
3 dealing with what is the temperature now, what do I  
4 have now, where are my reserves now, where is my  
5 flexible capability now. And the all-in approach, if  
6 we look ahead, and the diversity that we currently have  
7 now that the Commission has granted us that ability to  
8 have a very diverse capable system, allows us to  
9 deliver for our customers.

10 Q. So to bring us back to -- I think we got a  
11 little off the question there.

12 To bring us back to it, what my question was  
13 is, is it common for the Companies to import power in  
14 order to meet winter peak; is that a fair statement?

15 A. (Sammy Roberts) So back in  
16 January 7th of 2014, there wasn't anything to import.  
17 It was every EDA for themselves with respect to serving  
18 that cold winter morning peak load.

19 Q. Mr. Roberts, you were on the Transmission  
20 Panel, correct?

21 A. That's correct.

22 Q. How did you get so lucky as to go twice?

23 A. Just lucky, I guess.

24 Q. Okay. Do you have your Transmission Panel

1 testimony in front of you, by chance?

2 A. I do not.

3 Q. Okay. Then do you have it here with you in  
4 the Commission room?

5 MR. QUINN: Or if it helps, I could just  
6 approach the witness with a section of the  
7 transmission.

8 THE WITNESS: Yeah, I have it here in  
9 the Commission room, if this is relevant to  
10 reliability.

11 Q. It is absolutely relevant to the line of  
12 questioning that we're on right now.

13 (Pause.)

14 MS. DEMARCO: Chair Mitchell, just  
15 again, the Transmission Panel has been dismissed,  
16 so we're just curious how this has relevance to the  
17 Reliability Panel.

18 CHAIR MITCHELL: All right. Let's let  
19 him ask the question and then object if you -- if  
20 there's a basis for objection.

21 Q. If you could turn to page 61, please,  
22 Mr. Roberts.

23 A. Okay.

24 Q. If you could please read lines 12 -- or the

1 sentence that appears on lines 12 through 15.

2 A. Okay. "Yes. Reiterating what Companies  
3 communicated to the Commission in the 2020 IRP  
4 technical conference, the Companies' resource adequacy  
5 study accounts for 2,000 megawatts of non-firm  
6 assistance from neighboring systems during peak demand  
7 periods."

8 Q. So the Companies' resource adequacy study  
9 assumes 2,000 megawatts of non-firm assistance; is that  
10 right?

11 A. That's correct. And I'm glad you said  
12 "assumes."

13 Q. Now, again, I mention that this line of  
14 questioning would be to Mr. Holeman. I didn't expect  
15 to get so off track, I apologize. But, Mr. Holeman, I  
16 believe you testified that -- you testified concerning  
17 the brownouts in the CAISO system in August of 2020,  
18 and you gave that testimony as kind of like a lesson  
19 about, you know, what happens if you rely on imports.

20 Is that -- we can look at your testimony if  
21 you want to, but is that a fair summation?

22 A. (John Samuel Holeman, III) I would not say  
23 it was solely attributed to relying on imports. I  
24 think it was -- they found themselves in a situation

1 post-peak where they didn't have enough resources  
2 capability to meet the load. And when you're in that  
3 situation -- I wouldn't say it's a brownout either. I  
4 think, in an operator's world, it's controlled load  
5 shed.

6 You don't want to get to uncontrolled loss of  
7 system. That's what happened in the blackout of 2003.  
8 The operators, when faced with this, have to make the  
9 tough decision that we're going to -- we're going to  
10 cut the energy off to some of our customers to protect  
11 the grid. In California they're in the western  
12 interconnection; here in the Carolinas we're in the  
13 eastern interconnection. But that's what it is. I  
14 mean, I've heard the phrase brownouts before and that  
15 kind of thing. It's really not what actually happens.  
16 What happened in California is a controlled load shed.

17 Q. I used the wrong word there, and I admit  
18 that. If you could turn, please, to your reliability  
19 testimony. This is on page 78.

20 A. And I think, on 78, that's actually  
21 Mr. Roberts' testimony, but we can work with you.

22 Q. Whichever, it doesn't matter to me.  
23 Mr. Roberts, if you could turn to page 78, please.

24 So on page 78, you were asked a question, can



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1 you provide an example of how relying on imports can  
2 impact reliability; that's the question you were asked,  
3 right?

4 A. (Sammy Roberts) Yes.

5 Q. And then in response to that, just to cut to  
6 the chase, you talked about the August 2020 event in  
7 California; is that correct?

8 A. That's correct.

9 Q. Okay. Have you ever, Mr. Roberts, reviewed  
10 the root cause analysis issued by CAISO concerning this  
11 event in August of 2020?

12 A. I have reviewed the root cause analysis  
13 generated by Cal ISO, yes.

14 Q. And would you recognize a copy of it if you  
15 saw it?

16 A. Yes.

17 Q. Very good.

18 MR. QUINN: I would like to, then, mark  
19 an exhibit. This will be my last exhibit with this  
20 panel. I'd like to mark an exhibit NC WARN, et al.  
21 Reliability Panel Direct Cross Examination  
22 Exhibit 2. And I will pass that out.

23 CHAIR MITCHELL: All right. The  
24 document shall be marked NC WARN Reliability Panel

1 Direct Cross Examination Exhibit 2.

2 (NC WARN Reliability Panel Direct Cross  
3 Examination Exhibit 2 was marked for  
4 identification.)

5 Q. Okay. So, Mr. Roberts, can you identify the  
6 attached as the root cause analysis by issue concerning  
7 the August 2020 event that you referred to in your  
8 direct testimony?

9 A. Pardon, can you ask the question again?  
10 Sorry. I didn't catch all of it.

11 Q. Yeah. Can you identify this Exhibit 2 as the  
12 final root cause analysis concerning the August 2020  
13 event in California which you referenced in your direct  
14 testimony?

15 A. Yes, this is the document.

16 Q. Okay. All right. So if you could please  
17 turn to page 3.

18 A. (Witness complies.)

19 Okay.

20 Q. Just to orient, you know, the type of  
21 discussion I want to have here, I believe you  
22 referenced this incident in August of 2020 in  
23 California as, kind of, a lesson about relying upon  
24 imports to meet demand; is that right?

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1           A.       That's correct. That was one of the causal  
2 factors.

3           Q.       On page 3, this exhibit, and tell me if I'm  
4 wrong, it says, quote, three major factors that led to  
5 rotating outages.

6                   Did I read that correctly?

7           A.       That's correct.

8           Q.       So the first one says, quote, the climate  
9 change induced extreme heat wave across the Western  
10 United States resulted in demand for electricity  
11 exceeding existing electricity resource adequacy and  
12 planning targets.

13                   Did I read that correct?

14           A.       That's correct.

15           Q.       That didn't have anything to do with imports,  
16 right?

17           A.       Not directly.

18           Q.       So point 2 -- I don't think I need to read it  
19 for the record. You can look at it for yourself and  
20 just confirm.

21                   It doesn't have anything to do with imports,  
22 does it?

23           A.       (Witness peruses document.)

24                   Well, one of the points that I would like to

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1 make in referring to this, even this point too, is that  
2 it does say, on page 6, that they had imports received  
3 in day-ahead market where between 40 to 50 percent  
4 higher than imports under resource adequacy  
5 obligations, which indicates that Cal ISO was relying  
6 on imports that did not have a contract-based  
7 obligation to offer into the market. In addition to  
8 the rule changes, the CPUC made-to-resource adequacy  
9 program with regard to imports for resource adequacy  
10 year 2021, the CPUC may consider additional changes to  
11 current import requirements.

12 Q. And you quoted that had in your direct  
13 testimony?

14 A. That's correct.

15 Q. I wanted to get to that.

16 A. Okay.

17 Q. But you brought it up, so let's get to it  
18 now.

19 Now, my understanding of that paragraph is it  
20 is encompassed within point 3 on page 5, right? This  
21 deals with the market practices issue, correct?

22 A. It's the third bullet, and this summary of  
23 performance of different types of resources is under  
24 that heading.

1 Q. I understand. And that issue -- my  
2 understanding of that issue, if you look at page 5 of  
3 this root cause analysis, it discusses that issue in  
4 more detail; is that fair to say?

5 A. It's the third --

6 Q. Point 3, yes.

7 A. -- third bullet under that summary of  
8 performance of different types of resources.

9 Q. Okay. And the way that this root cause  
10 analysis addresses this issue is it deals with certain  
11 market practices. I'm gonna use a word, the word  
12 gamesmanship, for a lack of a better word. But there  
13 were some sort of market practices where people were --  
14 there were some things going on in the trading of  
15 energy which this root cause analysis considered to be  
16 a mistake; is that right?

17 A. My understanding is that they had several  
18 issues going on with imports that day. One of which  
19 was the California, Oregon, Pacific Northwest corridor  
20 was in threat of going out of service from a fire. And  
21 if that would have gone out, they would have had a lot  
22 more firm load shed than they did have.

23 So my conclusion from the report is, yes,  
24 they were very dependent on imports. Overly reliant on

1 imports, as well as being overly reliant on the energy  
2 imbalance market. That's my conclusion from reading  
3 this report.

4 Q. Can you -- can you point to a section in this  
5 report that says that?

6 A. I cannot point to a specific section at this  
7 point in time.

8 Q. Thank you very much. I have no further  
9 questions.

10 CHAIR MITCHELL: All right. Who's up  
11 next? Walmart?

12 MS. GRUNDMANN: I'm not sure that I'm  
13 listed next, but I don't know if other parties have  
14 waived. It certainly can be me, Your Honor.

15 MS. THOMPSON: We have no questions. We  
16 would have normally been next, but SACE, et al.,  
17 has no questions. Thank you.

18 CHAIR MITCHELL: Thank you,  
19 Ms. Thompson. All right, Walmart, then you're up.

20 CROSS EXAMINATION BY MS. GRUNDMANN:

21 Q. Gentlemen, I think I really just have one  
22 question. Bear with me one second while I find my  
23 notes.

24 In response to some questions from

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1 Mr. Snowden -- Mr. Roberts, it was some questions that  
2 you responded to, some questions from Mr. Snowden about  
3 whether any of the intervenor portfolios, I think it  
4 was had to do with whether or not they modeled extreme  
5 weather events. And you indicated that the Company had  
6 done some of that modeling.

7 And I just wanted to confirm, is that the  
8 SERVVM process?

9 A. (Sammy Roberts) So yes. SERVVM would be used  
10 to look at that granular reliability validation step.

11 Q. So when you were indicating to Mr. Snowden  
12 that the Company had done that for the Brattle report,  
13 you meant that that was -- you ran his modeling through  
14 the SERVVM; is that what you meant?

15 A. Subject to check. I mean, I know a  
16 reliability validation was looked at with respect to  
17 the Brattle report.

18 Q. Okay. That's all I wanted to confirm. Thank  
19 you so much.

20 A. You're welcome.

21 CHAIR MITCHELL: Okay. So we've got  
22 CUCA and Tech Customers.

23 MR. TYNAN: CUCA's gonna waive its time.

24 CHAIR MITCHELL: So you're up for Tech

1 Customers?

2 MR. TYNAN: Up for Tech Customers.

3 CHAIR MITCHELL: All right. Go ahead.

4 (Pause.)

5 CROSS EXAMINATION BY MR. TYNAN:

6 Q. Good afternoon, gentlemen. Matt Tynan for  
7 Tech Customers. Just a few questions. I think most of  
8 them are for Mr. Holeman. First question is, if you  
9 could look at Figure 3 on page 27 of your testimony.

10 A. (John Samuel Holeman, III) Yes, sir, just  
11 give me a second and I'll find it. Got it.

12 Q. There is a -- Figure 3 shows the nameplate --  
13 or the performance of solar generation versus nameplate  
14 capacity; is that right?

15 A. Make sure we're on the same page. Page 27,  
16 Figure 3, seven-day solar profile for February 2  
17 through 8, 2022?

18 Q. Yes. And the Y axis of that shows the  
19 percent of nameplate?

20 A. Proxy from output, yes.

21 Q. And then the range on the Y axis goes from 0  
22 to 1.

23 Is that supposed to mean that 1 is  
24 100 percent?



1           A.       (Sammy Roberts) That's correct, yes, 1 per  
2       unit.

3           Q.       And the same issue, Figure 9 on page 65, it's  
4       the exact same issue; is it the same?

5           A.       That's correct.

6           Q.       Thank you. Mr. Holeman, on page 21, lines 7  
7       through 12 of your testimony, you say, "For example,  
8       NERC's 2021 ERO reliability risk priorities report  
9       identifies bulk electric system risks that merit the  
10      highest attention and mitigation efforts from  
11      regulators and grid operators, and specifically  
12      highlights transitioning the power system to lower  
13      carbon sources of energy as one of the highest  
14      magnitude reliability risks"; is that right?

15          A.       (John Samuel Holeman, III) Yes, sir.

16          Q.       And when you say "transitioning the power  
17      system to lower carbon sources of energy," you're  
18      including transitioning to more natural gas in that; is  
19      that correct?

20          A.       I think it's the whole transformation,  
21      retirement of coal, everybody's doing it. It's not  
22      something you're gonna have any diversity of risk.  
23      Everybody's moving that direction. And I think that  
24      the context of what NERC is trying to say is what I

1 said earlier. The reason it's so important is the  
2 consequence of what we're changing. And that is the  
3 most critical of the critical infrastructures in  
4 North America.

5 Every other critical infrastructure depends  
6 on the electric grid. Every single one of them. It's  
7 why we pay so much attention to it, it's why we're so  
8 focused on it. It's why pace is so important. Pace in  
9 this transformation is gonna be really important. We  
10 train our operators to do things methodically, to do  
11 things cautiously, to do things disciplined and  
12 deliberate. Why? Because what's at stake. For us in  
13 the Carolinas, it's the 4.5 million customers in  
14 North Carolina.

15 So if we're asking our operators to do that,  
16 I think we need to plan that way as we move forward in  
17 this transformation. And as I read the NERC report,  
18 that's what I took it to be saying. That's why this is  
19 so important.

20 Q. And is it correct that one of the risks that  
21 NERC was identifying was the risk associated with  
22 transitioning to more reliance on natural gas  
23 generation to coordinate with the new mix involving  
24 renewable energy resources?

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1           A.       So that's a component of it. I think NERC  
2 has brought that up in several forums. I would suggest  
3 that the Duke approach, the Carbon Plan approach for  
4 longer term gas procurement, is better handled by the  
5 Carbon Plan. I would say this: We've got a lot of  
6 experience with natural gas, both combined cycle and  
7 combustion turbine. We've gone through, as Mr. Roberts  
8 has said, very cold temperatures.

9                   We've learned from the 2014 and 2015 polar  
10 vortexes. We've learned from the Texas event on how to  
11 protect, winterize, be ready for cold weather with  
12 natural gas. And I think our natural gas leaders  
13 performed really well. The experts in our procurement  
14 group have done a really good job. They're experts,  
15 national experts in the field. I trust them as we move  
16 forward to be able to manage that risk.

17          Q.       At page 22 of your testimony, you cite a 2022  
18 NERC state of reliability report; is that right?

19          A.       That's correct.

20          Q.       And you cite that as supporting the idea that  
21 a changing resource mix driven by decarbonizing  
22 operating fleet has implications on other risk areas  
23 and amplifies those risks; is that right?

24          A.       I think the point, again, is what are we

1 changing. We're changing something of real  
2 significance, of real criticality. I mean, it's  
3 vitally important for us to decarbonize. I mean, I  
4 think that's part of the four pillars of our Carbon  
5 Plan: decarbonization, executability, affordability.  
6 But the one the other three hinge on is reliability.  
7 If we fail at that, then the other three will fail.

8 And I think that's what NERC is trying to say  
9 here. This is significant change. We've gone decades,  
10 my career of 38 years, we went many years with  
11 effectively the same generation mix, effectively the  
12 same capabilities, proven, dependable, delivered for  
13 us. We're fixing to make a big change. The biggest in  
14 my career.

15 And I think the point of NERC is we've got to  
16 do this with our eyes open. We've got to look at new  
17 planning techniques that operationalize the planning  
18 information. We can't afford for those planning  
19 activities to be experiments based on metrics that  
20 worked in the past. We've got to come up with new  
21 metrics as we move into the future. I think that's the  
22 core of EPRI's trying to help us with.

23 Q. Now, Mr. Holeman, didn't the -- you read the  
24 2022 NERC state of reliability report, right?

1           A.       Got it right here.

2           Q.       Isn't one of the risks that NERC identified  
3           in analyzing the February 2021 cold weather event, that  
4           there were interdependencies between the electricity  
5           and natural gas industries that are a new reliability  
6           risk that have to be managed?

7           A.       So it is a risk, it's not new. In my career,  
8           we've discussed this many times, at the NERC level and  
9           the industry level. It's interoperability of gas and  
10          electricity that goes back to the early 2000s when  
11          there was the first really push to build out gas  
12          technology. We've learned from all of that.

13                 That's part of the benefit that Duke has of  
14          being a member of the industry, the operational  
15          planning industry. We have access to the discussions,  
16          we have access to the information. Many times we're  
17          part of the teams that do the analysis on these events.  
18          And we learn from them. Going all the way back to the  
19          pre-Texas event back in 2011, we've learned on how to  
20          winterize our resources.

21                 And keep in mind it's just not a winter  
22          thing. It's a summer thing too. So coming out of 2014  
23          polar vortex, really coming out of events prior to  
24          that, we started preseasonal validation checks. And

1 they're challenge boards really. You have to justify  
2 why you're ready for the upcoming season. There's risk  
3 with anything. There's risk with all of our assets,  
4 and so we try to manage that risk through the  
5 diversity, through not putting all our eggs in one  
6 basket.

7 But yeah, I would agree with your statement.  
8 But we understand that, and as a utility with the  
9 obligation to serve the state of North Carolina, we  
10 deal with it every year when we come around to this  
11 time of year. In fact, we're gonna have our  
12 preseasonal winter check in about three weeks.

13 Q. Page 28 of your testimony, starting at line  
14 15, you refer to some statements that were made by the  
15 NERC president and CEO James Robb; do you see that?

16 A. I got it, yeah.

17 Q. And there's a block quote from Mr. Robb that  
18 continues on to the next page. Do you see that?

19 A. Yes.

20 Q. And what Mr. Robb was talking about in the  
21 comment in the block quote that you have there is the  
22 need for natural gas for a reliable transition.

23 A. That's correct. It gets us from here to  
24 there.

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1 Q. Do you have a copy of Mr. Robb's testimony  
2 with you?

3 A. I've read it. I don't have a copy of it with  
4 me, but I've read it.

5 Q. Are you familiar with the fact that  
6 immediately after this block quote, Mr. Robb went on to  
7 discuss the challenges with relying on natural gas for  
8 ensuring reliability in the future?

9 A. I've read it.

10 Q. And those risks include the interdependencies  
11 between the electric industry and the natural gas  
12 industry?

13 A. (No verbal response.)

14 COURT REPORTER: I'm sorry, is that a  
15 yes?

16 THE WITNESS: I'm sorry. Yes.

17 COURT REPORTER: Thank you.

18 Q. And the risks that there might not be fuel  
19 delivery for in-time generation?

20 A. So that is a risk. And like I said, part of  
21 our readiness discipline is that we meet and review  
22 with natural gas providers that serve our natural gas  
23 facilities on a regular basis, annual basis, to make  
24 sure we know what they know and they know what we know,

1 and make sure we're there.

2 But at the end of the day, that's why you  
3 want a diverse portfolio. That's why you don't want  
4 all your eggs in one basket. You want to be able to  
5 flex off whatever's happening. And I think that's  
6 important for the Commission to realize as move  
7 forward, we need to maintain that flexibility. Y'all  
8 have guided us a utility with y'all's oversight towards  
9 a very diverse -- I would say nationally, as diverse as  
10 any system I'm aware of, between nuclear, currently  
11 coal, natural gas, conventional hydro, pump storage  
12 hydro, and the programs we partner with our customers  
13 on.

14 We have a lot of tools in our toolkit, and  
15 part of those tools help us in the event we were to  
16 have a problem with natural gas. We do things like  
17 dual fuel capability. We have the ability to run  
18 multiple days on a fuel other than natural gas. We've  
19 instilled that capability and that's -- we're -- in the  
20 Carbon Plan, we're looking to do that again as we  
21 transition from natural gas into hydrogen.

22 So there's risk with everything in the world  
23 I operate in. What's the responsible thing to do,  
24 especially with our commitment of the Commission and



1 the citizens of North Carolina, is prepare what might  
2 happen and have that tool in your toolbox. That's what  
3 we try to do.

4 Q. And another one of the risks that Mr. Robb  
5 identified was that natural gas generation can be  
6 particularly sensitive to extreme cold temperatures  
7 unless other measures are taken?

8 A. So our experience in the polar vortex of  
9 2014 -- we didn't experience it but neighbors to the  
10 south did, and we fully understand those risks. It's  
11 challenging to winterize a large piece of equipment  
12 like a generator. It's not like you can put it in a  
13 freezer and test it against freezing temperatures. So  
14 you have to have the discipline as the generation owner  
15 to check your heat traces, those devices that help  
16 fallout, equipment, check your insulation. We do that  
17 every year.

18 Q. And another risk that Mr. Robb talked about  
19 in his testimony was the growth and the use of natural  
20 gas as fuel for electric generation can stress the  
21 natural gas supply infrastructure when expansions don't  
22 keep pace with increased use?

23 A. I think, as a forward-looking risk, I would  
24 suggest you approach our Modeling Panel on that. But

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1 we have a group within the Company, a procurement group  
2 that handles that for us. They're very good at what  
3 they do. They have a long proven track record. I'm  
4 confident they'll be able to manage those risks moving  
5 forward.

6 Q. And Mr. Robb also mentioned that the problem  
7 with constrained natural gas supply infrastructure is  
8 particularly acute during extremes.

9 Would you agree with that?

10 A. I think, in theory, it is. Our experiences  
11 to date is that we've been able to deliver natural gas  
12 to our facilities to meet the needs of our customers as  
13 a part of a very diverse portfolio. That doesn't come  
14 by chance, it's not luck. You know, I've had a mentor  
15 of mine tell me all the time, hope is not a plan. So  
16 hope it's gonna work is not a plan, it's not what you  
17 and the Commissioners want me to tell you. We hope it  
18 works. You want me to be able to tell you we've done  
19 our discipline, we've done our due diligence. I  
20 believe we've done that with natural gas.

21 Q. I could be wrong, but I think the rest of my  
22 questions are for Mr. Roberts.

23 Page 70 of your testimony, lines 21 down --  
24 going down to the first line on page 71, you mention

Page 75

1 that, on January 8, 2018, wind speeds offshore were  
2 fairly calm predicting no appreciable offshore wind  
3 generation; is that right?

4 A. So based on the data that we have for that  
5 week, that's correct. Offshore wind wouldn't have been  
6 producing very much energy during that day.

7 Q. And where was that data from?

8 A. Received it from the resource planning group.

9 Q. Do you know, geographically, where that data  
10 was from?

11 A. No, I do not.

12 Q. So that -- the testimony about the wind  
13 speeds being calm isn't necessarily related to either  
14 of the offshore wind areas that are being discussed in  
15 this proceeding?

16 A. That's correct.

17 Q. On page 75 of your testimony, and then  
18 there's a Figure 11 on page 76 discussing the benefits  
19 of consolidated system operations.

20 Do you see that?

21 A. Yes.

22 Q. Could you just discuss a little bit what the  
23 benefit of consolidated system operations would be  
24 beyond what's already obtained through the Companies'

1 joint dispatch agreement?

2 A. Yes. So one of the big differences -- you  
3 know, I think Mr. Peeler explained this. But anyway,  
4 one of the big differences between current operations  
5 and operations under consolidating system operations is  
6 the ability to share operating reserves. And so that  
7 ability to share operating reserves would help with  
8 respect to managing intermittency of solar, for  
9 example.

10 Q. Would the Companies be able to share  
11 operating reserves if they formed a group under the  
12 NERC rules?

13 A. So you're talking about a different type of  
14 operating. I was referring to regulating reserve.  
15 You're talking about something different, I believe.

16 Q. But isn't it possible for the Companies to  
17 form a reserve sharing group under the NERC rules?

18 A. Yes. That's -- usually when you're talking  
19 about reserve sharing group, that's addressed in  
20 standard BAL-002, and that's talking about sharing  
21 contingency reserves.

22 Q. I have no further questions. Thank you.

23 CHAIR MITCHELL: All right. I think  
24 Public Staff is next; is that correct? Okay.

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1 MR. FREEMAN: Thank you, Chair and  
2 Commissioners.

3 CROSS EXAMINATION BY MR. FREEMAN:

4 Q. Thank you, panelists. I'm Will Freeman. I'm  
5 an attorney with the Public Staff representing the  
6 Using and Consuming Public. I want to continue the  
7 discussion you were just having about the consolidation  
8 of DEC and DEP. And that is, I think, page 75 if you'd  
9 like to look. But just generally, you wanted to talk  
10 about consolidating the balancing authority, the  
11 transmission operations, and transmission service  
12 providers.

13 A. (Sammy Roberts) That's correct.

14 CHAIR MITCHELL: Mr. Freeman, make sure  
15 you're in the mic.

16 Q. Is that better?

17 A. Yes, it is.

18 Q. And Duke Energy's also proposing in the near  
19 term to consolidate the open access transmission  
20 tariff?

21 A. That would be part of consolidating the  
22 current two transmission zones into one.

23 Q. What are the benefits of a consolidated  
24 system?

1           A.     So if you're talking about CSO versus the  
2 merged utility, is that what I'm understanding?

3           Q.     In the near term, the merger was in the more  
4 distant future; is that correct?

5           A.     So you could sequence them where you do CSO  
6 first and then transition to merger, or we could go  
7 flat out to try to do -- get to a merger.

8           Q.     Okay. So in the near term, let's talk about  
9 the consolidation.

10          A.     Okay.

11          Q.     What are the benefits of that?

12          A.     Right. So as mentioned prior, you know, one  
13 of the benefits -- main benefits is being able to share  
14 operating reserves and contingency reserves. Although  
15 we do that today. So it's just you have to plan for a  
16 lower most severe single contingency compared to the  
17 aggregate. So that's one benefit.

18                 From a transmission perspective, you know,  
19 one tariff, you go under one rate. And so you would  
20 have one transmission plan for the whole area, one  
21 revenue requirement for the whole area. And so that  
22 would be a benefit as well.

23          Q.     Could this lower the combined system reserve  
24 margin?

1           A.       So I did discuss that in the Carbon Plan, in  
2       the CSO appendix. And if you held everything else  
3       equal -- and we actually looked at this in the 2020  
4       resource adequacy study. If you held everything else  
5       equal, and you didn't look at the systems as island  
6       systems, but you looked at the system as one system,  
7       just being able to share those reserves, you would be  
8       able to lower -- most likely lower -- holding  
9       everything, lower the loss of load probability. And,  
10      of course, probability consequence is risk.

11                So, theoretically, you would be able to lower  
12      the planning reserve margin, all else held equal. Now,  
13      I will defer to the modeling team for more specific on  
14      that.

15                But the other thing the industry is  
16      recognizing, though, is with respect to looking at  
17      unserved energy hours with respect to looking at energy  
18      adequacy. And as Mr. Holeman was talking about, EPRI,  
19      NERC are all looking at what metrics are going to be  
20      needed in the future to ensure energy adequacy. They  
21      even have a task force that was stood up, the Energy  
22      Reliability Assessment Task Force. And that's derived  
23      a SAR, which is going to result in a standard or  
24      standards. And those standards are going to require us

1 to look at energy adequacy.

2 So looking at things under the generation  
3 transition paradigm, going forward, I see planning  
4 reserve margins going up, even in a consolidation --  
5 consolidated system operations perspective just due to  
6 the change in resource mix. So I wouldn't flip the  
7 switch yet on saying CSO is going to lower the planning  
8 reserve margin.

9 Q. Can we talk about reliability for a moment?

10 Do you have, by chance, the direct testimony  
11 of Glen Snider, Bobby McMurry, Michael Quinto, and  
12 Matt Kalembe? I do if you don't.

13 A. (John Samuel Holeman, III) I don't, but I  
14 think Mr. Roberts does.

15 A. (Sammy Roberts) I don't. I don't have it.

16 MR. FREEMAN: May I approach?

17 CHAIR MITCHELL: Go ahead. Do you all  
18 want to check it first? Okay.

19 (Pause.)

20 Q. So my question is reliability, but this is an  
21 open-book test. So if you'll turn with me to page -- I  
22 flagged it, 202.

23 A. (John Samuel Holeman, III) I like those kind  
24 of tests.



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1 (Witness peruses document.)

2 Q. So Duke ran four portfolios, and then after  
3 consultation with the Public Staff and others, ran two  
4 more portfolios, one, two, three, four, five, six  
5 total. And within those portfolios were sensitivities  
6 where Appalachian Gas was and was not available.

7 Am I right so far?

8 A. (Sammy Roberts) That's correct.

9 Q. Okay. And so the document I handed you is a  
10 reliability test; and you see that in front of you?

11 A. Yes.

12 Q. And so this is a reliability validation  
13 analysis which tests the 6 portfolios against 41  
14 weather years to capture the impact of unanticipated  
15 forced outages. And it's a method to confirm whether  
16 the portfolios would allow Duke to reliably serve load  
17 under real-world conditions.

18 Am I right so far?

19 A. That's correct.

20 Q. That's a good thing, right?

21 A. Yes.

22 Q. And Duke seeks portfolios that have loss of  
23 load -- that's L -- LOLE -- loss of load expectations  
24 of 0.253 days per year or less, which is approximately

1 equivalent to 0.1 days per year in the Allen case,  
2 so -- right?

3 A. So yes, that's correct. That was a credit  
4 for that 2,000 megawatts of non-firm assistance that  
5 makes up the delta.

6 Q. And so this chart here is a measure of which  
7 portfolios are reliable under that standard?

8 A. That's correct.

9 Q. And if we look at the chart, Portfolio 5, do  
10 you see the dots there?

11 A. Yes.

12 Q. It is -- it meets the reliability threshold?

13 A. That's correct.

14 Q. It is reliable?

15 A. That's what this figure shows.

16 Q. And if we look at the dots, it's more  
17 reliable -- Portfolio 5 is more reliable than  
18 Portfolios 3 and 4, maybe 2, and comparable to 1?

19 A. If you just look solely at this loss of load  
20 expectation analysis. I don't know that you can infer  
21 that it's more reliable than another portfolio. This  
22 is just a reliability validation that we performed.

23 Q. Okay. Then on this reliability validation,  
24 we can say that it is more reliable than 3 and 4,

1     though.   The dots are higher, right?

2           A.     Yeah.   I mean, I think I'll defer this to the  
3     modeling group because I --

4           Q.     Okay.

5           A.     -- I don't think you can make that  
6     conclusion.

7           Q.     Thank you.

8                   CHAIR MITCHELL:   All right.   Let's  
9     pause.   We'll take our afternoon break.   We will be  
10    back on the record at 3:30.   Let's go off the  
11    record.

12                   (At this time, a recess was taken from  
13     3:16 p.m. to 3:32 p.m.)

14                   CHAIR MITCHELL:   All right.   You may  
15    continue.   Let's go back on the record, please.

16                   MR. FREEMAN:   Thank you, Commissioners,  
17    thank you, Chair.

18           Q.     Panelists, I would like to have, sort of, a  
19    talk about batteries, and by that I mean utility-owned  
20    standalone storage.

21                   And as I understand the system, it's  
22    envisioned that you take -- use an energy storage asset  
23    to energy shift from a time of low load to a period of  
24    high load?

1           A.       (Sammy Roberts) That's correct. That would  
2 be one of uses is energy shifting for peaking capacity,  
3 yeah.

4           Q.       And I guess, sort of, one method that we  
5 could energy shift is to charge storage during low load  
6 and discharge it during higher demand?

7           A.       Yeah. So, I mean, primarily, like I was  
8 referring to earlier in my response, ideally for a  
9 carbon reduction, looking at carbon reduction  
10 perspective, you would like to charge with renewables  
11 and use that energy for peaking capacity.

12          Q.       And to ensure reliability when  
13 interconnecting energy storage, does Duke define  
14 standards within its methods of service on how these  
15 resources are studied?

16          A.       Yes. So batteries are very new to DEC and  
17 DEP. I think Mr. Snider referred to them as a nascent  
18 technology. And so our practices for studying storage  
19 are different. I mean, even if you look at the pump  
20 storage. You know, with respect to the recent  
21 expansion, we had to look at that. But with respect to  
22 four-hour batteries, we're -- the practices for  
23 studying those batteries has changed, and it's exactly  
24 to take into consideration what you're mentioning, that

1 it doesn't make sense to look at charging a battery on  
2 peak.

3 Q. Are those standards written down somewhere  
4 or --

5 A. So we have some informal practices that we've  
6 developed.

7 Q. Can you -- can you give me a two-second  
8 overview of them?

9 A. Yes. So it basically looks at our winter and  
10 summer load shapes, and it looks at the hours that you  
11 would primarily be receiving solar energy. It looks at  
12 the hours of peak demand, and it basically says  
13 between -- below this percent will peak. That's when  
14 you're allowed to charge batteries or you're gonna  
15 study charging batteries. And so we use that as the  
16 threshold with respect to studying charging associated  
17 with batteries.

18 Q. Thank you.

19 MR. FREEMAN: Chair and Commissioners,  
20 in a fit of hubris, I handed out a document during  
21 the break so it wouldn't disrupt it. But if I  
22 could, it's -- I put it by your name plate. I  
23 would propose, Chair, with your permission, to mark  
24 it Public Staff Reliability Panel Direct Cross

1 Examination Exhibit 1.

2 CHAIR MITCHELL: Document will be so  
3 marked.

4 MR. FREEMAN: Thank you.

5 (Public Staff Reliability Panel Direct  
6 Cross Examination Exhibit 1 was marked  
7 for identification.)

8 Q. And I gave this to you during the break so  
9 you had a minute to look it over.

10 A. Yes, I've looked at it.

11 Q. Okay. Thank you. If you would look with me  
12 at -- at the bottom it says page 5.

13 A. (Witness peruses document.)

14 Okay.

15 Q. 3.1.2.

16 A. Yes.

17 Q. DEP studied charging of the battery at the  
18 full requested 100 megawatts at the most stressful  
19 times of summer and winter peak load conditions?

20 A. That's correct. This was pre-current  
21 practice.

22 Q. Okay. Would we study now today charging  
23 batteries at peak?

24 A. No. That's the -- basically, the realization

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1 in discussion with the third-party consultant doesn't  
2 make sense to study charging at peak.

3 Q. Thank you.

4 MR. FREEMAN: If I can have one minute,  
5 Commissioners, I think --

6 (Pause.)

7 MR. FREEMAN: Thank you very much for  
8 your time. Chair and Commissioners, I don't have  
9 any more questions.

10 CHAIR MITCHELL: All right. Redirect?

11 MS. DEMARCO: Thank you, Chair Mitchell.  
12 I just have a very few follow-up questions for  
13 Mr. Roberts.

14 REDIRECT EXAMINATION BY MS. DEMARCO:

15 Q. Mr. Roberts, do you still have the Modeling  
16 Panel testimony in front of you?

17 A. Yes.

18 Q. If you would, please turn to page 200.

19 A. Okay.

20 Q. And do you see the question starting at  
21 line 8 that asks, "Did Duke conduct the more detailed  
22 reliability validation step used in developing the  
23 Carbon Plan for any of the intervenors' alternate  
24 plans?" Do you see that?

1 A. Yes.

2 Q. And would you -- if you need to take some  
3 time to review the answer, but if you would, please  
4 just give us a summary of the response.

5 A. Yes. So we did pass some of these intervenor  
6 portfolios through the reliability validation step  
7 modeling, which includes the SERVVM modeling. And the  
8 results of that are found in Figure 18, loss of load  
9 expectation results for as-found portfolios.

10 Q. So you're on page 202 now?

11 A. That's correct.

12 Q. Okay. And so I see two charts here that I  
13 think you just talked about with Mr. Freeman.

14 Can you please just explain in a very basic  
15 level what is represented on the 2030 side of the chart  
16 and what is represented on the 2035 side of the chart?

17 A. Yeah. So looking at the 2030 portfolios, for  
18 each one of these P1 through P6, and also the Synapse  
19 Optimized and the Gabel/Strategem Preferred, what that  
20 shows is that when we performed the reliability  
21 validity step, that all of those portfolios, with the  
22 exception of Gabel/Strategem Preferred, passed the --  
23 passed the reliability validation step.

24 Q. And that's for the 2030?



1 A. That's correct.

2 Q. And I don't see -- I don't see a Brattle  
3 portfolio on there; is that right?

4 A. That's correct.

5 Q. Okay. And for the 2035, can you just give us  
6 a brief summary of that as well?

7 A. Yeah. So 2035, similarly it shows that all  
8 the portfolios, with the exception of Synapse Optimized  
9 and Gabel/Strategem Preferred passed.

10 Q. Okay. And again, I don't see Brattle on  
11 the --

12 A. That's correct.

13 Q. -- chart; is that right?

14 So all of -- to summarize, in 2030, all of  
15 the portfolios listed passed except the -- sorry, the  
16 Gabel portfolio; and in 2035, all of the portfolios  
17 passed except the Synapse and Gabel portfolios?

18 A. That's correct.

19 Q. And if you would turn back one page to page  
20 200. So we -- you did testify earlier in response to  
21 Mr. Snowden's question that the Companies performed the  
22 reliability validation step on the Brattle portfolio.

23 Would you like to clarify your response?

24 A. Yes. So my understanding is that that wasn't

1 finalized with respect to some of the data wasn't  
2 available to complete.

3 Q. And if you would look at on page -- I'm on  
4 page 200, lines 15 through 17. If you would take a  
5 moment to read that and let us know your impression of  
6 what was conveyed there.

7 A. Yeah. So it says, "The proposed CPSA  
8 portfolios are based on only screening-level analysis  
9 and were not presented in sufficient detail to be  
10 included in the reliability validation."

11 Q. Thank you. I have no further questions.

12 CHAIR MITCHELL: All right. Let me  
13 check in to see if there are questions from  
14 Commissioners. Commissioner Clodfelter?

15 EXAMINATION BY COMMISSIONER CLODFELTER:

16 Q. Mr. Roberts, I'm a little bit confused about  
17 where we are on Brattle. I get more confused each time  
18 you're asked questions about it.

19 So where do we stand, as of today, with  
20 respect to any attempt to do a reliability analysis of  
21 the Brattle portfolios?

22 A. Yeah. So today my understanding is we still  
23 are in process of analyzing that portfolio for  
24 validation -- reliability validation. And today

1 there's insufficient detail associated with completing  
2 that analysis, is my understanding.

3 Q. I respect and appreciate that you are not one  
4 of the modeling witnesses, but unfortunately, I am  
5 where I am, and I have to do what I have to do right  
6 now. Because if that process can be brought to  
7 conclusion, I think the Commission might want to see  
8 the results of that before the Modeling Panel gets up  
9 on rebuttal. The problem is, I don't know how to find  
10 out whether that's going to be brought to conclusion  
11 other than to ask you.

12 A. Right. I don't know if that's gonna be able  
13 to be brought to conclusion as well. I mean, post  
14 today, I could inquire and find out.

15 Q. Let me leave that with your counsel and not  
16 put that on you. But I think if that's still ongoing  
17 work, it's not yet been concluded, it would be very  
18 important for that to be concluded if it can be, if it  
19 can be concluded, and brought to us before rebuttal.

20 MR. BREITSCHWERDT: Thank you,  
21 Commissioner Clodfelter. I will confirm with the  
22 modeling team, but my understanding, as Mr. Roberts  
23 has explained, is that the methodological approach  
24 in the -- let's say the software -- they didn't use

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1 EnCompass -- did not allow for the same SERVVM  
2 modeling for reliability, the same LOLE validation  
3 step to be completed for their alternative  
4 portfolios.

5 COMMISSIONER CLODFELTER: That's great.  
6 I appreciate that. If they can't -- if they don't  
7 have the ability --

8 MR. BREITSCHWERDT: I'll confirm that by  
9 tomorrow.

10 COMMISSIONER CLODFELTER: -- to conclude  
11 it, I -- that's fine too. If there's nothing  
12 that -- there's no output, there's no output. But  
13 if there is going to be an output, I would think we  
14 would want to take a look at it before they get  
15 back up on rebuttal.

16 MR. BREITSCHWERDT: Yes, sir.

17 COMMISSIONER CLODFELTER: If they can't  
18 produce one, I understand that result too.

19 MR. BREITSCHWERDT: I'll confirm that by  
20 tomorrow.

21 COMMISSIONER CLODFELTER: Thank you.

22 Q. Now, I hope I'm not confused any more today,  
23 at least, on this point.

24 Mr. Roberts, I'm familiar with the metrics

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1 that are used for capacity planning purposes -- LOLE,  
2 LOLH, and EUE, and all of those things -- and I  
3 understood you to say in response to questions from  
4 counsel that there are efforts underway to try to  
5 develop some metrics that can be used for energy  
6 advocacy?

7 A. That's correct.

8 Q. And so I just want to confirm, are there not  
9 today any recognized or commonly used metrics for such  
10 things as regulating reserves or operating reserves, or  
11 there's nothing out there today?

12 A. Right. So I'll let the modeling group in  
13 rebuttal answer your question. But to my  
14 understanding, the SERVVM model is the closest thing  
15 to -- with certain inputs, to look at adequacy of being  
16 able to provide those regulating reserves with the  
17 change in resource mix.

18 Q. Okay. But from the standpoint of the two of  
19 you who have to actually run the system, you have to  
20 sort of be sure you got what you need in real time.  
21 You're not aware of numbers that you look at, are there  
22 are no data points or things like that that you look at  
23 to say, oh, we're at 80 percent of where we need to be,  
24 or we're at 35 percent of where we need to be?

1           A.       Yeah. So on a daily basis we -- and hourly,  
2       every minute, we're actually looking at data on our  
3       energy management system screens, dashboards. We're  
4       looking at data on the unit commitment seven-day  
5       reports. All that data shows that operating reserves  
6       have been considered and that the unit commitment and  
7       the dispatch are accommodating the needed operating  
8       reserves.

9           Q.       But again, as I understand Mr. Holeman's  
10      testimony, that's a situational judgment, assessment  
11      that's done by the operator based on knowledge and  
12      experience and practice. It's situational. It's not  
13      like a published or standard or metric that they look  
14      at.

15          A.       Right. For the unit commitment, there is a  
16      given amount of reserves that we have to show we are  
17      adhering to with respect to the resources that we have  
18      for that given day, and the peak load projected,  
19      et cetera.

20          Q.       Okay. Thank you for that. I want to ask you  
21      about something that's in Appendix Q, I believe it is,  
22      to the Carbon Plan to be sure I'm not misunderstanding  
23      what I'm reading. And Appendix Q is the appendix on  
24      reliability and operational resilience considerations.

1 And there's a section that begins on page 5 titled  
2 "Coal Units' Reliability During the Transmission." And  
3 I just I read something there that caused me to, sort  
4 of, sit up and take notice, and I want to be sure I'm  
5 not misunderstanding what I'm heading. And the  
6 paragraph carries over to top of page 6, and there's a  
7 sentence that -- I'm gonna read the last two sentences,  
8 and then I want to ask you about what I've read to be  
9 sure I'm understanding what I read.

10 The last two sentences say, "Iterative  
11 modeling of the pathways to carbon neutrality has shown  
12 that the timing of coal unit retirements can be  
13 challenging to match their contribution to resource  
14 adequacy with replacement generation resources. For  
15 example, when some of the Companies' super-critical  
16 coal units are retired, adequate new dispatchable  
17 resources must already be available for the system to  
18 remain reliable once those units are no longer in  
19 service."

20 And I think the big point that's being made  
21 there is the one Mr. Holeman made at the beginning of  
22 the testimony which is that you want to -- your goal is  
23 to try to be sure you've got the preplacement resources  
24 in place before you retire. That was the big point.

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1           What jumped out at me and what I want to ask  
2   you about is the reference there to super-critical coal  
3   units. Is it meant to be limited to -- is the point  
4   there meant to be limited to just the super-critical  
5   coal units? Or is that just a mistake in drafting?

6       A.     Yeah. That should be applicable to all coal  
7   units.

8       Q.     It applies to the subcritical units as well?

9       A.     That's correct.

10      Q.     Not just to, you know, Cliffside 6 and Belews  
11   Creek 1 and 2, it applies to all the coal units?

12      A.     That would be correct.

13      Q.     Okay. I just -- again, it jumped out at me,  
14   because it was very specific, and I wanted to be sure I  
15   wasn't misunderstanding it.

16            Yes, sir.

17      A.     (John Samuel Holeman, III) I think as I read  
18   that, the poor example, it was just one example of  
19   many. That was the way I took it.

20      Q.     Okay. You used the super-critical units as  
21   an example, but you didn't mean to limit it to them?

22      A.     That's right.

23      Q.     We're clear. Gentlemen, that's all I have.  
24   Thank you.



1 CHAIR MITCHELL: All right.

2 Commissioner Duffley?

3 EXAMINATION BY COMMISSIONER DUFFLEY:

4 Q. Good afternoon, gentlemen. Just a couple of  
5 questions.

6 First, with respect to the consolidated  
7 system operations, what regulatory approvals will you  
8 need? Will you need approval from NERC? Will you need  
9 approval from FERC?

10 A. (Sammy Roberts) So my understanding, subject  
11 to check, is we will need state approvals and we will  
12 need federal -- FERC approvals.

13 Q. Okay. And NERC approval as well or?

14 A. I don't know of any NERC -- we'll have to --  
15 we will have to have a -- yeah, the certification, I  
16 believe, associated with registering as one balancing  
17 authority, registering as one TOP.

18 Q. Okay. Thank you for that. And then turning  
19 to page 42 -- well, it starts -- the sentence starts  
20 out on page 41 and it goes --

21 A. (John Samuel Holeman, III) Is that my  
22 testimony?

23 Q. Your testimony, uh-huh.

24 A. Thank you.

1 Q. And so we heard some questions, or I heard  
2 some answers to questions with respect to batteries and  
3 cold days, or long duration. And so it starts out  
4 bottom of page 41-A, and it goes on, "A system that  
5 relies heavily on batteries would need to carefully  
6 plan and coordinate energy balance and replenishment of  
7 energy-limited batteries to span a multiday event,  
8 particularly if those batteries are charged from  
9 solar."

10 And my question is, so this sounds like that  
11 it's possible to charge these batteries for multiday  
12 events, but it sounds like the system would need to be  
13 carefully planned and coordinated. So how do you do  
14 this?

15 A. (Sammy Roberts) Right. So one of the first  
16 ways would be to look at the unit commitment, which  
17 covers a span of seven days, and look at the loads --  
18 they incorporate hourly loads into the model. And  
19 basically to make sure that you have sufficient energy  
20 available, based on solar projections, et cetera, that  
21 you have sufficient energy available to charge  
22 batteries during certain periods to be available for  
23 peaking -- peaking needs.

24 So unit commitment would probably be the best

1 way. And then, of course, the operators always review  
2 the unit commitment plan for reliability and bless the  
3 unit commitment plan.

4 A. (John Samuel Holeman, III) I think the  
5 difference is we put more of these four-hour batteries  
6 on the system, which we do in the plan. There's no  
7 doubt we're gonna do that. We've got a lot of  
8 experience with long-duration pump storage. And like I  
9 said before, we got to, kind of, go Monday to Monday.  
10 We want to be fully -- full upper pond on Monday so we  
11 can run through the week and have opportunities to  
12 flex, check, and adjust as we need to. So that gives  
13 us a lot of slack to change the plan if we need to.

14 With four-hour batteries, I think we're gonna  
15 have to be a lot more nimble intraday, because you're  
16 gonna have to match the availability of excess energy,  
17 which could be available when solar is ramping up in  
18 the morning, charge those batteries so it's available  
19 when the solar plays off in the afternoon.

20 It's a concept that we use a lot in  
21 operations called conforming or nonconforming. Solar  
22 tends to be nonconforming with the consumption by our  
23 customers. In the morning, for example, in the winter,  
24 as load is coming down, solar's coming up. So you've

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1 got an opportunity there to charge. And then in the  
2 afternoon summers and winters, solar is coming down as  
3 our customer load's either going up or slower -- coming  
4 down slower than solar is coming down.

5 So it's the batteries that gives you chances  
6 in the daily window to charge and discharge. But  
7 that's a lot of movement, a lot of moving parts  
8 intraday, whereas pump storage is more intraweek. I  
9 hope that made a little bit of sense.

10 Q. It does. And you also mentioned -- and I  
11 think I read it somewhere in the testimony as well --  
12 about you're having to retrain your operations  
13 personnel for this more dynamic balancing of the  
14 system; is that correct? Are you using manuals? What  
15 type of training are operations personnel receiving?

16 A. (Sammy Roberts) I'm sorry, could you repeat  
17 the question?

18 Q. So -- so we heard testimony to the fact that  
19 people that are actually in the operations room,  
20 operations have had pretty much the same generation,  
21 the same type of load profiles. And now we're in a  
22 more dynamic system.

23 What exactly is occurring with respect to the  
24 training of the personnel that are in the operations

1 rooms? Are there manuals that are being developed or  
2 is it just all on the job?

3 A. Right. So we have definitely revised our  
4 procedures with respect to maintaining adequate  
5 operating reserves. One of the issues we were running  
6 into with respect to blue sky days, solar ramping in  
7 quickly, et cetera, was associated with having too much  
8 energy. And you've got to comply with the NERC BAL-1  
9 standard, which gives you a 30-minute window. If you  
10 have too much energy, you're what we call area control  
11 error, or your difference between net actual  
12 interchange and net scheduled interchange. You're  
13 overgenerating. Your system is overgenerating.

14 And if you don't get that overgeneration back  
15 towards zero within 30 minutes, then you can have a  
16 violation of that standard. So that was one of the  
17 things we had to proceduralize and adjust, is to make  
18 sure that we could operate to manage that.

19 One of the things we did associated with  
20 managing that is we developed a tool to be able to --  
21 and through CPRE, having dispatchable solar dispatch  
22 down, capable solar, is we're able to set a set-point  
23 signal to these transmission-connected solar facilities  
24 to be able to quickly dispatch those down to manage

1 this imbalance. So that's one of the things.

2 With respect to batteries, it was just like  
3 Mr. Holeman described, we're gonna have to train on and  
4 develop tools to be able to have -- let the operator  
5 have control associated when they charge, when they  
6 discharge, maintaining a certain state of charge. If  
7 we see a really cold morning, you know, trying to  
8 maintain that state of charge into that cold morning.

9 The concern happens when you start looking at  
10 a series of cold mornings, or several successive cold  
11 days where you may not get above freezing for 48 hours,  
12 72 hours. And with that, the concern is will you have  
13 sufficient energy to be able to properly charge and  
14 discharge those batteries to be able to cover -- if  
15 you're counting on those for peaking capacity, will you  
16 have proper energy to charge to be able to operate them  
17 in that manner.

18 Q. Okay. Thank you.

19 CHAIR MITCHELL: Go ahead.

20 EXAMINATION BY COMMISSIONER McKISSICK:

21 Q. Thank you, gentlemen. And I appreciate the  
22 testimony you've provided. I guess this is in  
23 follow-up to Commissioner Duffley's questions.

24 The thing I'm curious about is that, once you

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1 have this vary array, it's in place, it's strategically  
2 positioned, so your charging these batteries -- once  
3 they are charged, what period of time do you have  
4 before they begin to discharge somewhat on their own or  
5 before they must be used to address peak capacity?

6 A. (Sammy Roberts) Yeah. So I'm not the expert  
7 associated with leakage associated with battery charge,  
8 maintaining state of charge. And, you know, what with  
9 lead acid, you called it float charging to maintain a  
10 certain level of charge. And so I'm not familiar with  
11 lithium ion batteries with respect to any leakage and  
12 maintaining that.

13 I know if I -- if I take my battery charge --  
14 lithium ion battery charged or powered tools and I set  
15 that on the ground, every time that battery discharges  
16 even not using it. So your point is well taken, and  
17 that would have to be considered.

18 Q. Okay.

19 A. Ideally, once again, is -- one of the main  
20 purposes of storage would be to -- in a decarbonizing  
21 world, would be to take that zero carbon energy and use  
22 that when you can displace higher cost carbon-producing  
23 energy.

24 Q. And I guess the next question I would have is

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1 simply this. I understand you're not an expert in that  
2 area.

3 I guess the thing which I was curious about  
4 is, in reading through your testimony and the testimony  
5 of others, it talks about right now if batteries are  
6 purchased, you know, become early adopters of this  
7 technology to some extent, what sort of advances do you  
8 anticipate might be occurring, you know, in the near  
9 term that might increase battery capacity or might  
10 drive cost down, things of that sort?

11 A. Right. So, subject to check, I believe we  
12 already tested a flow-control battery at one of our  
13 pilot facilities. And so flow-control batteries could  
14 extend duration. You know, it's -- you've got to have  
15 the land area to put -- it's a little bit larger land  
16 area, lot larger land area to put a flow battery on the  
17 system as compared to lithium ion. But still, that may  
18 provide for a longer duration battery if that  
19 technology is more commercially viable, cost-effective.

20 Q. I read about them. Yes, sir.

21 A. (John Samuel Holeman, III) I was just gonna  
22 add this. From an operator's perspective, duration  
23 would be a potential real advantage moving forward.  
24 Because there's a lot of capability within these



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1     inverters. I mean, I think they're to some degree  
2     untapped in terms of what they can do. But the  
3     duration right now is, kind of, a limiting factor. If  
4     we could get them with a duration closer to pump  
5     storage, that unlocks a lot of potential as we move  
6     forward.

7           Q.     Sure. Thank you. I guess, when Commissioner  
8     Duffley asked those questions, it just occurred to me,  
9     so I appreciate your insight.

10                  CHAIR MITCHELL: Commissioner Hughes?  
11     EXAMINATION BY COMMISSIONER HUGHES:

12           Q.     Yeah. Thank you. I am going to do a  
13     follow-up question that I asked Mr. Roberts related to  
14     resiliency. I'm not sure if you saw that the other day  
15     when I asked him that.

16                  But with your experience having gone through  
17     so many different events, could you comment a little  
18     bit about the type of long-term outages, hurricane, ice  
19     storm outages that we've gone through; and if those  
20     happened in the future, what this new kind of  
21     transition looks like as far as having a lot more  
22     distributed energy plants maybe distributed much more  
23     across the state?

24                  I just would like to know -- I mean, I've

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1 heard that there will be benefits to that, but I just  
2 wanted to know if that's your opinion if that's true,  
3 and if the -- we have to start modeling things  
4 differently or building the transmission system  
5 differently to take advantage of that distributed  
6 energy production.

7 A. (John Samuel Holeman, III) So I think there  
8 is potential in that. I mean, we've got to manage it  
9 on both sides. So the more you have, especially of  
10 assets that are critical in nature, the more  
11 challenging it is to protect it both from a cyber and a  
12 physical security perspective. And from that sense,  
13 being able to have fewer to protect is sometimes  
14 better.

15 But I think from a resilience perspective,  
16 which I think NERC believes is an operational  
17 characteristics of reliability -- it's all kind of  
18 lumped in there together with reliability and security.  
19 But from a physics side, not from a cyber or physical  
20 side.

21 But I think, you know, microgrids have  
22 potential. I think we've seen some examples around the  
23 country where microgrids have been able to be used by  
24 operators in situations where they were able to provide

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1 resiliency in situations where without them they  
2 wouldn't, would have had to taken outages.

3 So, you know, as we move forward, there's no  
4 doubt we're gonna be adding more storage -- more  
5 battery storage in the Carolinas. I think we'll learn  
6 how we can take advantage of that technology as we move  
7 forward.

8 Q. Thank you. So it's safe to say that that  
9 whole sphere of benefits and modeling has not really  
10 been understood enough to roll into the current Carbon  
11 Plan? And I can ask the modelers. I will probably ask  
12 the modelers the same question.

13 A. (Sammy Roberts) So, I mean, with respect to  
14 distributed energy resources, I mean, we are developing  
15 a new distributed energy project platform, looking at  
16 those DER resources from A to Z with respect to -- all  
17 the way from an interconnection agreement to getting  
18 into proper databases, billing systems, controls  
19 associated with those DERs, all the way to energy  
20 accounting.

21 And so the A-to-Z process is gonna help us  
22 better manage distributed energy resources. It's just  
23 when you start looking at that from a cost perspective,  
24 getting communications to each one of these DERs to

1 facilitate that control, et cetera, that's when it gets  
2 a little bit more questionable. But from a resilience  
3 point of view, I mean, there's pluses and minuses with  
4 respect to being able to give the operator control to  
5 balance and so forth versus having that resource local.

6 Q. Okay. Thanks for that.

7 CHAIR MITCHELL: Okay. Go ahead.

8 EXAMINATION BY COMMISSIONER CLODFELTER:

9 Q. Mr. Roberts, I want to ask you a follow-up,  
10 and it's about Public Staff Reliability Panel Direct  
11 Cross Examination Exhibit 1. Do you have that one?

12 A. (Sammy Roberts) Okay.

13 Q. It's the one exhibit Public Staff used with  
14 you. The last one that was handed out.

15 A. Okay. Did I give that back?

16 Q. And apologies to your counsel and to the  
17 chair. My question really is actually linking back to  
18 something in the transmission panel, but I didn't know  
19 it until I saw this exhibit.

20 A. Okay.

21 Q. So if I look at page 5, the upgrades that  
22 were assigned to this battery project, lo and behold,  
23 both of them are red zone projects; am I correct?

24 A. Yes.

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1 Q. And so I looked at the -- quickly looked at  
2 your exhibits to your transmission testimony 3 and 4,  
3 and I couldn't find but one battery project.

4 Was this the only one that was included in  
5 the supplemental studies?

6 A. So --

7 Q. It is -- it is -- this -- this Q479 battery  
8 project is included in the supplemental studies?

9 A. Yes, it would be in the base plan.

10 Q. And there were no other battery projects,  
11 though, that were looked at?

12 A. Not that I'm aware of. But I'll just say  
13 once again, this study is -- Public Staff referred to  
14 was studied with the battery charging at peak --

15 Q. Right. I understand. The point of the  
16 question was to say you've changed how you study the  
17 charging and discharging for interconnection study  
18 purposes. I appreciate the point. It just all of a  
19 sudden jumped out at me that those were two red zone  
20 projects that were the problem for this battery.

21 I'd like to know, but it's confidential I'm  
22 sure, and if your counsel is willing to furnish it as a  
23 confidential late-filed exhibit, I'd like to know -- I  
24 have a suspicion I know who the customer was on Q479,

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1 but if that can be disclosed in a confidential manner.

2 If not, I'll just rely on my speculation.

3 MS. DEMARCO: We'll have to look into  
4 that.

5 COMMISSIONER CLODFELTER: Okay. If that  
6 goes too far -- but I think I know who it is, but  
7 I'd like to confirm it if I can.

8 MS. DEMARCO: We'll take a look and let  
9 you know.

10 COMMISSIONER CLODFELTER: Thank you.

11 EXAMINATION BY CHAIR MITCHELL:

12 Q. All right. Just a few questions for you-all.  
13 In your testimony today, you-all have discussed several  
14 different types of reserves, and I just want to make  
15 sure I understand the various types. And I'm sure  
16 there is overlap in the categories.

17 But -- so there are planning reserves. So  
18 what are planning reserves?

19 A. (John Samuel Holeman, III) So planning  
20 reserves -- and Mr. Roberts, I'll defer to him in a  
21 minute, if that's okay. So planning reserves are  
22 generally associated with capacity megawatts, megawatt  
23 hours. And it's that resource need to meet a load  
24 obligation, and how much extra do you have over a

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1 certain window of time. It's a product of the longer  
2 term planning tools.

3 A. (Sammy Roberts) Yes, I agree.

4 Q. Okay. Operating reserves?

5 A. (John Samuel Holeman, III) Operating  
6 reserves is more of a NERC-defined function. When we  
7 refer to it or write it, it's capital O, capital R  
8 because it appears in the NERC terms used in the  
9 glossary. They are a set of capabilities at the  
10 disposal of the operator to handle uncertainty such as  
11 forced or planned outages of weather patterns, loss of  
12 units, pretty much anything that might happen while the  
13 operator is sitting in the chair, including load  
14 forecast error.

15 A. (Sammy Roberts) A intermittency of solar.

16 A. (John Samuel Holeman, III) Yeah, and in  
17 today's world, intermittency of solar; that's correct.

18 Q. So can there be overlap between the planning  
19 and the operating?

20 A. So I'd say yes, but the overlap is really  
21 irrelevant. Because the planning reserve is a -- is a  
22 characteristic or a quantity that stays in planning  
23 space.

24 Q. Okay.

1           A.       It rarely translates into operating space.

2           Q.       Okay. And so just making sure I understand.

3       So for operating -- for purposes of establishing  
4       operating reserves for your -- to meet your NERC  
5       obligations, I assume you have to have a -- you have to  
6       have those operating reserves available at any given  
7       minute? Or is it a -- I mean, when do those operating  
8       reserves have to be there?

9           A.       So it depends. So if you're regulating -- as  
10       Mr. Roberts mentioned earlier, if you're regulating  
11       real-time demand, it has to be available then and now,  
12       either through automatic generation control through our  
13       energy management system or calling on the phone saying  
14       I need you to pick up 10 megawatts, I need you to drop  
15       10 megawatts. If you're holding reserves to respond to  
16       the loss of a unit, then you put it to the side until  
17       you need it. If you're looking out a couple of days  
18       and you're saying, hey, my load is gonna be higher in  
19       two days than I thought, I may need to call on a unit  
20       that maybe has a day startup time.

21                    So the tools in the operational reserve  
22       toolbox have different specific jobs and they have  
23       different time frames.

24           Q.       Okay. That makes sense.



1 A. Does that help?

2 Q. It does. It does. Regulating reserves?

3 A. Those are reserves that are gonna respond to  
4 real-time changes in load. And it's generally spending  
5 reserve, which means it's been synced to the system  
6 it's actually producing megawatts. That's up and down.  
7 Regulating reserves can go up when needed and go down  
8 when needed or hold when needed.

9 Q. Okay. Again, a separate category of asset.  
10 I mean, are they -- is there any overlap between -- I  
11 mean, do you always have those regulating reserves  
12 available?

13 A. We are -- if we're gonna be consistently  
14 compliant with BAL-1 and BAL-2 we've got to have  
15 regulating reserves available to us 24 by 7 by 365.

16 Q. Okay. So you've got units on the system  
17 designated as your regulating reserve for that period  
18 of time?

19 A. That's correct.

20 Q. At any given time?

21 A. That's correct.

22 Q. Okay. And then contingency reserves?

23 A. That's -- those are reserves you hold off  
24 until you need it. You've lost a unit, 80 percent of

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1 your largest facility. When you have that, as an  
2 operator sitting in a chair, you see your area --  
3 control area drop, you see frequency drop, produces an  
4 eastern interconnection measure, ACE, area control  
5 error is a BA measure. When you see that, you confirm  
6 it first. You call the facility and say did you just  
7 trip, or you look at other indications within your EMS.

8 Once you confirm it, you've got 15 minutes  
9 from the time it trips to return to precontingency ACE  
10 or zero, whichever comes first. I know that's a lot of  
11 stuff. I know that's horrible for you to try to type,  
12 I apologize for that. But that reserve sits there  
13 unused, generally, until you need it.

14 Q. Okay.

15 A. Does that help?

16 Q. It does. So I now understand the different  
17 types of reserves and the role they play for the system  
18 operator's purpose. I still want to be clear on, sort  
19 of, how they -- I guess, if they're units or  
20 capabilities the system operator has in isolation. But  
21 we can have that -- that's a discussion for another  
22 day. We don't have to get into that now.

23 A. Can I have one quick comment?

24 Q. Sure.

1           A.       So I know value stacking is a really  
2       effective way of, kind of, placing assets where they  
3       need to be. It's more of a planning exercise. When  
4       you get into operations, you're on dangerous territory  
5       if you start double-counting these capabilities.

6           Q.       Okay.

7           A.       For example, if you're saying, okay, this  
8       unit here -- pick an example, Bad Creek 1. I'm gonna  
9       hold you in for contingency reserves. And then you  
10      say, but I need regulation, and Bad Creek 1 is a really  
11      good regulating unit, I'm gonna put you on AGC control,  
12      you just crossed a line you don't want to cross.

13          Q.       Okay. That's helpful. You've cleared it up  
14      for me. Okay. Okay. You-all have provided some  
15      testimony, both in your prefiled and today and some  
16      discussion with Commissioners, related to DER,  
17      distributed energy resources. And there's not much in  
18      the -- in y'all's -- there isn't extensive discussion  
19      in y'all's testimony. So I'm hoping you can talk some  
20      about your comfort as a -- as system operators with  
21      distributed energy resources at this point in time.

22                  Just say beyond -- you know, I recognize your  
23      testimony says what it says. But how -- talk to us  
24      about how comfortable you are relying on DERs, how far

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1 we have to go before we're to a place where DERs play a  
2 meaningful role in the operation of the system.

3 You're -- I'm looking at your testimony right  
4 now on page 72. You don't have to go there, I'll just  
5 read it to you. But it says, "Duke Energy will be able to  
6 control DERs when needed to ensure system reliability."

7 My takeaway from your testimony, that being  
8 able to control DERs is critical in the minds of the  
9 system operators or the system operations panel to  
10 reliability, and -- but be more specific. I mean,  
11 what's your current experience with DERs and how far do  
12 we have to go?

13 A. (Sammy Roberts) Yeah. I think -- I think we  
14 can relate it back to, you know, when we came in with  
15 the avoided cost rate hearing and we're talking about  
16 the PURPA solar that was put energy, and we could only  
17 maneuver that energy if it was -- met a certain class  
18 of emergency.

19 And, you know, we argued, well, violating a  
20 NERC standard, which is the minimum requirement for  
21 reliability, is an emergency. And so we're -- we got  
22 the ability to control that. And, unfortunately, it  
23 was binary. You'd open up a disconnect switch or  
24 recloser in order to curtail that solar.

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1           And so with that, we established some ability  
2   to control for compliance with NERC standards. It's  
3   more -- it's a more of a butcher knife than a scalpel  
4   approach. With respect to being able, if you have a  
5   lot of DER -- a lot more DER, that ability to control  
6   more granularly with respect to balancing, for example,  
7   or managing power flows becomes a lot more important.

8           And so that's why it would be critical with  
9   respect to having control, especially if you start  
10   connecting battery storage to distribution also. And  
11   one of the things I will mention as well is the  
12   definition in the Companies is a little bit different  
13   than NERC's definition with respect to DER. We  
14   consider distributed energy resources to not just be  
15   connected to distribution, but they're distributed on  
16   the transmission system as well.

17           And so this DER dispatch project that we're  
18   talking about will be able to control distributed  
19   energy transmission as well as distribution.

20           Q.     Can you -- can you tell me -- well, let me  
21   ask it this way.

22           How comfortable is each of you right now at  
23   this moment relying on distributed energy resources for  
24   your system operations obligations?

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1           A.       Well, once again, we have the -- I call it  
2       the brute force method with respect to curtailing  
3       the --

4           Q.       Other than the PURPA solar that you've  
5       mentioned.

6           A.       Right. You know, if you have sufficient  
7       communications, they're reliable, you have sufficient  
8       control, it's reliable, in order to maneuver, you're  
9       gonna have smaller resources, so less range with  
10      respect to a given resource. So the vision would be  
11      to -- for the EMS to still be the central one to  
12      control. It gets a range from our ADMS, or  
13      distribution management system, of here's the DERs that  
14      are connected to distribution and here's the amount of  
15      range of movement we can have with an aggregate set of  
16      batteries in a region or aggregate set of solar both in  
17      a region.

18                   And based on the range, the EMS will take  
19      that into account with its regulation setpoint signal,  
20      and it will be able to send that signal back to the  
21      ADMS to implement in an optimized manner.

22           Q.       That's a helpful explanation. And so I  
23      understand we're not there yet, the Duke systems aren't  
24      there yet, but is this DER dispatch project, are you

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1 moving in that direction --

2 A. Yes, we are.

3 A. (John Samuel Holeman, III) Can I add just  
4 one thing?

5 Q. Please.

6 A. You kind of asked us how comfortable we are.  
7 You know, comfort's a relative word. But I think --  
8 I'm confident that we will continue to take our  
9 operating experience that we started when we first  
10 installed our first solar assets on DEP, we moved  
11 forward to the brute force method of curtailment, we're  
12 moving to more sophisticated methods, we're working  
13 towards this DER dispatch. And it's all pointing  
14 towards an aggregation function.

15 Providing the operators who are ultimately  
16 responsible for the real-time operation of the grid,  
17 but providing them with an aggregation function and a  
18 degree of control over those resources to do what we  
19 need them to do. I'm confident we're moving in the  
20 right direction. It's not just Duke. We're using  
21 operating experience from other parts of the industry  
22 as well. Our engagement with EPRI, for example. But  
23 I'm confident we're moving in the right direction.

24 Q. Okay. Do you -- are you-all aware of the

1 work that some of your wholesale customers have done  
2 with respect to aggregating DERs?

3 A. (Sammy Roberts) I'm somewhat familiar with  
4 one of our wholesale customers and what they're doing.

5 Q. And I'm specifically thinking about the  
6 co-ops, the work the co-ops have done.

7 Has -- are you-all, as system operators,  
8 involved with their energy management systems? Are you  
9 communicating? Are your systems communicating with  
10 their systems? Help me just, kind of, understand the  
11 level of coordination between Duke.

12 A. Yes. So we've collaborated with that  
13 wholesale member, and basically coordinated with  
14 respect to value that can be obtained from what they  
15 call their distribution operator function. And so  
16 currently -- and we filed this with the Commission  
17 fairly recently, I believe it was last year, where we  
18 have incorporated into our GLRP the ability to provide  
19 an operating instruction, so to speak, to their DO and  
20 utilize that for emergency purposes. Utilize their  
21 capabilities for emergency purposes.

22 We continue to have meetings in coordination  
23 going forward, but they've been very collaborative with  
24 respect to making sure we're tied in, from a



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1 reliability perspective, the utilization of that  
2 distribution operator function.

3 Q. And just so the record is clear, GLRP means?

4 A. General load reduction plan.

5 Q. Okay. And I understand that you-all have an  
6 arrangement or an agreement with the wholesale customer  
7 to utilize the technology for emergency purposes.

8 And do you envision -- well, first of all,  
9 have you called on the wholesale customer in an  
10 emergency?

11 A. So we have not given a verbal operating  
12 instruction for need for that DO assistance.

13 Q. Okay.

14 A. And so they're basically optimizing it for --  
15 I mean, they have very good -- established very good  
16 communications with respect to sharing data, such as  
17 the output of solar facilities connected to their  
18 system. And so we're able to utilize that to enhance  
19 our reliability as well. And they also share data with  
20 respect to implementation of some of their programs, so  
21 we know when that's occurring as well.

22 Q. Okay. So you can see when, or you have  
23 insight into when the wholesale customer is using its  
24 DERs to manipulate or optimize its load, or maybe its

1 demand from your perspective?

2 A. That's correct.

3 Q. Okay.

4 A. They provide windows of when they're  
5 projecting to utilize those programs.

6 Q. So do you see -- I'm asking you to sort of  
7 speculate and hypothesize now, but do you envision this  
8 type of coordination evolving beyond the emergency  
9 scenario into more routine system operations?

10 A. So as far as being able to have more  
11 real-time control, et cetera?

12 Q. Yes. And being able to use -- use their tool  
13 or their platform for purposes of managing conditions  
14 on your system?

15 A. Yeah, for --

16 Q. Dynamically.

17 A. For the peaking emergency purposes, that's  
18 already in place. For consideration of balancing  
19 function, et cetera, it depends on what -- where our  
20 collaboration leads us to.

21 Q. Okay. And my questions, I really am just  
22 trying to understand, sort of, the state of the  
23 technology and how this opportunity or this -- the  
24 coordination between the wholesale member and the

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1 operating Companies, you know, exists at the moment and  
2 perhaps, you know, exists as we move forward, what kind  
3 of role that will play as you all navigate through  
4 these changes. So thank you for my questions. I mean  
5 thank you for answering my questions. Let me see if  
6 there are any more.

7 CHAIR MITCHELL: Okay. Questions on  
8 Commissioners' questions? This side of the room?  
9 Go ahead, Mr. Burns.

10 MR. BURNS: I just have one quick one.

11 EXAMINATION BY MR. BURNS:

12 Q. Just for clarity of the record and when we go  
13 back to it later, you were responding to Commissioner  
14 McKissick, Mr. Holeman, and you said that duration is  
15 the key for batteries, or the future of batteries.

16 And I just wanted to understand, when you say  
17 duration, you're referring to the duration of discharge  
18 after a full charge of the battery, is that --

19 A. (John Samuel Holeman, III) Yeah, the cycle.  
20 The cycle period.

21 Q. Thank you.

22 CHAIR MITCHELL: All right. Anybody  
23 else on this side of the room?

24 MR. FREEMAN: I had some questions,

1 Commissioners.

2 CHAIR MITCHELL: All right. Go for it.

3 EXAMINATION BY MR. FREEMAN:

4 Q. When you referenced the red zone upgrade for  
5 our Exhibit 1 -- thank you -- is the \$104.5 million  
6 still included or has it been removed, the expenses to  
7 the upgrades?

8 A. (Sammy Roberts) So I'm sorry, refresh my  
9 memory on the 104.

10 Q. Commissioner Clodfelter referenced our  
11 Exhibit 1, the system --

12 A. Oh, yes, sorry.

13 Q. And if you look at 3.1.2, it had  
14 \$104.5 million upgrade fee.

15 A. Yes.

16 Q. Is that still going to be in place now, in  
17 light of the change in --

18 A. I don't know that. I don't know that they'll  
19 go back and restudy this and change that. I don't  
20 know, to be honest with you.

21 Q. Okay. And then you had a -- colloquies with  
22 Commissioners Duffley and Mitchell about GLRP and some  
23 of those issues.

24 Is it true that, typically, stressful

1 conditions can be known like a day ahead of time based  
2 on load forecasting and just looking at weather reports  
3 and sort of your experience?

4 A. So stressful conditions can be projected  
5 based on day ahead, but, I mean, you can -- the next  
6 hour can end up being really stressful, based on if  
7 generators trip offline or, you know, transmission  
8 trips. Any of that can make for a stressful situation.

9 Q. Well, you adjust your system load operations  
10 based on your general load reduction and system  
11 reduction plans?

12 A. Can you ask that question again?

13 Q. Based on the conditions that you see in your  
14 system, you adjust your systems operations?

15 A. Yes. We -- we have a grid reliability level  
16 report, and if reserves are below a certain amount, we  
17 go into a heightened awareness and change our action  
18 plan associated with that.

19 Q. Have you studied emergency or stress plans on  
20 how battery storage should be operated in the days,  
21 sort of, preceding anticipated stressful events?

22 A. So every event is different. I mean, if it's  
23 a successive prolonged cold weather period, that's --  
24 once again, that's, kind of, where we're concerned if

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1 you're over-reliant on battery storage, that you may  
2 not have enough energy -- be able to have enough  
3 engineer to charge that battery storage to be able to  
4 make it through that week in an energy adequacy manner.

5 So we will -- we will be developing  
6 procedures, training operators, et cetera, on how to  
7 try to ensure that energy adequacy is maintained  
8 throughout the week.

9 Q. Thank you. Has the -- let me go back to our  
10 Exhibit 1.

11 Has the interconnection agreement with Q479  
12 been signed?

13 A. I'm not really the expert to talk about Q479.

14 Q. Thank you. I don't have any more questions.

15 MR. FREEMAN: Thank you, Commissioners.

16 CHAIR MITCHELL: All right. Duke?

17 MS. DEMARCO: No questions on Commission  
18 questions.

19 CHAIR MITCHELL: All right. At this  
20 point, I'll take motions.

21 MS. DEMARCO: Chair Mitchell, I would  
22 move to admit Reliability Panel Direct Exhibit 1  
23 into the record.

24 CHAIR MITCHELL: All right. The motion

1 is allowed.

2 (Reliability Panel Exhibit 1 was  
3 admitted into evidence.)

4 MS. CRESS: Chair Mitchell, at this  
5 time, CIGFUR II and III would like to move into the  
6 record its exhibit CIGFUR II and III Reliability  
7 Panel Direct Cross Examination Exhibit Number 1,  
8 please.

9 CHAIR MITCHELL: All right. Motion is  
10 allowed.

11 MS. CRESS: Thank you.

12 (CIGFUR II and III Reliability Panel  
13 Direct Cross Examination Exhibit  
14 Number 1 was admitted into evidence.)

15 MR. QUINN: Chair Mitchell, at this  
16 time, I'd like to move into the record NC WARN, et  
17 al.'s Reliability Panel Direct Cross Examination  
18 Exhibits 1 and 2 into the record.

19 CHAIR MITCHELL: All right. Motion is  
20 allowed.

21 (NC WARN Reliability Panel Direct  
22 Cross Examination Exhibits 1 and  
23 2 were admitted into evidence.)

24 MR. FREEMAN: Commissioners, I would ask

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1 the Public Staff Reliability Panel Direct Cross  
2 Examination Exhibit 1 entitled "Generation  
3 Interconnection Facility Study Report" be admitted  
4 into the record.

5 CHAIR MITCHELL: All right. That motion  
6 is allowed.

7 (Public Staff Reliability Panel Direct  
8 Cross Examination Exhibit 1 was admitted  
9 into evidence.)

10 CHAIR MITCHELL: All right.  
11 Mr. Snowden?

12 MR. SNOWDEN: Chair Mitchell, I don't  
13 know if the Commission intends to deal with the  
14 witnesses being waived right now, but before we  
15 move on to the Public Staff's testimony, on behalf  
16 of a long list of intervenors that I can name, we  
17 would ask that we break for the day to permit  
18 intervenors and the Public Staff to engage in some  
19 settlement discussions.

20 AGO; Avangrid; CCEBA; CIGFUR; CPSA;  
21 CUCA; NCSEA; SACE, et al.; the Tech Customers; and  
22 Walmart have been engaged in settlement  
23 discussions. We've engaged with the Public Staff  
24 as well with the hope of ultimately arriving at



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1 some kind of settlement or partial settlement that  
2 would include Duke and other intervenors.

3 We've been trying as best as we can  
4 during the pendency of this hearing to have those  
5 discussions. It's very difficult to do it all  
6 outside of business hours. Recognizing we've only  
7 got about a half hour left in the day today, we  
8 don't want to delay the hearing, but having a  
9 little bit of time during business hours to keep  
10 that conversation going would be very helpful, I  
11 think, and could streamline the hearing. So we'd  
12 ask to break for the day. And Duke is -- well,  
13 we've apprised Duke of this and they can --

14 MR. JIRAK: Certainly no objection from  
15 Duke to allow that time. As much as I love this  
16 windowless room, we wouldn't mind some more time  
17 out in the sunlight. And certainly would love the  
18 opportunity to be invited to that conversation at  
19 the right time. But no opposition.

20 CHAIR MITCHELL: All right. Let's  
21 finish business and then we'll go into recess until  
22 tomorrow. Commissioner McKissick?

23 COMMISSIONER MCKISSICK: I'm very  
24 pleased to hear the announcement that you guys are

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1        working together. I mean, it's very encouraging.  
2        So maybe something positive will be reported  
3        shortly.

4                    This past Friday, September 16th, I  
5        asked the Grid Edge Panel to provide a late-filed  
6        exhibit providing a high-level road map of a list  
7        of programs and regulatory enablers that would  
8        allow the Companies to achieve a higher annual  
9        reduction in eligible load from DSM/EE programs.  
10       And specifically at that time, looked at looking at  
11       a reduction of 1.5 percent rather than the  
12       1 percent.

13                   Mr. Huber seemed to understand the  
14       parameters of my request. He initially at that  
15       time said it would take about 30 days. Considering  
16       where we are in this hearing and in terms of having  
17       the record as complete as possible, what I would  
18       like to request is that he get that late-filed  
19       exhibit in prior to the Huber/Duff panel appearing  
20       on rebuttal, just so the record would be complete  
21       and there'll be a chance to perhaps ask questions  
22       relating to that.

23                   And we understand the caveats from the  
24       panel that the shorter duration of time, the less

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1 complete it may be, but as long as he can make it  
2 as clear and specific and detailed as possible,  
3 understanding the time constraints, that would be  
4 very much appreciated. And that would be about it.  
5 Thank you, Chair Mitchell.

6 CHAIR MITCHELL: Counsel from Duke, any  
7 questions on Commissioner McKissick's --

8 MR. JIRAK: No, we'll certainly do our  
9 best and given the time frame to deliver what we  
10 can.

11 COMMISSIONER MCKISSICK: Excellent. And  
12 again, you know, we're looking at the program's  
13 enablers that will help us get the reduction from  
14 DSM and EE up to the 1.5 percent. Thank you.

15 CHAIR MITCHELL: All right. Any  
16 additional business before we go into recess?

17 MS. CRESS: Chair Mitchell, at this  
18 time, if it's appropriate to do so, I do have a  
19 motion to waive a witness for CIGFUR, if now is the  
20 right time.

21 CHAIR MITCHELL: We can do that now or  
22 we can hold that until tomorrow.

23 MS. CRESS: Absolutely.

24 CHAIR MITCHELL: All right. And so

1       this -- just for clarity of the record, the  
2       Reliability Panel may step down. Thank you,  
3       gentlemen, for your testimony. We will see you  
4       back again on your -- for rebuttal. All right.  
5       And with that, we will be in recess until 9:30  
6       tomorrow.

7                       (The hearing was adjourned at 4:32 p.m.  
8                       and set to reconvene at 9:30 a.m. on  
9                       Thursday, September 22, 2022.)

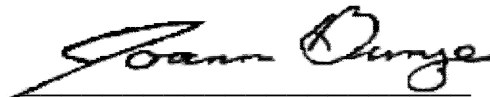
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## CERTIFICATE OF REPORTER

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 25th day of September, 2022.



JOANN BUNZE, RPR

Notary Public #200707300112

