

PLACE: Dobbs Building, Raleigh, North Carolina

DATE: Thursday, September 29, 2022

TIME: 9:30 a.m. - 11:35 a.m.

DOCKET NO.: E-100, Sub 179

BEFORE: Chair Charlotte A. Mitchell, Presiding

Commissioner ToNola D. Brown-Bland

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: 30

1 A P P E A R A N C E S:

2 FOR DUKE ENERGY CAROLINAS, LLC and DUKE ENERGY

3 PROGRESS, LLC:

4 Jack E. Jirak, Esq., Deputy General Counsel

5 Kendrick C. Fentress, Esq., Associate General Counsel

6 Jason A. Higginbotham, Esq., Associate General Counsel

7 Kathleen Hunter-Richard, Esq.

8 Duke Energy Corporation

9 Post Office Box 1551

10 Raleigh, North Carolina 27602

11
12 Andrea Kells, Esq.

13 E. Brett Breitschwerdt, Esq., Partner

14 McGuireWoods LLP

15 501 Fayetteville Street, Suite 500

16 Raleigh, North Carolina 27601

17
18 Vishwa B. Link, Esq., Partner

19 McGuireWoods LLP

20 Gateway Plaza

21 800 East Canal Street

22 Richmond, Virginia 23219-3916

23

24

A P P E A R A N C E S Cont'd.:

Lara S. Nichols, Vice President,
State & Federal Regulatory Legal
Duke Energy Corporation
4720 Piedmont Row Drive
Charlotte, North Carolina 28210

FOR NORTH CAROLINA SUSTAINABLE ENERGY ASSOCIATION:

Taylor Jones, Esq., Regulatory Counsel
4800 Six Forks Road, Suite 300
Raleigh, North Carolina 27609

FOR SOUTHERN ALLIANCE FOR CLEAN ENERGY, NATURAL
RESOURCES DEFENSE COUNCIL, and THE SIERRA CLUB:

Gudrun Thompson, Esq., Senior Attorney
David, L. Neal, Esq., Senior Attorney
Nicholas Jimenez, Esq., Senior Attorney
Southern Environmental Law Center
200 West Rosemary Street, Suite 220
Chapel Hill, North Carolina 27516

1 A P P E A R A N C E S Cont'd.:

2 CAROLINA INDUSTRIAL GROUP FOR FAIR UTILITY RATES II

3 AND III:

4 Christina D. Cress, Esq., Partner

5 Douglas E. Conant, Esq., Associate

6 Bailey & Dixon, LLP

7 434 Fayetteville Street, Suite 2500

8 Raleigh, North Carolina 27601

10 FOR CAROLINA UTILITY CUSTOMER ASSOCIATION and

11 FOR TECH CUSTOMERS:

12 Matthew B. Tynan, Esq.

13 Brooks Pierce

14 Post Office 26000

15 Greensboro, North Carolina 27420

17 Craig Schauer, Esq.

18 Brooks Pierce

19 1700 Wells Fargo Capitol Center

20 150 Fayetteville Street

21 Raleigh, North Carolina 27601

A P P E A R A N C E S Cont'd.:

FOR CAROLINAS CLEAN ENERGY BUSINESS ASSOCIATION:

John D. Burns, Esq., General Counsel

811 Ninth Street, Suite 120-158

Durham, North Carolina 27705

FOR BRAD ROUSE:

Brad Rouse, Pro se

Brad Rouse Consulting

3 Stegall Lane

Asheville, North Carolina 28805

FOR CLEAN POWER SUPPLIERS ASSOCIATION:

Ben Snowden, Esq., Partner

Erin Catlett, Esq., Associate

Jack Taggart, Esq., Associate

Fox Rothschild LLP

434 Fayetteville Street, Suite 2800

Raleigh, North Carolina 27601

1 A P P E A R A N C E S Cont'd.:
2 FOR THE ENVIRONMENTAL WORKING GROUP:

3 Andrea C. Bonvecchio, Esq.
4 The Law Offices of F. Bryan Brice, Jr.
5 127 West Hargett Street, Suite 600
6 Raleigh, North Carolina 27601

7
8 Carolina Leary, Esq.
9 1250 I Street Northwest, Suite 1000
10 Washington, DC 20005
11

12 FOR WALMART INC.:
13 Carrie H. Grundmann, Esq., Member
14 Spilman Thomas & Battle, PLLC
15 110 Oakwood Drive, Suite 500
16 Winston-Salem, North Carolina 27103
17

18 FOR CITY OF CHARLOTTE:
19 Karen Weatherly, Esq., Senior Assistant City Attorney
20 600 East Fourth Street
21 Charlotte, North Carolina 28202
22
23
24

1 A P P E A R A N C E S Cont'd.:

2 FOR APPALACHIAN VOICES:

3 Catherine Cralle Jones, Esq.

4 The Law Offices of F. Bryan Brice, Jr.

5 127 West Hargett Street, Suite 600

6 Raleigh, North Carolina 27601

7
8 FOR REDTAILED HAWK COLLECTIVE, ROBESON COUNTY

9 COOPERATIVE FOR SUSTAINABLE DEVELOPMENT, ENVIRONMENTAL

10 JUSTICE COMMUNITY ACTION NETWORK, and DOWN EAST ASH

11 ENVIRONMENTAL AND SOCIAL JUSTICE COALITION:

12 Ethan Blumenthal, Esq.

13 ECB Holdings LLC

14 1624 Nandina Comers Alley

15 Charlotte, North Carolina 28205

16
17 FOR NC WARN and

18 FOR CHARLOTTE-MECKLENBURG NAACP:

19 Matthew D. Quinn, Esq.

20 Lewis & Roberts, PLLC

21 3700 Glenwood Avenue, Suite 410

22 Raleigh, North Carolina 27612

23

24

1 A P P E A R A N C E S Cont'd.:

2 FOR BROAD RIVER ENERGY, LLC:

3 Patrick Buffkin, Esq.

4 Buffkin Law Office

5 3520 Apache Drive

6 Raleigh, North Carolina 27609

7

8 FOR KINGFISHER ENERGY HOLDINGS, LLC, and

9 FOR PERSON COUNTY, NORTH CAROLINA:

10 Patrick Buffkin, Esq.

11 Buffkin Law Office

12 3520 Apache Drive

13 Raleigh, North Carolina 27609

14

15 Kurt Olson, Esq.

16 The Law Office of Kurt J. Olson, PLLC

17 Post Office Box 10031

18 Raleigh, North Carolina 27605

19

20 FOR NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION:

21 Tim Dodge, Esq., Regulatory Counsel

22 3400 Sumner Boulevard

23 Raleigh, North Carolina 27616

24

1 A P P E A R A N C E S Cont'd.:

2 FOR THE CITY OF ASHEVILLE and COUNTY OF BUNCOMBE:

3 Jannice Ashley, Esq., Senior Assistant City Attorney

4 City Attorney's Office

5 70 Court Plaza

6 Asheville, North Carolina 28801

8 Curt Euler, Esq., Senior Attorney II

9 Buncombe County

10 200 College Street, Suite 100

11 Asheville, North Carolina 28801

13 FOR MAREC ACTION:

14 Bruce Burcat, Esq, Executive Director

15 MAREC Action

16 Post Office Box 385

17 Camden, Delaware 19934

19 Kurt J. Olson, Esq.

20 Law Office of Kurt J. Olson, PLLC

21 Post Office Box 10031

22 Raleigh, North Carolina 27605

1 A P P E A R A N C E S Cont'd.:
2 FOR TOTALENERGIES RENEWABLES USA, LLC, and
3 FOR CLEAN ENERGY BUYERS ASSOCIATION:
4 Joseph W. Eason, Esq.
5 Nelson, Mullins, Riley & Scarborough LLP
6 4140 Parklake Avenue, Suite 200
7 Raleigh, North Carolina 27612
8
9 Weston Adams, Esq.
10 Nelson, Mullins, Riley & Scarborough LLP
11 1320 Main Street, Suite 1700
12 Columbia, South Carolina 29201
13
14 FOR PORK COUNCIL:
15 Kurt J. Olson, Esq.
16 Law Office of Kurt J. Olson, PLLC
17 Post Office Box 10031
18 Raleigh, North Carolina 27605
19
20 FOR COUNCIL OF CHURCHES:
21 James P. Longest, Jr., Esq.
22 Duke University School of Law
23 Box 90360
24 Durham, North Carolina 27708

1 A P P E A R A N C E S Cont'd.:

2 FOR AVANGRID RENEWABLES, LLC:

3 Benjamin Smith, Esq.

4 Todd S. Roessler, Esq.

5 Joseph S. Dowdy, Esq.

6 Kilpatrick Townsend & Stockton LLP

7 4208 Six Forks Road, Suite 1400

8 Raleigh, North Carolina 27609

9
10 FOR SEAN LEWIS:

11 Sean Lewis, Pro se

12 640 Firebrick Drive

13 Cary, North Carolina 27519

14
15 FOR THE USING AND CONSUMING PUBLIC, THE STATE, AND ITS
16 CITIZENS:

17 Margaret Force, Esq., Special Deputy Attorney General

18 Tirrill Moore, Esq., Assistant Attorney General

19 North Carolina Department of Justice

20 Post Office Box 629

21 Raleigh, North Carolina 27602

22

23

24

A P P E A R A N C E S Cont'd.:

FOR THE USING AND CONSUMING PUBLIC:

Lucy Edmondson, Esq., Chief Counsel

Robert Josey, Esq.

Nadia L. Luhr, Esq.

Anne Keyworth, Esq.

William E.H. Creech, Esq.

William Freeman, Esq.

Public Staff - North Carolina Utilities Commission

4326 Mail Service Center

Raleigh, North Carolina 27699-4300

12

13

14

15

16

17

18

19

20

21

22

23

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P R O C E E D I N G S

CHAIR MITCHELL: All right. Good morning. Let's go back on the record, please. We will continue on with cross-examination of the Grid Edge Panel, and, Ms. Cralle Jones, we are still with you.

MS. CRALLE JONES: Thank you.

Whereupon,

LON HUBER AND TIM DUFF,

having previously been duly sworn, were examined and testified as follows:

CONTINUED CROSS EXAMINATION BY MS. CRALLE JONES:

MS. CRALLE JONES: As a preliminary matter and in consultation with counsel, I have a couple of questions that are gonna refer to what was previously marked as Appalachian Voices Grid Edge Panel Direct Cross Exhibit 2, and I've provided that to the witness for today.

THE WITNESS: (Tim Duff) Before you start these questions, I need to make one correction. I wasn't sure, so I answered something yesterday, and upon checking, we do, in fact, do energy efficiency upgrades on mobile homes as part of the neighborhood energy saver program. It

1 wasn't part of the original approval, but as one of
2 the modifications, we added mobile homes. And we
3 even have phase 2 measures where we'll do the belly
4 insulation as part of the neighborhood energy
5 saver. So I did want to make that correction.

6 Q. So if the website currently reflects that --
7 in a frequently asked questions, that mobile homes are
8 not eligible and that renters are not eligible, you're
9 saying there's been some correction to that
10 information?

11 A. I don't know what the web- -- I can't speak
12 to what the website says. You asked me if the
13 neighborhood energy saver covered mobile homes, and I
14 said I didn't believe it did. And I wanted to correct
15 that for the record.

16 Q. Okay. Thank you. And to try and go back to
17 another question where we left off yesterday, I think
18 you testified also about, kind of, a second tier of
19 that neighborhood energy saver program.

20 I think the Duke website calls it the home
21 energy call plus program; would that be correct?

22 A. Home energy house call is a
23 non-income-qualified program.

24 Q. It's under the neighborhood energy --

1 A. Oh, yeah, the -- so there is the tier 2 where
2 customers within that program that are found to have
3 high -- high energy usage, then they are eligible for
4 those additional measures, which are the deeper
5 measures I discussed yesterday.

6 Q. The website, in describing that home energy
7 call plus program, says that it includes a blower door
8 test and a thermal energy imaging, and it's available
9 for an additional \$50 charge.

10 MS. FENTRESS: Objection.

11 MS. CRALLE JONES: I'm gonna just ask
12 whether or not that's a fair description.

13 THE WITNESS: I think you're looking --

14 MS. FENTRESS: Madam Chair, I believe
15 Mr. Duff has already testified that he doesn't --
16 is not really familiar with what's on the website.
17 And I believe that information that's on our
18 website about low-income programs is beyond the
19 scope of this proceeding and properly, perhaps,
20 brought in the low-income affordability
21 collaborative proceeding where the Commission
22 established that proceeding to address these types
23 of questions.

24 MS. CRALLE JONES: He provided a

1 description yesterday of programs that were
2 available to low-income customers, and the website
3 appears to provide different information. And I
4 wanted to bring that to the Commission's attention,
5 because as to -- and he's also testified to the
6 fact that there are no financial barriers to
7 low-income participation in these programs.

8 And it seems to me that, if tier 2 is
9 supposed to be that enhanced program that he was
10 referring to, then a \$50 additional charge would be
11 a financial barrier.

12 CHAIR MITCHELL: All right. I'm gonna
13 overrule the objection. I'll allow the witness to
14 answer the question. And answer to the best of
15 your ability.

16 THE WITNESS: I can't speak to what is
17 being looked at on the web page. The home energy
18 house call plus, with the \$50 blower fee, is the
19 regular home energy audit program. It is not the
20 neighborhood energy saver program. So I'm not sure
21 what you're looking at on the web page, but the
22 home energy house call plus, with that \$50 option
23 for the blower door, that's the regular home energy
24 audit program, not neighborhood energy saver.

1 Q. Okay. Thank you. Okay. Moving on to what
2 was our last question yesterday was a question
3 regarding publication by the ACEEE guide for regulators
4 regarding low-income energy efficiency.

5 And you said you were not familiar with that
6 publication, but you are familiar, in general, with
7 ACEEE, correct?

8 A. I am aware of the organization, yes.

9 Q. And, in general, can we agree that they focus
10 on programs and policies to reduce energy waste and
11 combat climate change?

12 A. I think they focus on energy efficiency. I
13 think it's the American Council for an Energy-Efficient
14 Economy is what ACEEE stands for. And I can tell you,
15 I look at the -- my knowledge of them is focused on
16 energy efficiency. As I pointed out, there's some
17 inconsistencies with some of the measurements that they
18 make in their reports, so I'm particularly aware of
19 their work.

20 Q. Okay.

21 MS. CRALLE JONES: I would like to have
22 marked at this time Appalachian Voices Grid Edge
23 Panel Rebuttal Cross Examination 1, and I'd ask my
24 associate to pass that out. It is the

Page 20

1 April 28, 2021, supporting low-income energy
2 efficiency, a guide for utility regulators. And I
3 won't go there right now, but wanted to have that
4 available.

5 Q. Yesterday, I also asked whether we could
6 agree that utilities and regulatory bodies in other
7 states --

8 CHAIR MITCHELL: All right.

9 Ms. Cralle Jones, let's go ahead and mark the
10 document.

11 MS. CRALLE JONES: Thank you. I
12 apologize.

13 CHAIR MITCHELL: So the document will be
14 marked as Appalachian Voices Grid Edge Panel
15 Rebuttal Cross Examination Exhibit 1.

16 MS. CRALLE JONES: Thank you.

17 (Appalachian Voices Grid Edge Panel

18 Rebuttal Cross Examination Exhibit 1 was
19 marked for identification.)

20 Q. Yesterday, relative to the question of
21 whether you were aware of any other states where
22 targets had been implemented for low-income programs --
23 and I went to YouTube to try and make sure we were -- I
24 was accurately describing this -- you responded, in

1 general, that you were not aware of any in the areas
2 that Duke serves. And I think you said, "I'm not
3 specifically aware of any. None of the states that
4 Duke operates in that I'm familiar with, we don't have
5 those specific targets associated with achievements,
6 other than what we have in NC, which is projected
7 targets as part of the cost recovery mechanism in
8 annual reconciliations to that target."

9 Is that --

10 A. That's what I said, yes.

11 Q. Okay. Duke operates in Ohio, correct?

12 A. Correct.

13 Q. Duke Ohio, on the 2020 scorecard, has a
14 higher rating than Duke Energy Carolinas, correct?

15 A. Yes. As I pointed out, that's one of the
16 fallacies with this ranking, is we don't even offer
17 energy efficiency programs in Ohio anymore. The
18 statute changed and ended all of those programs.

19 Q. So the ACEEE report quotes the Ohio program
20 as having a \$15 million set-aside; is that not
21 accurate?

22 MS. FENTRESS: Objection. I'm not -- I
23 don't know what ACEEE report. If you could point
24 me.

1 MS. CRALLE JONES: Okay.

2 CHAIR MITCHELL: I'll sustain the
3 objection.

4 Q. Let me back up. Are you aware of any
5 set-aside for low-income programs in Ohio?

6 A. There is no set-aside for utility energy
7 efficiency programs that I'm aware of in Ohio.

8 Q. On page 2 of the document that's been marked
9 Cross Examination Exhibit 1, the ACEEE sets out
10 recommendations to regulators. And the first one is to
11 set a goal on to energy efficiency delivered to
12 low-income customers.

13 Do you see where that is?

14 A. I see that, yes.

15 Q. And at the end of that first paragraph, it
16 refers to several examples of spending savings and
17 other requirements in state databases. And there's a
18 link there to the state database.

19 A. Yeah, I see that it says state policy
20 database.

21 Q. Okay. Thank you. So, subject to check, I'll
22 represent to you that the database lists that
23 \$15 million set-aside. Whether or not it was part of
24 the Duke program or not, I do not know.

1 A. The -- I can tell you, as having been
2 responsible in a similar role in Ohio, that we had
3 utility energy efficiency programs since 2008. They
4 were terminated in 2020. During that entire period of
5 operations, we did not have a targeted low-income
6 amount for utility energy efficiency programs, nor was
7 there a utility energy efficiency program set-aside.

8 There may be some sort of low-income funding
9 for bill assistance or other things that I'm not aware
10 of, but I can tell you with confidence that, as long as
11 they -- that I'm aware of, which goes back to 2008,
12 there were no utility energy efficiency programs that
13 had specific targets associated with them or set-aside
14 budgets.

15 Q. If the state had a set-aside program of
16 \$15 million for low-income energy efficiency
17 improvements, is it -- is it -- is it fair to conclude
18 that that could also contribute to additional energy
19 efficiency savings?

20 A. So I don't know, because I don't know if
21 there was any measurement or verification or actual
22 quantification of savings if, in fact, such a program
23 existed.

24 Q. Okay. The scoreboard also lists two

1 Massachusetts utilities at the top of the list, and
2 then your late-filed exhibit also spends some time
3 talking about utility energy efficiency in
4 Massachusetts, correct?

5 A. So it does -- this does have -- I believe
6 NGMA is National Grid Massachusetts and Eversource
7 Massachusetts, or MA, is on the exhibit that you
8 provided. And in the late-filed exhibit, we do discuss
9 Massachusetts, because there are a number of things
10 that are done in Massachusetts that help to increase
11 the amount of what's counted as utility energy
12 efficiency.

13 I believe what you're talking about in the
14 late-filed exhibit referenced that they have an ability
15 to promote fuel switching and count those savings,
16 similar to what I mentioned during our direct testimony
17 regarding California recognizing fuel switching. So
18 that's what I talked about.

19 Q. And subject to check, in Massachusetts
20 there's also a 2010 policy that required 10 percent of
21 electric utility program funds go into energy
22 efficiency.

23 Are you aware of that program?

24 A. I'm not aware, specifically, of that program.

1 Q. But hypothetically, would it be fair to say
2 that, if there was an annual set-aside of 10 percent of
3 program funds to install EE measures in low-income
4 households, that could also contribute to a net
5 incremental energy efficiency savings?

6 A. I don't think it -- I don't see a direct
7 high. As I talked about yesterday, we don't have a
8 cap. And even the most recent enhancements to our
9 cost -- to our cost recovery mechanism provides an
10 incentive through a PRI, or performance recognition
11 incentive, associated with low-income programs that are
12 not cost-effective, and so they don't have a positive
13 net benefit to share.

14 So I truly don't believe that there's any tie
15 with necessarily achieving more by having a higher
16 level of budgeting, because if we can do more
17 low-income energy efficiency, I can tell you that the
18 Company would like to do it. It's not -- there are
19 other barriers that are not related to the program
20 budgets that are what limit the amount of low-income
21 energy efficiency that's achieved.

22 Q. And you've talked several times in the
23 proceeding about low-income programs and evaluation,
24 that they are not cost-effective. And that's based

1 upon current definitions in North Carolina about
2 cost-effectiveness; is that right?

3 A. That's based off of the currently approved
4 cost recovery mechanism that delineates how measures
5 and programs are deemed to be cost-effective, yes.

6 Q. Are you aware of states that would define
7 cost-effectiveness differently to include consideration
8 of non-energy benefits, such as asthma reduction,
9 thermal stress reduction, productivity improvements,
10 reduced risk of carbon monoxide poisoning, reduced risk
11 of fire that would change the definition of
12 cost-effectiveness?

13 MS. FENTRESS: Objection. I don't
14 believe that this is relevant to this docket, and
15 that was a very long list of things for Mr. Duff to
16 say whether he is aware or not aware of.

17 MS. CRALLE JONES: In this -- in the
18 rebuttal exhibit and in his primary rebuttal
19 testimony and the Grid Edge testimony, they discuss
20 that part of the problem with the energy efficiency
21 ranking is how that's calculated and what the
22 definitions are used. And so likewise, there's
23 been testimony about whether it is cost-effective
24 or not.

1 In states that list higher on this
2 energy efficiency, they have definitions that
3 include cost-effectiveness with those additional
4 aspects. And so if you balance cost-effectiveness
5 differently, you also get a different -- I think
6 it's reasonable to conclude you'd get a different
7 result relative to energy efficiency savings.

8 CHAIR MITCHELL: So the basis for
9 your -- the basis for your question is what? What
10 are you trying to get from the witness? Or why ask
11 the witness the question?

12 MS. CRALLE JONES: If -- if the
13 cost-effectiveness definition in North Carolina was
14 expanded to include nonenergy definitions, is it
15 reasonable to conclude that low energy
16 efficiency --

17 CHAIR MITCHELL: You're still arguing --
18 you're still arguing to me here, Ms. Cralle Jones.
19 But I'm hearing you. Keep going.

20 MS. CRALLE JONES: Would it be
21 reasonable to conclude that that expanded
22 definition would increase the cost-effectiveness
23 determination of low-income programs?

24 CHAIR MITCHELL: All right. I'm gonna

1 overrule the objection for this one question. I'll
2 ask the witness to do his best in responding, and
3 then let's move on to your next topic,
4 Ms. Cralle Jones.

5 THE WITNESS: So I think the first --
6 there was kind of multiple parts to that question.
7 First, yes, I am aware that states look at
8 nonenergy benefits. We actually, as part of our
9 energy efficiency order and work with our
10 collaborative, are doing a study to evaluate
11 nonenergy benefits to be considered in the total
12 resource cost test for informational purposes.

13 But I highly disagree with the second
14 part of your statement, which is that more ener- --
15 more energy efficiency could get done if you change
16 the cost-effectiveness definition for low-income.
17 Because the North Carolina Commission, as well as
18 the Commissions in the other states we operate
19 where they do not recognize those nonenergy
20 benefits, have said you're allowed -- we approve
21 these programs because -- recognizing there is a
22 societal benefit to providing low-income energy
23 efficiency even though it's non-cost-effective.
24 Meaning that the long-term benefits are less than

1 the cost if you're looking at as utility system
2 benefits.

3 So Commissions have approved the
4 programs and we offer the programs despite the fact
5 they're non-cost-effective. It's important,
6 whether you are considering those nonenergy
7 benefits or not, that the Commission consider
8 whether or not the utility benefits are greater
9 than the utility cost to implement the program.

10 So I don't see any change in the
11 cost-effectiveness definition changing the
12 magnitude of low-income energy efficiency programs
13 offered, because the Commission has already
14 approved programs, recognizing under the utility
15 cost test that those programs are not
16 cost-effective.

17 Q. All right. One last comparison from the
18 scorecard. The fourth utility listed on the scorecard
19 is ComEd.

20 Would you agree that that's an Illinois-based
21 utility?

22 A. I believe, actually, they're a multistate
23 utility. And that's one of the things I pointed out on
24 this, it's kind of hard to figure out what it actually

1 represents, because there's Duke Energy North Carolina,
2 Duke Energy South Carolina, Duke Energy Progress all
3 listed here. I can't -- I don't want to specify that
4 it is ComEd Illinois. ComEd does have utility
5 operations in Illinois, though, yes.

6 Q. Okay. And turning back to what's been now
7 marked as Rebuttal Cross Examination Exhibit 1, the
8 first program listed under neither that point 1 is the
9 Illinois program. And that indicates that it directs
10 utilities to implement low-income energy efficiency
11 measures costing no less than \$25 million per year.

12 Would it be fair to conclude that an annual
13 \$25 million spending requirement for low-income energy
14 efficiency measures could also contribute to a net
15 incremental energy efficiency savings on the scorecard?

16 A. So I can't tell you that for sure. I -- I
17 struggle to say that telling somebody they have to
18 spend a certain amount of money every year, I think
19 that can lead to sometimes inefficiencies. Because if
20 you're trying to spend money and you're not actually
21 getting what you should be from the most meaningful
22 energy efficiency, I've struggled with spending targets
23 for a long time when we've talked about energy
24 efficiency, and I don't know if it's any different for

1 low-income.

2 So I can't say it's going to deliver more or
3 more meaningful energy efficiency. The budgets are
4 higher. And if, in fact, they're utilizing those
5 budgets to a higher level, then yes, I think you could
6 get more efficiency savings. But from what I've seen,
7 having firm spending targets can sometimes be
8 problematic because you're more focused on spending
9 than getting savings.

10 Q. And we can disagree that that is -- except
11 that -- thank you for that answer.

12 You would acknowledge that that's a different
13 conclusion than the recommendation made by ACEEE?

14 A. Yes. I'm not speaking for ACEEE. I'm
15 speaking on my experience and what I've seen with
16 respect to utility energy efficiency programs
17 specifically targeting low-incomes in the eight utility
18 operating Companies for Duke which I have knowledge
19 about.

20 MS. CRALLE JONES: That's all the
21 questions I have. I'd ask that this exhibit be
22 admitted into the record.

23 CHAIR MITCHELL: All right. I'll take
24 motions at the conclusion of this panel's

1 examination today.

2 All right, CIGFUR, you're up.

3 MS. CRESS: Thank you, Chair Mitchell.

4 CROSS EXAMINATION BY MS. CRESS:

5 Q. Good morning, Mr. Duff. Good morning,
6 Mr. Huber.

7 MS. CRESS: Counsel, do you have copies
8 of the exhibit that we discussed?

9 MS. FENTRESS: I do.

10 MS. CRESS: Chair Mitchell, yesterday
11 Duke filed in Docket Number E-7, Sub 1277 and
12 E-2, Sub 1306, an application for approval of Green
13 Source Advantage Bridge Program, and I would ask
14 that the Commission take judicial notice of that
15 filing. And counsel, I believe, has copies if that
16 would aid in this line of questioning.

17 CHAIR MITCHELL: All right. Copies
18 likely would aid in the Commission's understanding
19 of the questions, so if you would, Ms. Fentress.
20 And I'm not hearing any objection to her request.

21 MS. FENTRESS: No objection at this
22 time.

23 CHAIR MITCHELL: All right. Well, the
24 Commission will take judicial notice of the filing

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1 made by the Companies yesterday in the dockets
2 identified by Ms. Cress.

3 MS. CRESS: Thank you, Chair Mitchell.

4 And thank you to counsel for providing copies.

5 Q. Mr. Huber, Mr. Duff, in your rebuttal
6 testimony, you provided essentially advanced notice
7 that this filing was coming; is that fair to say?

8 A. That's correct.

9 Q. And in your rebuttal testimony, you
10 specifically indicate that the Companies would soon be
11 seeking approval of a GSA bridge program of
12 250 megawatts to satisfy customer demand, while new
13 customer programs are being developed pursuant to House
14 Bill 951; is that right?

15 MS. FENTRESS: Counsel, may I ask that
16 we be directed to that testimony?

17 MS. CRESS: Absolutely. Page 15, lines
18 6 through 10.

19 MS. FENTRESS: Thank you.

20 THE WITNESS: (Lon Huber) Yes, that's
21 right.

22 Q. Thank you. And you are -- you have in front
23 of you the filing that the Companies made yesterday
24 seeking approval of the GSA bridge program, correct?

1 A. Correct.

2 Q. Okay. And according to that filing, Duke has
3 proposed that the 250 megawatts of GSA bridge program
4 capacity would be less the current reserved capacity of
5 100 megawatts for the Department of Defense that has
6 since expired; is that right?

7 A. That's right. One to, you know, balancing
8 different stakeholder requests carve out that chunk for
9 the DoD.

10 Q. Is there any reason why that 100-megawatt
11 set-aside for DoD can't be additive to the
12 250 megawatts for other nonresidential customers?

13 A. I mean, we're certainly open to
14 conversations. We thought that the 250 with the 100
15 set-aside was sufficient to last us while we all worked
16 together on the new programs and get them filed. So we
17 think it's sufficient, but we're certainly open.

18 Q. Thank you for that. And when do the
19 Companies anticipate that a filing would be made for
20 approval of new renewable programs?

21 A. Well, I think we're hoping that, you know,
22 maybe in the next few weeks. But responding to
23 stakeholder requests to pause conversations until after
24 this proceeding, I think that's gonna push us back a

1 bit. But we would like to file those new programs as
2 soon as possible once we get consensus from
3 stakeholders.

4 Q. Thank you for that. And just to be clear,
5 the capacity for the GSA bridge program would be
6 subject to the 45 percent third-party owned new solar
7 capacity pursuant to House Bill 951; is that right?

8 A. That's right. Because these -- although it's
9 similar -- very, very similar to the previous GSA, this
10 is a 951 program.

11 Q. Understood. Thank you. Are you aware that
12 some CIGFUR members have indicated a preference for a
13 standard offer program option much like what Duke
14 previously had proposed in the underlying GSA program
15 docket?

16 A. I'm not familiar with that.

17 Q. Okay. Are you aware that customer feedback
18 from nonresidential customers specifically has been,
19 would you say, on a spectrum of preference for program
20 complexity?

21 A. I'm not exactly sure what you mean. I think,
22 in general, the -- you know, we've received sort of two
23 camps of feedback. One is, you know, have a simple
24 straightforward utility offer program, have the

1 third -- a program where customers can negotiate with
2 third parties as well. So we've seen a spectrum just
3 because businesses are in just completely different
4 stages of their journeys for sustainability.

5 Q. And how do the Companies plan to address that
6 wide range of preferences and feedback that you've
7 received so far?

8 A. Yeah, so we're taking all that feedback
9 together and, as I put in testimony, we -- we're gonna
10 have a few different programs, so an entire menu of
11 options. So a company in the early stages will have a
12 straightforward option, no commitment; maybe companies
13 that are willing to take a long-term position, they can
14 have that option; and then the more advanced companies,
15 they can actually engage in what we call time-aligned
16 renewable energy matching, which is sort of the next
17 generation of clean energy programs, where they can
18 look at every hour of the day and match up their usage
19 to renewable energy or clean energy. And that's gonna
20 require energy storage.

21 And so we thought that's a really good array
22 of options for customers. And again, it can be small
23 commercial customers, it can be large. In fact, some
24 of the programs here can be open to residential. And

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1 we've had some success with these in our Florida
2 territory where our programs have been sold out for
3 different types of businesses and residential
4 customers. So we think we have a good track record and
5 some really solid ideas to build on.

6 Q. Thank you for that. And to save time, I'm
7 not gonna introduce it as an exhibit unless I need to,
8 but are you familiar with a response to a data request
9 that CIGFUR sent to Duke pertaining to the carbon
10 reduction consultants that the Companies discuss on
11 page 11 of Appendix G of the Carbon Plan?

12 A. Yes, I'm aware.

13 Q. Okay. And can you speak to what the
14 Companies contemplate for the role that those carbon
15 reduction consultants can play for nonresidential
16 customers?

17 A. Sure. And, you know, this is more of a
18 concept, admittedly, that we put out to get feedback
19 and show a signal of what we're interested in doing.
20 But as we see it, there's, again, companies in
21 different stages, and some of them need guidance of,
22 hey, how can we best reduce our carbon usage and our
23 carbon emissions generally.

24 And so we're thinking, okay, well, let's put

1 together a team that can holistically guide them, so
2 energy efficiency, DR, clean energy programs. It could
3 be partially on-site renewables buttressed by off-site
4 remote renewables. And so we thought, hey, this could
5 be a service that some business customers, especially
6 smaller business customers that don't have the
7 resources, could utilize.

8 Again, admittedly, early stages, but
9 especially now that we're gonna have -- or hopefully
10 we'll have these new options approved where we can
11 guide them into a variety of different programs that
12 fit their needs, we thought that it could actually help
13 with 951 compliance as we get customers on these
14 journeys and then introduce them to other programs that
15 they might not have known about.

16 Q. Thank you for that. I think I just have a
17 couple more questions. In the application that was
18 filed yesterday for the GSA bridge program, I believe
19 the Companies indicate that, if this bridge program
20 capacity is not subscribed before the Commission
21 approves a new customer renewable program or programs,
22 then it will automatically expire; is that right?

23 A. That's what I -- that's my understanding,
24 yes.

1 Q. Can you help us understand why any unutilized
2 bridge program capacity couldn't just roll into new
3 customer renewable program capacity?

4 A. Yeah. Well, I think the capacity actually
5 would roll into the new one, it just wouldn't be under
6 this older framework. So this -- this -- this
7 application for GSA bridge will be outdated by the time
8 those new programs are approved. And those new
9 programs should be far more attractive than this bridge
10 offering. And so it's not like, you know, all of a
11 suddenly those megawatts are just gonna disappear, it
12 will basically be assumed by those new programs.

13 Q. Thank you for that. And I think this is my
14 last question. But you testified earlier this morning
15 about the Companies pushing pause on discussions for
16 customer renewable programs pending this hearing being
17 completed.

18 Have the Companies rescheduled the discussion
19 that I believe was previously scheduled to take place
20 on October 8th, subject to check?

21 A. I'm not sure. I think -- I think some of the
22 stakeholder outreach folks were trying to obtain
23 calendars and figure out when the best time to meet
24 would be. So I'm not sure if that's been booked or

1 not.

2 Q. But there will be at least one more meeting
3 before the Companies file any permanent new programs
4 for Commission approval?

5 A. For sure, yeah. And I think what's
6 contemplated is another, you know, completely open to
7 the public session as well.

8 Q. Great. Thank you. No further questions.

9 MR. SNOWDEN: Chair Mitchell, if I may.
10 CPSA had not reserved time to question these
11 witnesses. I was not -- had not -- was not able to
12 review the petition -- I'm sorry, the application
13 for the GSA extension program before 8:00 last
14 night. If I may, I'd like permission to ask just a
15 couple of clarifying question on the -- on what was
16 just being discussed.

17 MS. FENTRESS: Objection. We do have a
18 filing. There will be an entire docket process on
19 this. It was just filed, and there will be -- I
20 imagine the Commission would allow the docket to go
21 forward.

22 MR. SNOWDEN: And the questions don't
23 relate to the petition as such, but they do -- they
24 relate to how the petition and the capacity that's

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1 being sought under this program relates to or would
2 relate to the procurement targets that are at issue
3 in this proceeding.

4 CHAIR MITCHELL: All right. I will
5 overrule the objection on very narrow grounds and
6 allow you to ask that one question that you just
7 asked of these witnesses. Go ahead.

8 MR. SNOWDEN: Thank you.

9 CROSS EXAMINATION BY MR. SNOWDEN:

10 Q. Mr. Huber, does Duke envision that the
11 250 megawatts of capacity that's part of this program
12 would be in addition to the procurement targets that
13 the Commission approves in this proceeding, or would
14 they be drawn from the procurement targets?

15 A. (Lon Huber) So this is getting a little bit
16 outside of my expertise. But from what I understand,
17 this could be -- there could be a variety of ways that
18 these megawatts could manifest. It could be developers
19 that have interconnection agreements today; it could be
20 developers that didn't win the 2022 procurement and,
21 you know, they've gone through the DISIS process. So I
22 think there's a few avenues that -- from where those
23 megawatts could come from.

24 Q. Okay. Thank you very much.

1 CHAIR MITCHELL: Okay. SACE?

2 MR. NEAL: Thank you, Chair Mitchell.

3 CROSS EXAMINATION BY MR. NEAL:

4 Q. David Neal for SACE, et al. Good morning,
5 gentlemen.

6 A. (Lon Huber) Good morning.

7 Q. Sorry, I haven't been speaking. I want to
8 ask you few questions about Late-Filed Exhibit
9 Number 6, which I believe has now been marked Grid Edge
10 Panel Rebuttal Exhibit 1.

11 MR. NEAL: And first, Chair Mitchell,
12 maybe I should ask the Commission. Will there be
13 an opportunity for intervenors to provide any
14 comments on this late-filed exhibit before the
15 close of the record in this matter?

16 CHAIR MITCHELL: State your question
17 again, Mr. Neal.

18 MR. NEAL: Yes. So we received a
19 late-filed exhibit yesterday, obviously after our
20 witnesses had concluded. I just wanted to know if
21 there was any opportunity for intervenors to file
22 any response or comments on this late-filed exhibit
23 before the close of evidence in this docket.

24 CHAIR MITCHELL: Anticipating that the

1 record is gonna close today at some point,
2 hopefully sooner rather than later today, I
3 don't -- I don't see how that's possible. But we
4 have done our best to minimize the amount of
5 late-filed exhibits that the Commission has
6 requested, and have been clear that they needed to
7 be filed prior to the close of evidence to give
8 you-all an opportunity to review and explore those
9 with witnesses as time allows.

10 So I guess that's a no. A long-winded
11 no to your question. Just given where we are at
12 the hearing and anticipating that we're gonna close
13 evidence today.

14 MR. NEAL: Thank you, Chair Mitchell.

15 Q. So at a high level, would you all agree that
16 Late-Filed Exhibit 6 looks at different ways of
17 accounting for savings and different ways of achieving
18 savings?

19 A. (Tim Duff) Yes. Yes, that's correct. The
20 intent of the exhibit was to be responsive to
21 Commissioner McKissick's request as well as inform
22 that, not only are there programatic additions that can
23 achieve additional savings or additional participation
24 that the Company worked very aggressively to identify

1 for the exhibit, but the metric which was -- we were
2 asked to talk about with respect to becoming a national
3 leader is also highly dependent, as I've talked about
4 before, on what is counted. And so yes, I think that's
5 a fair characterization.

6 Q. And turning your attention to the title of
7 Late-Filed Exhibit 6, "Potential Ways to Increase Duke
8 Energy's Annual Energy Savings Percentage to
9 1.5 Percent of Retail Sales for Utility Energy
10 Efficiency," you would agree that, within the document,
11 you-all talk about eligible retail sales, not total
12 retail sales; isn't that right?

13 A. Yes. Because Commissioner McKissick's direct
14 question was how to get from 1 percent that you had to
15 a 1.5. And the 1 percent that was modeled was of
16 eligible sales.

17 Q. And recognizing that you take an issue with
18 basing efficiency savings levels on total retail sales,
19 you would agree that it's not just intervenors that
20 have taken that approach, correct?

21 A. I guess I need a little bit more
22 clarification on that.

23 Q. Sure. Yeah. Fair enough.

24 The current governing mechanism, for example,

1 that was approved by this Commission in 2020 includes a
2 bonus incentive in the event that the utilities
3 achieve -- the Duke utilities achieve 1 percent savings
4 as a percentage of total prior year retail sales; isn't
5 that right?

6 A. Yes. The bonus incentive is based off of
7 total retail sales; the penalty or performance penalty
8 is based off -- includes eligible retail sales. And
9 again, as I talked about in direct testimony, we think
10 that's really important, because it still shows that
11 that incentive is meaningful, because we're gonna be
12 striving to try and achieve it, as I've talked about
13 before, to get above the 1 percent of eligible and get
14 to that 1 percent of total, and we have a meaningful
15 incentive to do so. And the penalty would be if we
16 fell below the 0.5 percent of eligible retail sales.

17 Q. At the end of the day, this is, sort of,
18 another issue about how you count it, though, right?
19 If the Commission set a slightly higher target of a
20 percentage savings of eligible sales, that would equate
21 to a slightly lower percentage of total retail sales;
22 isn't that right?

23 A. I think I understand your question.
24 Essentially, if the Commission used 1 percent of total,

1 it would require us to get more than 1 percent from
2 those customers that were participating, which is why
3 we said it's -- it's something that we felt was not
4 necessarily achievable and should be modeled in the
5 Carbon Plan.

6 Q. I have a question about page 2, the last
7 sentence of the first paragraph. You state that --
8 essentially, that Duke cannot include energy savings
9 related to fuel switching, and you cite General Statute
10 62-133.8.

11 Can you -- do you know particularly where --
12 and that's the REPS log, where in 62-133.8 it specifies
13 that efficiency savings cannot include fuel switching?

14 A. That's a legal statute that I would need to
15 have in front of me in order to -- in order to
16 present -- in order to give you where I see that in
17 there. But it's -- we have been made aware of that in
18 the residential new construction proceeding, so that --
19 that was the basis of it, is we talked about it at
20 great lengths, that the Companies' energy efficiency
21 programs should not promote fuel switching.

22 Q. And are you aware that the multiyear rate
23 plan provisions of HB 951 include -- again, different
24 statute, but include language related to what the

1 Commission may consider when evaluating a utility's
2 performance-based regulation application that includes
3 whether or not that application encourages beneficial
4 electrification?

5 MS. FENTRESS: Objection. Mr. Duff is
6 not an attorney, and I do not believe he has House
7 Bill 951 in front of him.

8 MR. NEAL: It's just a question about
9 whether he's aware that that provision exists.

10 MS. FENTRESS: Madam Chair, we would
11 stipulate that House Bill 951 says what it says.

12 CHAIR MITCHELL: All right. Mr. Neal?

13 MR. NEAL: Yes. Just -- I can move on.

14 Q. You cite, in Late-Filed Exhibit Number 6, a
15 couple times, a different ACEEE report than we've
16 discussed before. You cite the state's scorecard as
17 opposed to the utilities' scorecard that's been
18 discussed previously.

19 A. The Tech Customers referenced the state
20 scorecard, and we discussed that. I'm sorry, I forget
21 the attorney's name, but it was the Tech Customers'
22 attorney.

23 Q. And I'm sorry, just to direct your attention
24 to Late-Filed Exhibit Number 6, there are a couple of

1 footnotes that refer to the state energy efficiency
2 scorecard, for example, footnote 1 and footnote 2.

3 A. Yeah.

4 Q. And you're aware that the -- that in
5 Table ES-2 of that state scorecard, ACEEE ranks
6 North Carolina 27th out of the 50 states plus District
7 of Colombia in terms of overall efficiency savings as a
8 state?

9 A. Yeah. And as I said, there's still the same
10 issues with -- with those rankings.

11 Q. And did you review that 2020 state efficiency
12 scorecard in the course of putting together this
13 late-filed exhibit?

14 A. I looked at the ranking section, yes.

15 Q. And did you also see in the executive
16 summary, at Roman numeral XVII, where it lists
17 strategies for improving energy efficiency that --
18 where the number 1 recommendation is to establish an
19 energy efficiency resource standard or similar
20 efficiency savings target?

21 A. Yes. I think North Carolina already has that
22 with respect to the REPS standard, where we're allowed
23 to achieve our REPS compliance by using 40 -- up to
24 40 percent of -- to meet of the annual target through

1 energy efficiency.

2 Q. And I think I have no further questions.

3 Thank you.

4 CHAIR MITCHELL: Public Staff?

5 CROSS EXAMINATION BY MS. LUHR:

6 Q. Good morning. Thank you guys for being with
7 us. Just one question for you.

8 Can you explain what a target -- a target
9 would get us, as far as energy efficiency goes, that
10 the Companies are not already attempting to achieve?

11 A. (Tim Duff) As I said earlier, we think
12 that's one of the beauties of the cost-recovery
13 mechanism that we operate under here in North Carolina,
14 which has been the progress of -- the process of a lot
15 of stakeholder engagement, as well as time and learning
16 where modifications should be made to the mechanism.
17 The mechanism promotes Duke to effectively go out and
18 get as much cost-effective energy efficiency as
19 possible.

20 So we did, in the last -- in the last two
21 mechanisms, include performance incentives for reaching
22 a target. Those were -- the last version was refined
23 in this version to have both a target and a penalty,
24 which I was talking about with Mr. Neal, the 1 percent

1 of total being a \$500,000 bonus, falling below
2 0.5 percent of eligible sales being a penalty.

3 But the mechanism works well because it
4 promotes us getting as many kWh and kW savings and
5 doing it in as low cost a manner as possible so we're
6 maximizing the benefits. So I honestly don't believe,
7 beyond the targets that we try and achieve through the
8 REPS -- through REPS compliance, that additional
9 targets are required for the state.

10 Q. Thank you. No further questions.

11 CHAIR MITCHELL: Redirect?

12 MS. FENTRESS: Just a few.

13 REDIRECT EXAMINATION BY MS. FENTRESS:

14 Q. Mr. Duff, I'd like to follow up on the Public
15 Staff's question. We -- the Companies have proposed a
16 1 percent of eligible retail sales goals with respect
17 to the Carbon Plan.

18 If the Company had the opportunity to exceed
19 that goal at any time, is the Company gonna stop at
20 1 percent or will the Company continue to pursue
21 cost-effective energy-efficient opportunities?

22 A. (Tim Duff) So as I said, yes, there was a
23 1 percent of eligible -- eligible sales modeling
24 assumption that was put in as a floor for the entire

1 28-year Carbon Plan period. The -- and if you actually
2 look at those numbers, in the early years, and it's
3 shown in exhibit -- in Exhibit 6, we're actually in
4 excess of 1.3 percent of eligible retail sales in the
5 early years.

6 And that's really important, because that's
7 based off of, kind of, the most granular knowledge and
8 detail. It comes from our program managers who
9 understand the market. But we thought it was important
10 to keep those aggressive 1 percent assumptions
11 throughout the entire period. But in any year across
12 that period, the Company is always going to try to do
13 as much cost-effective energy efficiency as possible
14 and exceed the 1 percent of eligible.

15 Q. Thank you. And turning to the questions
16 relating to the 2020 utility scorecard that I believe
17 you have in front of you, it's Appalachian Voices Cross
18 Examination Number -- Exhibit Number 2.

19 Understanding you do not agree necessarily
20 that the way these savings are quantified aligns with
21 the way North Carolina quantifies its energy efficiency
22 savings, you do agree that Massachusetts utilities are
23 at the top?

24 A. Yes. The Massachusetts utilities are at the

1 top. And as I said, there are a number of things that
2 they do differently. They count fuel switching. In
3 reviewing their technical reference manual which
4 determines what they get for savings, they use an
5 as-found or preconditioned baseline for early
6 replacement in retrofit measures. They also have
7 different measure life assumptions than we do, which
8 increases the amount of utility efficiency savings.

9 I was surprised, in looking at their
10 thermostat measure, where Duke Energy Carolinas and
11 Progress, I believe, recognizes 11 years, they
12 recognize 15 up until 2021, and the new recommendation
13 is 19. So that's all -- that's eight additional years
14 of energy savings that go into their UE forecast.

15 So yes, I see that they're at the top of the
16 scorecard, but for the reasons I talked about, it's not
17 an apples-to-apples comparison that would say, oh, Duke
18 should do more. If we were using the same assumption
19 and measurement quantification, then I think we would
20 come up very similar to where Massachusetts is.

21 Q. And in responding to that question, you used
22 the terms "preconditioned" and "as found," and that's
23 our technical jargon.

24 Can you explain what the use of "as found"

1 for measurement and verification would mean to a Duke
2 customer?

3 A. Sure. So essentially, "as found," as we
4 called it in the Carbon Plan filing and in our
5 testimony, and it's sometimes called preconditioned
6 baseline is essentially what you're replacing. So when
7 generally energy efficiency is assumed, you're
8 replacing something when it fails. And so at that
9 point, currently, we recognize what the savings are
10 versus the standard. Meaning you're exceeding the
11 standard, so if it's a SEER 15 standard, you count SEER
12 15 to SEER 16.

13 However, if you can promote the customer to
14 replace something that has 5 years or 10 years left of
15 its life, you should be able to claim the savings that
16 they're realizing versus what they replaced, because
17 that unit that was being replaced would still be in
18 service using a lot more energy than what you replaced
19 it with. And so that's what we mean by "as found."

20 Q. So "as found" means encouraging a customer to
21 replace inefficient equipment that may still be working
22 or may be slightly malfunctioning with something more
23 efficient?

24 A. Yes. And it's important because, in order to

1 get that early replacement, you need to provide a
2 higher incentive. So you need higher savings to
3 justify the incentive. So it is really important,
4 because it's looking at the early replacement
5 holistically.

6 Q. Thank you. We've also talked a lot about
7 percentages and what percentages we can achieve and
8 what percentages the Companies can achieve, and I
9 believe the scorecard has a number of percentage
10 savings on it.

11 MS. FENTRESS: If I may pass out an
12 exhibit. And may I have this premarked as Grid
13 Edge Redirect Exhibit 1?

14 (Pause.)

15 CHAIR MITCHELL: All right. The
16 document will be marked for identification as Duke
17 Energy Grid Edge Panel Rebuttal Redirect Exhibit 1.

18 MS. FENTRESS: Thank you.

19 (Duke Energy Grid Edge Panel Rebuttal
20 Redirect Exhibit 1 was marked for
21 identification.)

22 Q. Mr. Duff, can you explain to the Commission
23 at this time what this exhibit is? And let me back up
24 real quickly.

1 Did you prepare or have this exhibit prepared
2 at your direction?

3 A. Yes, I did.

4 Q. Thank you. And can you now explain what this
5 exhibit is?

6 A. Very concisely, this exhibit shows the
7 incremental annual energy efficiency savings that were
8 in the base IRP versus the 1 percent of eligible load
9 case that was modeled in the Carbon Plan. And it
10 was -- I put this exhibit together to really show
11 something that I talked about with respect to that
12 1 percent of eligible retail sales to show that, if you
13 look at the far two right-hand columns, the first --
14 the column that says difference over the forecast
15 period, it's showing the amount of difference between
16 the IRP and the targeted 1 kWh case for that period of
17 time.

18 So there -- associated with 2024, you see
19 0.35. That means, between 2023 and 2024 combined, the
20 total difference is 0.35 percent versus the IRP. The
21 final column shows the difference of the total over
22 that horizon. So, essentially, let's look at 2027. It
23 would say that of the difference between the IRP case
24 and the 1 percent of eligible case, basically

1 97 percent -- almost 97 percent of the difference
2 occurs after 2027.

3 And this is really showing that what we've
4 talked about is the 1 percent of eligible case is
5 slightly more but not -- not something that wouldn't be
6 obtainable, especially if we can achieve some of the
7 enablers that we're talking about what was in the IRP.
8 But those enablers that we've identified are important,
9 because that's how we get the savings in the later
10 years of the Carbon Plan that account for the total
11 12.42 percent difference at the time you reach 2050.

12 Q. And so -- just to hone in a bit, so when
13 you -- when you look at the far left-hand column and
14 you look at the year 2024, the Company -- the Companies
15 have not strayed too far from the base IRP case; is
16 that correct?

17 A. Yes. Looking at the far right-hand column,
18 it would say that 99.76 percent of the difference
19 occurs after 2024.

20 Q. And we would be -- the Companies would be
21 back before the Commission in 2024 for another Carbon
22 Plan hearing; is that correct?

23 A. That's correct.

24 Q. And throughout these years, the Companies

1 would come in and -- for additional Carbon Plan
2 hearings and could check and adjust?

3 A. Yes. That's one of -- that's one of the
4 things that's really important to note is, with the
5 difference being so small in those early years, we can
6 check and adjust and understand what enablers have been
7 approved and not approved that will help us achieve the
8 difference over the longer term.

9 Q. Thank you. I have nothing further.

10 CHAIR MITCHELL: All right. Questions
11 from Commissioners for the witnesses? I will start
12 with Commissioner Brown-Bland. Commissioner
13 Clodfelter? Duffley? Go ahead. Commissioner
14 Hughes.

15 EXAMINATION BY COMMISSIONER HUGHES:

16 Q. Thank you for your testimony so far. Just a
17 couple of questions. One, how comfortable are you -- I
18 know there's an elaborate collaborative process, lots
19 of people are involved in energy efficiency in the
20 state working with you.

21 How comfortable are you that the key
22 collaborators are really -- have a good understanding
23 of the current cost recovery mechanism?

24 A. I think that the key collaborators have a

1 very good understanding. I think that bonus and
2 penalty incentive were two key areas that were really
3 driven by stakeholders. And as I talked about, the
4 original -- originally, in the previous mechanism that
5 was in place until through 2021, there was just a bonus
6 incentive for hitting 1 percent of sales. And we
7 didn't specify whether it was eligible or total, and so
8 that was a lot of controversy that we then worked
9 through and put into the new mechanism. So I think
10 that the stakeholders that are involved are very
11 familiar with the mechanism.

12 Q. Okay. Thank you for that. The second
13 question is, you talked a lot about recognition of
14 savings and, kind of, how the beans are counted with
15 this metric. And it made very clear sense to me that
16 you have to understand the definition when you're
17 looking at a metric. So you've expressed evidence
18 that -- that fundamentally just the definitions are
19 different in different states, and that's -- you know,
20 that's calculating a different -- different percentage.

21 So my question is, you've talked about that
22 we could change the -- how savings are recognized. If
23 we just changed something today about how savings are
24 recognized, current savings that are occurring, but

1 they're just -- you're not, quote, getting credit for
2 it -- so does that make sense? If we just did that, is
3 that gonna change what Duke is forecasting what kind of
4 generation they need to -- is that really gonna have an
5 impact on why we're here for the Carbon Plan?

6 A. No. And so if you're looking at the exhibit,
7 the exhibit was done in a manner to show that, if
8 you're simply honing in on that metric, if you make
9 that metric apples-to-apples, North Carolina, the Duke
10 utilities could be higher up on that list by counting
11 additional things.

12 But to your point, it's not going to yield
13 any additional savings. The IVCC volt VAR project was
14 identified in the Carbon Plan, we're doing it. But if
15 it was counted, we would be a national leader. And so
16 I think that your question is a good one. Does it get
17 more efficiency? No.

18 And I think that's our point is, Duke
19 believes what it is doing in the Carolinas is nation --
20 is national leading when you factor in how we count
21 things in North Carolina as well as, as we point out in
22 late late-filed exhibit, how customers -- how much
23 customers use their usage and what rates they pay for
24 that electricity.

1 Q. So thank you for that.

2 So with that said, is there another metric we
3 could be using, in addition to this 1 percent, that
4 would be directly tied to the Carbon Plan? That -- I
5 mean, do you have a suggestion for us to consider it?

6 A. So I would suggest that we would use that
7 1 percent of eligible sales that is the modeling
8 assumption the Company's proposing in the Carbon Plan,
9 and monitor our performance versus that, because that's
10 what we're trying to achieve. It's important, though,
11 to recognize that there are things outside of the
12 Companies' control that pandemics, supply chain issues,
13 inflation, workforce availability, that can cause you
14 to miss efficiency.

15 And because a lot of efficiency achievement
16 is associated with timing, if those things happened,
17 you lose that opportunity to have it be utility
18 efficiency. It's gonna appear in the load forecast as
19 naturally occurring efficiency, but the utility energy
20 efficiency window has closed because standards may have
21 advanced.

22 And so I think that that's a -- that's, I
23 think, that's what the Company is believing it's gonna
24 track going forward is how it's doing towards what it's

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1 put into the Carbon Plan, because that's what we're
2 trying to do in order to make the entire Carbon Plan
3 work.

4 So that's how I would propose us meter it.
5 And as I said, since there are those variables that can
6 affect if customers choose to participate or not, which
7 is ultimately what's required for utility efficiency, I
8 think having the two years to check and adjust and
9 account for those changes is really important. But I
10 do think that the -- using that 1 percent of eligible
11 load until we do the first check and adjust is a great
12 target that we should be trying to shoot towards.

13 Q. Okay. I think that's it for now. Appreciate
14 that. Thanks.

15 CHAIR MITCHELL: Additional questions?

16 Go ahead, Commissioner McKissick.

17 EXAMINATION BY COMMISSIONER McKISSICK:

18 Q. Let me first thank the two of you for pulling
19 together Late-Filed Exhibit 6. I know the time frame
20 that we originally thought you might have for preparing
21 it ended up being reduced rather substantially and
22 compressed so that we could get it in the record today
23 before the hearing ended, so in the event there were
24 intervenors that had questions, they'd have a chance to

1 pose those questions to you. So I appreciate your good
2 faith efforts to present us with, kind of, an options
3 of policies and enablers that would help us get to that
4 1.5 percent. So I want to thank you for that.

5 I think you did an excellent job in comparing
6 and contrasting how energy efficiency is defined in
7 other states, and that it isn't necessarily an
8 apples-to-apples comparison. So I think you, in your
9 narrative, provide that in context. But, of course,
10 you also, you know, get into other details about new
11 programs that could be initiated here in
12 North Carolina, different approaches we might take.
13 And I don't want to get into anything dealing with a
14 pending docket we might have. I'm gonna stay away from
15 that completely. That would be inappropriate.

16 But I guess I would like to start, perhaps,
17 some discussion by going to -- let's see. And I'm
18 looking at Late-Filed Exhibit Number 6, which was
19 identified as Grid Edge Rebuttal Exhibit Number 1. And
20 if we go to the -- I guess to the sixth page.

21 A. (Tim Duff) I'm there.

22 Q. Yeah, item number 4. Of course, you discuss
23 nonresidential opt-out enhancements, and there we're
24 talking about, you know, commercial and industrial

1 users who were opting out. And, of course, you noted
2 in your earlier testimony that approximately 30 percent
3 of commercial industrial load is opted out for some
4 portion of DSM and EE programs.

5 And can you walk us through what the options
6 the Companies might explore for decreasing the level of
7 opt-outs as this particular provision that's, you know,
8 on the bottom of page 6 identified as item 4 is posed?

9 A. Yes. Certainly. So I think it's important
10 to note that your request was what the Commission could
11 do.

12 Q. Yes.

13 A. And I have to point out that the
14 nonresidential opt-out is a statutory provision. So I
15 tried to keep it in the context of what could be done
16 with utility programs. And so I don't have specifics
17 at this time, other than we are looking at --
18 continually looking at developing new programs that are
19 attractive.

20 We feel like we have a pretty encompassing
21 portfolio now, but, you know, we've been working with
22 CIGFUR and others to design potentially a new demand
23 response program consistent with something that's
24 offered for SoCal Edison. And so developing programs

1 that meet customers' needs and get them to opt in is
2 something that we're always exploring.

3 I think we continue to look for process
4 changes. You know, we added in a few years back an
5 opt-in window for Duke Energy Carolinas because in
6 the -- in conversations with our large account
7 management, we learned that a lot of times, in that
8 November to December window when they were making
9 decisions to opt out, they had not finalized our
10 capital budgets for the next year, so they didn't know
11 if they'd have the money to do the projects.

12 So we created an opt-in window the first week
13 in March where customers who had opted but decided that
14 they now could participate could opt in during that
15 window.

16 So that's what the intent of this is, is to
17 find those processes that works with customers'
18 businesses and their processes to make participating in
19 the programs more attractive.

20 Q. And, of course, you spoke to some work you've
21 done so far. I mean, do you know of anything that's
22 been done in other jurisdictions by other utilities or
23 even by Duke in places outside of North Carolina that
24 would substantially contribute to, you know, businesses

1 not opting out or opting in?

2 A. So we have opt-out in most of our
3 jurisdictions. I will say there's differences in the
4 definitions of what counts as a customer's eligibility,
5 but that's a statutory provision. And then we have
6 some states where they -- where they -- we don't have
7 opt-outs. And in those -- in those states, customers
8 have really worked closely with us to make sure that,
9 since they can't opt out, that they are participating.

10 I'm hopeful -- I think the one thing that I
11 would say is, if we could have more intentional
12 conversations, I think -- with customers, because right
13 now, when they have the ability to opt out, that's kind
14 of easy, right?

15 Q. Yeah.

16 A. I don't have to worry about figuring out how
17 to make the programs work. So I think, in speaking for
18 the one state where we do have all customers in,
19 they're interested in -- more interested in telling us
20 what works for them. Not to say our customers -- I
21 mentioned some process improvements we've made, but I
22 do think the intentionality of dealing with customers,
23 trying to make the programs work is something that I
24 think could enhance the process in our programs that we

1 offer to customers.

2 Q. Thank you. And let's move down to, I guess,
3 item number 5, which is on the top of page -- let's
4 see, top of page 7. And, of course, this is identified
5 as community-driven investment, CDI. And, you know, it
6 certainty presents an interesting concept, you know.
7 And I think it would probably behoove us to think about
8 what approaches we might take that would, you know,
9 work with communities that wish to take advantage of
10 this type of process to design, structure, and
11 implement eligible investors underneath a CDI tariff.

12 But could you speak more extensively about
13 what you envision occurring if this were -- if we moved
14 in this direction?

15 A. So this is one of the ones I was -- that when
16 we were talking about the time, I was gonna highly
17 caveat. This is very conceptual.

18 Q. I see.

19 A. Because there is some legalities that have to
20 occur.

21 Q. Just give me, kind of, an example.

22 A. Not necessarily for the cities that would be
23 communities that would participate. But the concept is
24 that, because cities have, and municipals have, kind

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1 of, defined budgets of operating revenues, that their
2 decisions to make -- take on investments to get
3 efficiency are often -- are oftentimes constrained by
4 those budgets, because in order to increase their
5 budgets, they have to raise taxes.

6 This is an approach that essentially allows
7 them to say we're gonna undertake this process -- this
8 project for -- in the town's buildings or the city's
9 buildings, and then our constituents will have a
10 monthly charge where they're paying the cost for that.
11 And the rationale is they're seeing it in lower future
12 operating budgets.

13 So it's designed to give complexity.
14 Obviously, there's a lot of legal issues. We've
15 explored this in a couple of other states looking at
16 it. We don't have any programs out there, but it's
17 something similar to on-tariff financing for
18 residential customers. It seems like something that
19 could address the problems that we have from cities
20 where we see a lot of opt-out. There are quite a few
21 city accounts that opt out of the -- of the programs.

22 Q. Have you had any discussions with communities
23 here in North Carolina?

24 A. (Lon Huber) Commissioner, yes, we've --

1 we've had conversations with SSDN, so the Southeast
2 Sustainability Directors Network.

3 Q. Okay.

4 A. And, you know, just to give a concrete
5 example of this --

6 Q. Sure.

7 A. -- you know, think of a like, you know, fire
8 engine house. They need to do EE improvements, maybe
9 make it a microgrid. So that's a community resiliency
10 center if something goes wrong. Well, every customer
11 served by that fire station would have basically this
12 charge to help support it. Within reason, right?
13 There would be caps so it couldn't get large.

14 But that initial concept, we've received some
15 positive feedback from it. But again, a lot of -- a
16 lot of details that would need to be worked out for
17 this particular state, yeah.

18 Q. I mean, it certainly would appear to be an
19 intriguing and innovative concept that I would
20 encourage you to continue to explore and have
21 conversations about. Because that's the type of thing
22 I was looking for when I asked for this exhibit, things
23 that may not be within my world view, in terms of
24 what's actually going on out there in this particular

1 area.

2 And why don't we go on down a little bit
3 further to item number 6 here talks about net zero new
4 construction.

5 Now, would this be a new program or would
6 this be a modification or enhancement to an existing
7 program the way you have it outlined here?

8 A. (Tim Duff) So that's undefined. We just --
9 just, after a very long time, got the residential new
10 construction program approved for DEC, and so it's just
11 now getting in the market. But this is thinking
12 broader. With the Carbon Plan targeting net zero by
13 2050, we thought that having customers having that same
14 target out there of how to build a new home that would
15 be net zero, having that holistic view, which is -- you
16 can't just get to net zero by energy efficiency. So
17 putting that all together in a program will get more
18 energy efficiency savings, but it will also have other
19 DER components, et cetera.

20 So it's -- I'm not sure whether we would file
21 it as a new program, given the complexities of some of
22 the bundling, or whether it would be a modification.
23 But it's something that, as we see how our existing
24 program moves forward, that this could be a -- either a

1 nice complimentary program or just an additional
2 modification to it to help customers get to that next
3 level that we, as a company, are seeking to get to.

4 Q. And are you meeting with stakeholders to
5 discuss this concept at this time? Or how are you
6 going about envisioning it or seeking input?

7 A. So this one is really in its, kind of,
8 infantile stages. We haven't had any specific
9 conversations.

10 A. (Lon Huber) And that's true, but we've also
11 engaged some new home builders to talk to them. And
12 then we've received -- we applied for and received a
13 DOE grant for connected communities demonstration
14 project that works with, like, a new neighborhood and
15 essentially decks the homes out with all the latest,
16 sort of, controllable technology. So that's gonna be a
17 first demonstration of it. But then we want to go
18 further than that.

19 And again, as Mr. Duff mentioned, we want to
20 align the housing stock that comes in the state to the
21 long-term goals of decarbonization. And so you have to
22 start now to get there by 2050. And so it will -- what
23 we envision, it builds off of a lot of these other
24 dockets that we won't talk about but, you know, the

1 smart saver and a few other ones. And then as well as
2 those new customer renewable programs that we were just
3 speaking to, right?

4 So -- and then there could be some resiliency
5 plays in the neighborhoods as well. So we have started
6 very initial discussions, but this DOE grant that we
7 were able to win, that -- that's gonna be, you know, a
8 big boost to this effort.

9 Q. And the grant that you're referring to, how
10 recently did you receive it, and do you mind if I ask
11 what the amount of that grant was?

12 A. Sure. So I believe the contract with the DOE
13 was just recently signed, like, a few weeks ago. I
14 believe it was just under \$7 million.

15 Q. Okay. So it's significant enough that you
16 can really flush out the details and have this
17 demonstration project undertaken that can help
18 determine what the parameters might be of this type of
19 a program?

20 A. That's right. And it's more of a technical
21 test. And then from there, we need to get into the
22 business model customer acceptance test. So, you know,
23 think on-tariff financing. Well, how can we take
24 on-tariff financing and bring it to new construction so

1 that the homebuilder doesn't have a disincentive
2 because their homes are more expensive --

3 Q. Right.

4 A. -- but that additional cost is layered into
5 the customer's monthly bill; but the savings overtake
6 that cost on the bill. So it's a win-win. So the
7 homebuilder can now say, hey, our homes are, you know,
8 these great net zero homes, no additional -- no
9 additional costs to the upfront, you know, price of the
10 home. So that's a business model that we -- that
11 potentially we could explore.

12 And then, again -- and then matching it to
13 different programs that hopefully will be approved so
14 that you have, again, a menu of options. Because not
15 every customer is gonna want rooftop solar, and not
16 every customer might want batteries on their premise,
17 right? So having that optionality but still getting to
18 net zero in different ways is gonna be important.

19 So first we got to get the technology, and
20 then the business models, the customer acceptance,
21 which then fits into that rapid prototyping that we
22 were talking about last time.

23 Q. Look forward to hearing a lot more about
24 this. And I guess item 7 and 8 kind of -- they were

1 linked together in a way but they were also separate,
2 and I understand why. So, I mean, if you could --
3 we've touched upon already, kind of, the early
4 replacements in retrofit matters. If there's anything
5 further you would like to state about that, this would
6 certainly be an appropriate time to do so.

7 A. (Tim Duff) Sure. Just that it is -- it is a
8 critical component of on-tariff, because on-tariff
9 financing, in the way we've developed it with
10 stakeholders, is designed to be bill positive. Meaning
11 that the savings are greater than the monthly charge on
12 the bill associated with the efficiency investment.
13 And in order for those savings to work, you have to
14 count it as as-found savings, because that's what's
15 really being seen on the bill.

16 You're getting customers to make a big
17 investment, they're gonna see a charge on their bill,
18 and so you have to reflect the actual savings that are
19 being achieved versus what they replaced, not just that
20 efficiency standard bump that you would see if, in
21 fact, it was new construction rather than a replacement
22 and retrofit.

23 Q. So really just incentivize people to go out
24 there, replace operative appliances, put in more

1 efficient ones, but creating some type of standard that
2 can be used to measure what the existing condition
3 might be, in terms of energy usage?

4 A. Yeah.

5 Q. Now, in terms of number 8, it talks about
6 tariff on-bill program, which is different, in terms of
7 the way it would function and operate, but could,
8 again, incentivize people to go out and replace
9 appliances or other goods that they might have in their
10 home.

11 A. They work hand-in-hand. One is an energy
12 efficiency program, the other is really just a payment
13 program that eliminates the upfront financial burdens
14 for the customer as well as credit requirements and
15 allows it to be put on the bill. It's actually tied to
16 the account rather than to the customer. So a
17 subsequent owner of the -- of the premise where that
18 account is responsible for the charge, they will pay
19 that on-tariffed amount, but they'll also receive the
20 savings that were from the original decision.

21 But yes, they're complimentary, but there's
22 no actual incentives built into on-tariff.

23 Q. Right.

24 A. It leverages the Companies' energy efficiency

1 incentives in order to make it work.

2 Q. Are you aware of jurisdictions that offer
3 this type of tariff on-bill program today?

4 A. So today the on-tariff program has been
5 primarily offered by co-ops.

6 Q. I see.

7 A. There are a few utilities who we have talked
8 to at lengths that are running pilots versus a, kind
9 of, broader program. But we have been working with
10 stakeholders on on-tariff financing on and off since
11 2016 trying to figure out how to make this work. And
12 we really think that we finally have, kind of, cracked
13 the nut by not -- by having it be a separate on-bill
14 repayment approach versus an energy efficiency program.

15 Because what we found in talking to the other
16 utilities in other states is they're double-counting
17 savings. And we didn't want to do that, so we've tried
18 to make it a very transparent and clear separate
19 approach. One is simply a repayment, one is the
20 efficiency incentives. They can work together, but
21 they are separate.

22 Q. Got it.

23 A. (Lon Huber) And, Commissioner, I would just
24 add that it's taken a lot of work on all sides to

1 figure this out, but we do think we've cracked the
2 code. You use a different analogy.

3 Q. Right.

4 A. But there's no other IOU, I think, that can
5 say that they've been able to piece this all together
6 in a way that's cost-effective and yields the savings
7 that overtake that charge.

8 But, of course, we need, you know, some of
9 the enablers to make this work. But we think this will
10 probably set the trend for the country, honestly, if
11 this is approved.

12 Q. Well, I hope that we will. And, of course, I
13 guess HB 951 pretty much puts you in a directive to
14 move in this direction, so I'm looking forward to
15 learning more about it as you guys work on these
16 concepts.

17 Now, let me ask you this. Is there any other
18 program or initiative that's identified in this
19 Late-Filed Exhibit Number 6? I've only focused upon
20 the ones which I found most intriguing. But if there's
21 others you'd like to discuss or bring to the attention
22 of this Commission, I would certainly provide you with
23 the opportunity to do so at this time.

24 A. Okay. I'll start out on this one. And I

1 won't take too long, I promise. But the energy
2 optimization one I think is really important for us to
3 start to think about. Because to save carbon, it's not
4 just about reducing a kilowatt-hour whenever you can
5 reduce it. It has to be at a specific time
6 increasingly. And sometimes, as I mentioned in my last
7 testimony, you have to load build in order to avoid
8 curtailments and reduce integration costs to the
9 system.

10 And so with this energy optimization, this is
11 something that Arizona has recently passed in their
12 energy efficiency dockets, because they've recognized
13 this need. And they're a little bit ahead of us, in
14 terms of the amount of solar and the dynamics of the
15 system there. And so I think they're a good postcard
16 from the future that we can look to.

17 But we have to increasingly think about
18 optimizing the energy use and having as much dynamic
19 price signals and programs as possible. And so, in the
20 past, when you could just say every kilowatt-hour is
21 valued the same, you should just reduce the
22 kilowatt-hour, we -- that's still important, but what's
23 going to be increasingly important is the time that
24 you're actually reducing load.

1 And so if we -- we might have some programs
2 in the future that slightly increase usage, but they
3 increase usage at the right time and decrease usage
4 during the most carbon-intensive periods. In the past,
5 you would say, oh, this isn't good, this is slightly
6 increasing usage. But in the future, it could actually
7 be one of the most effective ways to reduce carbon.

8 And you can think about a battery at a
9 premise. A battery has roundtrip efficiency losses,
10 right? So it might be using more energy overall, but
11 it's targeting the highest carbon times and the highest
12 peak demand times, so it's creating an overall net
13 benefit. So that is what this is trying to get at.

14 Q. Very good. Well, let me, once again, thank
15 you for pulling together this exhibit. I think it
16 certainly focuses our attention on some initiatives
17 that could be undertaken, and I look forward to hearing
18 more from the two of you and from the Companies as we
19 continue to set our goals aggressively to get to that
20 1.5 percent. Thank you.

21 CHAIR MITCHELL: All right. No
22 questions? No additional questions? Okay. With
23 that, you-all -- let me take questions on
24 Commissioners' questions.

1 EXAMINATION BY MS. CRESS:

2 Q. Just a couple of brief ones.

3 In response to Commissioner McKissick asking
4 you about ways to reduce non-residential load that is
5 opted out of EE/DSM programs, you indicated, in part,
6 that CIGFUR and Duke have been engaging constructively
7 about some new or potentially modified demand response
8 programs; is that correct?

9 A. (Tim Duff) That's correct. And it was
10 actually shared at our -- with our collaborative last
11 Wednesday.

12 Q. To the extent you know, when do the Companies
13 anticipate proposing for Commission approval some of
14 the modifications that have been discussed between Duke
15 and CIGFUR?

16 A. I would say in the near future. We're still
17 waiting for some feedback from the collaborative.
18 Obviously, like I said, it was -- the concept was a
19 direct result of conversations with CIGFUR, but we want
20 to make sure that all stakeholders have time to give us
21 input into the concept.

22 Q. Thank you for that. And again, sticking with
23 that same question from Commissioner McKissick about
24 ways to explore the reduction of opted-out

1 nonresidential load, have the Companies considered
2 making participation in the EE/DSM collaborative more
3 inclusive?

4 A. I -- we think it is -- we think it is very
5 inclusive. We don't -- we don't turn away members.
6 The only requirement that was done to make it a
7 constructive working environment is really we don't
8 allow attorneys or potential -- and that wasn't a shot,
9 that wasn't a shot, we just didn't want it to get
10 into -- into, kind of, legal positions. So we don't
11 have attorneys generally there in the collaborative
12 meetings.

13 And then we also, kind of, preclude vendors
14 who might be trying to get information that could help
15 them win a bid for a program administration. But other
16 than that, we don't turn away customers interested in
17 participating in the collaborative.

18 Q. And thank you, you anticipated my next
19 question, which more specifically, have the Companies
20 considered lifting that ban on attorneys participating
21 in the EE/DSM collaborative?

22 A. We think the collaborative works very
23 constructively, and so, at this time, we haven't -- we
24 haven't decided to remove that.

1 Q. Okay. Thank you. Nothing further.

2 EXAMINATION BY MR. BLUMENTHAL:

3 Q. Thank you, gentlemen. Ethan Blumenthal for
4 EJCAN, et al. In response to a question by
5 Commissioner Hughes about using another metric as
6 opposed -- within the Carbon Plan, rather than the
7 1 percent that may more accurately reflect all of the
8 energy efficiency on the system, I believe your answer
9 discussed timing as an important aspect of that, and
10 that nonutility funded programs are, kind of, lumped in
11 with naturally occurring efficiency within your models.

12 Is that an accurate representation?

13 A. (Tim Duff) I think that's accurate.

14 Q. Okay. So considering the increase in other
15 sources of funding, like the Inflation Reduction Act
16 and a few others, would it be possible to track the
17 energy efficiency achieved by strictly
18 nonutility-funded programs either separately or as a
19 subset of the naturally occurring energy efficiency
20 metric?

21 A. I'm gonna say that would be -- nothing is
22 impossible, but it would be likely very costly and
23 difficult to do. For example, I don't know how we
24 would find out who got tax incentives to install energy

1 efficiency measures if they hadn't participated in our
2 programs, as well as not actually doing third-party EM
3 and V on the program participants in our sampling would
4 not give us the ability to have an accurate
5 representation of what the savings achievement would
6 be.

7 Q. Okay. I think that probably takes us into
8 the next question, I'm gonna ask it anyways just to
9 see.

10 So to the extent that the utilities may
11 undertake activities that increase activity of -- or
12 increase the participation rate of customers in
13 nonutility-funded programs, how would you propose the
14 Companies receive credit for that increase in
15 participation, either in the Carbon Plan or the cost
16 recovery mechanism?

17 A. So that's -- that's a great question. So,
18 you know, we believe that there's a large opportunity
19 to have our programs work constructively with other
20 programs, specifically once we learn more about the
21 IRA. We know they -- we have experience from the ERA
22 funds that were distributed in the latter -- the latter
23 part of the first decade of the 21st century, that we
24 were able to -- the Commission approved -- basically,

1 we didn't have to try and break out the savings.

2 If they received our incentives and also had
3 an incentive from the federal government, we were able
4 to still recognize our full savings. That's important
5 because, if, in fact, you have to start apportioning
6 the savings, you may not be able to cost-effectively
7 offer that incentive, and it just becomes a very
8 challenging exercise to start breaking up credit of
9 what incentive -- what incentive led to this portion of
10 the savings or to that portion of the savings.

11 So I think, to the extent that we know
12 participation in our programs is also participating --
13 participants in our programs are also participating in
14 other programs outside of utility funding, like I- --
15 like IRA funding, then we should be able to understand
16 those numbers of participants and talk about what we're
17 seeing in savings.

18 But direct attribution of savings for
19 nonutility programs is something that we think is
20 problematic and ultimately very expensive to even try
21 an estimate.

22 Q. Thank you. No further questions.

23 EXAMINATION BY MR. NEAL:

24 Q. Thank you. Mr. Duff, in response to

1 questions from Commissioner Hughes about whether or not
2 there might be a metric other than 1 percent of
3 eligible sales, you responded that 1 percent of
4 eligible load is a great target to shoot for.

5 Do you recall that exchange?

6 A. (Tim Duff) Yes, it's what's in the Carbon
7 Plan.

8 Q. And you agree that Rebuttal Redirect Exhibit
9 1 shows that, in the next few years, 1 percent of
10 eligible sales is pretty much a rounding error from
11 business as usual?

12 A. So what I would say is that's different from
13 the IRP. There is still challenges because of all the
14 market conditions we're operating in to hit there. So
15 we think that the fact that we're actually, I believe,
16 at like 1.35 percent of eligible sales in the next few
17 years actually is a very challenging target, and we're
18 gonna have to work to get there, just as we would have
19 to work to get to the IRP targets, because of the
20 market conditions that weren't anticipated at the time
21 that those -- that the IRP was originally put together.

22 Q. At the time the IRP was put together, there
23 wasn't HB 951 or the carbon reduction goals either.

24 A. Exactly, which is why we thought the 1

1 percent of eligible, which is more aggressive, over the
2 total time frame was appropriate.

3 Q. In response to, let's see, Commissioner
4 McKissick's question about whether or not you're aware
5 of other utilities that offer tariff on-bill financing,
6 you responded mostly co-ops have done this program.

7 You're aware that one of those is in
8 North Carolina, correct?

9 A. Yes.

10 Q. So Roanoke Electric has been offering a very
11 successful tariff on-bill financing program for several
12 years now; isn't that right?

13 A. They have participants. They don't have the
14 same rigor of M&V and cost-effectiveness requirements
15 that we have, which I think, by their metrics, they are
16 successful, yes.

17 Q. And finally, in response -- Mr. Huber, I
18 think it was, and also to Commissioner McKissick's
19 question about anything else you wanted to discuss, you
20 mentioned the energy optimization.

21 And just -- would you agree that the dynamic
22 time-of-use rates with critical peak pricing is an
23 example of the kind of energy optimization that you're
24 talking about?

1 A. (Lon Huber) So that is one form, in terms of
2 a price signal to encourage behavior, but it is, to me,
3 just one component. You know, you want to couple that
4 with actual devices and other behavioral programs as
5 well. But it is certainly a key piece. There will be
6 other rate designs, I'm sure, you know, that will
7 develop. But absolutely, that's a key piece.

8 Q. And you would agree that managed EV charging
9 would be another example of how to get at that kind of
10 energy optimization?

11 A. That's exactly right.

12 Q. And so just really that's in the category of
13 maybe enhanced demand response, so integrating
14 technology that allows the utility to control devices
15 to help move them off of peak, generally?

16 A. Yeah. It's -- I guess it's -- it's this
17 hybrid category, right? Because demand response
18 typically, oh, it's only an hour or two every once or
19 twice a year, where we're talking about operating much
20 more frequently and in all months. And some of the use
21 cases will be longer than a few hours. So, for
22 instance, for, like, a smart thermostat, we would have
23 the function of those big DR events when we've got a
24 peak day.

1 But there could also be settings that
2 optimize the customers' usage for key hours every day.
3 But it's just a minor setback, not the big setback that
4 you would get when there's a large event. And so
5 that's one where that -- it's a little bit closer to an
6 EE, an energy efficiency play, than a DR play, but
7 still under this umbrella of dynamic optimization.

8 Q. All right. Thank you. No further questions.

9 CHAIR MITCHELL: Questions from Duke?

10 (No response.)

11 CHAIR MITCHELL: All right. I believe
12 we have come to the end of this panel's
13 examination. I'll take motions on the panel.

14 MS. FENTRESS: We would like to move in
15 the late-filed exhibit, Grid Panel Late-Filed
16 Exhibit 1, and we would also like to move into
17 evidence the -- move into the record the Grid Edge
18 Panel Rebuttal Redirect Exhibit 1.

19 CHAIR MITCHELL: Okay. The exhibit that
20 we have identified as -- I think it's Duke Energy
21 Grid Edge Panel Rebuttal Exhibit 1; is that
22 correct?

23 MS. FENTRESS: Are you referring to the
24 late-filed exhibit or to the exhibit that was

1 produced today?

2 CHAIR MITCHELL: To the late-filed
3 exhibit.

4 THE WITNESS: Yes, that is -- that is
5 correct.

6 CHAIR MITCHELL: Okay. We will -- that
7 exhibit will be moved -- accepted into evidence,
8 and it's just -- so we're clear, the record is
9 clear, that document will be marked Grid Edge Panel
10 Rebuttal Exhibit 1. Grid Edge Panel Rebuttal
11 Exhibit 1. That document will be accepted into
12 evidence. And the redirect exhibit identified by
13 Ms. Fentress will be accepted into evidence as
14 well.

15 MS. FENTRESS: Thank you.

16 (Duke Energy Grid Edge Panel Rebuttal
17 Redirect Exhibit 1 and Grid Edge Panel
18 Rebuttal Exhibit 1 were admitted into
19 evidence.)

20 CHAIR MITCHELL: Any motions on this
21 side of the room? Ms. Cralle Jones.

22 MS. CRALLE JONES: Yes. Chair Mitchell,
23 Appalachian Voices would move that the document
24 marked as Appalachian Voices Grid Edge Panel

1 Rebuttal Cross Examination Exhibit 1 be moved into
2 evidence.

3 CHAIR MITCHELL: All right,
4 Ms. Cralle Jones, your motion is allowed.

5 (Appalachian Voices Grid Edge Panel
6 Rebuttal Cross Examination Exhibit 1 was
7 admitted into evidence.)

8 MS. FORCE: I just -- can you hear me
9 okay? I don't know whether this has been admitted
10 or not, but I'd ask the Commission to take judicial
11 notice of the joint North Carolina Low-Income
12 Affordability Collaborative Quarterly Report that
13 was filed August 12, 2022, and I can give you the
14 docket numbers for that. It could be that
15 somebody's already introduced it, but.

16 MS. FENTRESS: Madam Chair, I believe we
17 stipulated to the contents of the low-income
18 affordability collaborative joint report.

19 MS. FORCE: You'd stipulate to it?

20 MS. FENTRESS: Yes, we did so in an
21 earlier --

22 MS. FORCE: In an earlier -- okay.

23 MS. FENTRESS: During the direct, yes.

24 MS. FORCE: I apologize for bringing it

1 up. I couldn't remember.

2 CHAIR MITCHELL: And just to be clear,
3 it's the same report as the one referenced by
4 Ms. Force? Ms. Force, you've identified the most
5 recently submitted report?

6 MS. FORCE: That's right. And it was
7 submitted on August 12, 2022.

8 MS. FENTRESS: That is the one we are
9 referring to as well.

10 CHAIR MITCHELL: Thank you,
11 Ms. Fentress. Okay.

12 MS. FORCE: Thank you. And if this is
13 the appropriate time, I'd like to clear up an
14 earlier motion. We would withdraw that motion, and
15 that relates to the questions that Commissioner
16 Clodfelter had for Mr. Burgess, our witness, and we
17 just withdraw that motion.

18 CHAIR MITCHELL: Okay. And that motion
19 related to Late-Filed Exhibit 2 versus 4?

20 MS. FORCE: That's right. Exactly.

21 CHAIR MITCHELL: All right. Well, we
22 will -- the record will so reflect that that motion
23 has been withdrawn.

24 MS. FORCE: Thank you.

1 CHAIR MITCHELL: Okay. And then,
2 Ms. Cress, did you need to make a motion here?

3 MS. CRESS: I don't think so --

4 CHAIR MITCHELL: Okay.

5 MS. CRESS: Did the document that
6 Ms. Fentress had copies of that she circulated --

7 CHAIR MITCHELL: We took judicial notice
8 of that document.

9 MS. CRESS: Excellent. Thank you.

10 CHAIR MITCHELL: Okay. All right. With
11 that, Duke, let's see. Gentlemen, you are excused.
12 You may step down. You are excused. Thank you
13 very much for your testimony today.

14 All right. We will take our morning
15 break at this point. We will come back on the
16 record at 11:20. Let's go off the record, please.

17 (At this time, a recess was taken from
18 11:08 a.m. to 11:26 a.m.)

19 CHAIR MITCHELL: All right. Let's go
20 get back on the record, please. Duke, go ahead and
21 call your next witnesses or witness.

22 MS. DEMARCO: Good morning.

23 Tracy DeMarco on behalf of Duke Energy. Before I call
24 the Reliability Panel to the stand, I have a

1 motion for consideration. As I believe the
2 Commission is aware, witness Holeman is unable to
3 appear today due to illness. However, Mr. Roberts
4 is prepared to speak to the portions of the
5 Reliability Panel's testimony that were
6 Mr. Holeman's in addition to his own. So I would
7 move that Mr. Roberts adopt the entirety of the
8 reliability testimony as his own.

9 CHAIR MITCHELL: The Reliability Panel
10 rebuttal testimony?

11 MS. DEMARCO: The rebuttal testimony,
12 yes.

13 CHAIR MITCHELL: Okay. I hear no
14 objection to that motion, so it's allowed.

15 MS. DEMARCO: Thank you. So I would
16 call Mr. Roberts to the stand.

17 CHAIR MITCHELL: All right.
18 Mr. Roberts, you've already been sworn twice, so I
19 won't make you go through it again. But just
20 remind you, you are under oath.

21 Whereupon,

22 SAMMY ROBERTS,
23 having previously been duly sworn, was examined
24 and testified as follows:

1 DIRECT EXAMINATION BY MS. DEMARCO:

2 Q. Mr. Roberts, are you appearing today on
3 behalf of the same Reliability Panel that appeared in
4 this proceeding on September 21, 2022?

5 A. Yes.

6 Q. And did the panel cause to be prefiled in
7 this docket on September 9, 2022, rebuttal testimony
8 consisting of 25 pages?

9 A. Yes.

10 CHAIR MITCHELL: Ms. DeMarco, would you
11 speak -- pull the mic a little closer to you,
12 please, ma'am? Thank you.

13 Q. And that testimony was prepared by you and
14 Mr. Holeman; is that correct?

15 A. That is correct.

16 Q. And since Mr. Holeman could not be with us
17 today, are you adopting his testimony as your own?

18 A. Yes, I am.

19 Q. Do you have any changes to your rebuttal
20 testimony at this time?

21 A. I do not.

22 Q. If I were to ask you the same questions today
23 that appear in your prefiled rebuttal testimony, would
24 your answers remain the same?

1 A. Yes.

2 Q. And none of your panel's testimony is
3 confidential, correct?

4 A. That is correct.

5 Q. And did you also prepare and cause to be
6 prefiled summary of the panel's rebuttal testimony?

7 A. Yes, I did.

8 MS. DEMARCO: Chair Mitchell, I move
9 that the Reliability Panel's rebuttal testimony and
10 summary be entered into the record as if given
11 orally from the stand.

12 CHAIR MITCHELL: All right. That motion
13 is allowed.

14 (Whereupon, the prefiled rebuttal
15 testimony of Sammy Roberts and
16 John Samuel Holeman, III and the
17 prefiled summary testimony of
18 Sammy Roberts and John Samuel Holeman,
19 III were copied into the record as if
20 given orally from the stand.)
21
22
23
24

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 179

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:)	REBUTTAL TESTIMONY OF
Duke Energy Progress, LLC, and)	JOHN SAMUEL HOLEMAN AND
Duke Energy Carolinas, LLC, 2022)	DEWEY S. ROBERTS II ON
Biennial Integrated Resource Plan)	BEHALF OF DUKE ENERGY
And Carbon Plan)	CAROLINAS, LLC AND DUKE
)	ENERGY PROGRESS, LLC

1 **Q. MR HOLEMAN, PLEASE STATE YOUR NAME, TITLE AND**
2 **BUSINESS ADDRESS.**

3 A. My name is John Samuel Holeman III (“Sam”), and my business address is
4 526 S. Church Street, Charlotte, North Carolina, 28202. I am the Vice
5 President of Transmission System Planning and Operations for Duke
6 Energy Corporation. I am providing rebuttal testimony today with Sammy
7 Roberts as the “Reliability Panel.”

8 **Q. ARE YOU THE SAME RELIABILITY PANEL THAT FILED**
9 **DIRECT TESTIMONY IN THIS CASE?**

10 A. Yes.

11 **Q. MR. HOLEMAN, PLEASE SUMMARIZE THE PURPOSE AND**
12 **KEY TAKE-AWAYS OF YOUR JOINT REBUTTAL TESTIMONY.**

13 A. The purpose of this Panel’s Rebuttal Testimony is to respond to various
14 parties’ testimony regarding reliability of the Carbon Plan from the
15 perspective of system operations in light of the mandate of North Carolina
16 Session Law 2021-165 (“HB 951”) to maintain or improve upon the
17 adequacy and reliability of the grid. Beyond responses to specific
18 intervenors, key take-aways include:

19 1. Duke Energy Progress, LLC’s (“DEP”) and Duke Energy Carolinas,
20 LLC’s (“DEC” and together with DEP, “Duke Energy” or the
21 “Companies”) operational experience with exceptional weather and
22 outage patterns integrated into the reliability validation step as part of

- 1 Carbon Plan modeling was important to ensure portfolio reliability
2 performance required by HB 951.
- 3 2. The Companies will continue to integrate operational experience into
4 Carbon Plan modeling validations, and reliability analysis and metrics
5 will evolve in step with industry experience and NERC Reliability
6 Standards—understanding that a model cannot feasibly capture all
7 operational conditions.
- 8 3. In order to maintain or improve upon adequacy and reliability of the
9 grid, an orderly transition of resources is critical. This means ensuring
10 enough flexible, dispatchable natural gas resources as a bridge, not over
11 relying on any single technology, and being vigilant on pace of resource
12 mix retirements and additions to ensure enough operational capability
13 to not increase the risk of capacity or energy shortfalls for customers.
- 14 4. Off system purchases are used by the Companies; however, any
15 decision to rely more on off-system purchases for reliability, firm or
16 non-firm, must be made with full understanding of associated and
17 compounding risks to real-time operations.

- 1 **I. THE COMPANIES' RELIABILITY VALIDATION COUPLED WITH**
2 **OPERATIONAL EXPERIENCE IS CRITICAL TO MAINTAINING**
3 **AND/OR IMPROVING UPON THE RELIABILITY OF THE GRID**
4 **DURING THE ENERGY TRANSITION**
- 5 **Q. SEVERAL INTERVENORS CHALLENGE THE COMPANIES'**
6 **EFFORTS TO CONFIRM RELIABILITY OUTSIDE OF THE**
7 **ENCOMPASS MODEL. FROM A SYSTEM OPERATOR'S**
8 **PERSPECTIVE, WHY WAS THE RELIABILITY VALIDATION**
9 **STEP IMPORTANT TO VERIFY CARBON PLAN PORTFOLIO**
10 **RELIABILITY?**
- 11 **A.** Planning reserve margin is an important component to long-term resource
12 plan adequacy that establishes an essential baseline. However, System
13 Operators must deal with exceptional and abnormal operating conditions,
14 and we believe the Companies should take every opportunity to integrate
15 real-world operational experience into planning processes. The Companies'
16 System Operators have the unique role and obligation to provide a secure
17 and reliable grid for customers that meets NERC Reliability Standards, so
18 it is critical to leverage their feedback in the resource planning processes.
19 System Operators understand that in an integrated grid no resource works
20 in isolation and have real-world perspectives of both the resource
21 capabilities and limitations that together provide for reliable electric service.
- 22 For this reason, members of the System Planning and Operations
23 functions collaborated with the Modeling team to ensure the reliability
24 validation step checked portfolios against weather, demand, and outage

1 parameters that better reflect what occurs in the Companies' operating
2 areas, providing confidence the final portfolios will perform under such
3 parameters. As described by the Modeling and Near-Term Actions panel
4 (Snider, McMurry, Quinto, Kalembe), the reliability validation step serves
5 as a final check to ensure that the Carbon Plan portfolios' resulting resource
6 mixes meet loss of load expectation ("LOLE") thresholds under varying
7 weather and outage parameters that System Operators must address in real
8 time.

9 **Q. DO ANY PARTIES SUPPORT THE COMPANIES' USE OF THE**
10 **RELIABILITY VALIDATION STEP?**

11 A. Yes. Public Staff witness Thomas determined the reliability validation step
12 "appeared reasonable" and is consistent with HB 951's mandate to maintain
13 or improve upon the reliability of the grid.¹ Similarly, AGO witness Burgess
14 affirmed that "[i]t is essential that reliability be evaluated comprehensively,
15 to ensure that any simplifications in models like EnCompass do not
16 overlook any potential gaps" and recommended against removing the step.²

¹ Public Staff Thomas Direct Testimony at 24.

² AGO Burgess Direct Testimony at 35-36. Witness Burgess further noted the import of "mak[ing] sure that transparent information is provided about these types of reliability adjustments" in future Carbon Plan proceedings. *Id.* at 36.

1 **Q. IF BENEFICIAL, WHY WAS THE RELIABILITY VALIDATION**
2 **STEP NOT INCLUDED IN THE 2020 IRP, AS NOTED BY NCSEA**
3 **WITNESS FITCH?**

4 A. In light of recent operational events in other regions, the Companies’
5 experience integrating high levels of solar into the system, and the broader
6 industry’s recognition that a changing resource mix increases risk, the
7 Companies began working to develop enhanced planning methods to
8 further validate grid adequacy and reliability in 2021—around the time
9 NERC commenced efforts to revise its Reliability Standards. These key
10 real-world operational considerations of a changing grid were highlighted
11 in Carbon Plan Appendix Q (Reliability and Operational Resilience
12 Considerations). While the Companies’ 2020 Integrated Resource Plans
13 (“IRPs”) reflected an energy transition pathway to achieve the Companies’
14 corporate goal of carbon neutrality by 2050, the industry-wide effort to
15 revise reliability metrics was just beginning at that time.

16 In addition, HB 951’s 70% interim CO₂ emissions reductions target
17 further drives significant changes to the resource mix over the next 10 to 15
18 years. The Companies’ validation check on LOLE against varying patterns
19 of weather and outages that the Companies have experienced in the
20 Carolinas ensures that the Carbon Plan meets HB 951’s mandate to maintain
21 or improve upon the reliability of the grid.

1 **Q. CPSA WITNESS HAGERTY ARGUES THAT BRATTLE**
2 **MODELED A 25% RESERVE MARGIN TO ADDRESS ANY NEED**
3 **FOR ADDITIONAL RESOURCES BEYOND THE COMPANIES’**
4 **17% PLANNING RESERVE.³ FROM A SYSTEM OPERATOR’S**
5 **POINT OF VIEW, DOES THIS APPROACH ENSURE GRID**
6 **RELIABILITY IS MAINTAINED OR IMPROVED UPON?**

7 **A.** As explained above, planning reserve margin establishes an important
8 reliability baseline. However, the reliability validation step performed on
9 the Carbon Plan portfolios validated LOLE thresholds under significantly
10 varying weather and outage parameters that reflect real-world operational
11 conditions in the Carolinas. Simply increasing the reserve margin would not
12 test these important metrics. The Companies expect that reliability analysis
13 and metrics will continue to evolve to mitigate risks of a changing resource
14 mix as the Companies learn with the industry, gain operational experience,
15 and check and adjust the Carbon Plan every two years.

³ CPSA Hagerty Direct Testimony at 43-44.

1 **Q. CIGFUR WITNESSES MULLER AND GORMAN ARGUE THAT**
2 **POWER QUALITY SHOULD BE INCLUDED AS PART OF**
3 **CARBON PLAN RELIABILITY ANALYSIS AND METRICS. HOW**
4 **DO YOU RESPOND?**⁴

5 A. Power quality is a critical issue, particularly for large industrial customers
6 in the Companies' service territories, like Carolina Industrial Group for Fair
7 Utility Rates' ("CIGFUR") members.⁵ The Companies address power
8 quality as part of facility interconnection processes and regularly engage on
9 power quality issues as described in the Reliability testimony. However,
10 power quality is a highly localized grid issue and is not addressed in long-
11 term resource planning analysis and modeling.

12 **Q. CIGFUR WITNESS GORMAN ARGUES THAT THE CARBON**
13 **PLAN FAILS TO MAINTAIN OR IMPROVE UPON SYSTEM**
14 **RELIABILITY DUE TO OVER-RELIANCE ON UNPROVEN**
15 **TECHNOLOGIES. HOW DO YOU RESPOND?**

16 A. HB 951 specifically includes the consideration of "latest technological
17 breakthroughs" to achieve the objectives of reliable and least-cost CO₂
18 emissions reductions.⁶ Peer studies referenced in the Reliability testimony
19 illustrate that the broader industry has identified the need for new
20 technologies to achieve carbon neutrality. Witness Gorman specifically

⁴ CIGFUR Muller Direct Testimony at 11-12.

⁵ *Id.*; CIGFUR Gorman Direct Testimony at 28-29.

⁶ N.C. Gen. Stat. § 110.9(1).

1 calls out zero-emitting load-following resources (“ZELFRs”),⁷ which are
2 not introduced in Carbon Plan portfolios until the latter decades. Through
3 the HB 951 provision to update the Carbon Plan every two years, the
4 Companies will “check and adjust” by monitoring the signposts of all
5 breakthrough technologies, as outlined in Chapter 4 of the Carbon Plan, that
6 can contribute to the HB 951 objectives of reliable and least-cost CO₂
7 emissions.

8 **Q. FROM YOUR EXPERIENCE AS A SYSTEM OPERATOR, CAN**
9 **RESOURCE PLAN MODELING ALONE CAPTURE ALL**
10 **POTENTIAL RELIABILITY FACTORS?**

11 A. The Companies agree with Public Staff witness Metz’s statement that “[n]ot
12 all system operational factors can be captured within a model.”⁸ While
13 witness Metz was specifically referring to the Companies’ proposed coal
14 retirement schedule, the underlying concept remains true for all resource
15 planning. Modeling and studies are important in planning, and the
16 Companies should continue to leverage their unique role as System
17 Operators to integrate into planning as much operational experience as
18 possible.

19 As presented by the Companies, the Carbon Plan provides System
20 Operators with concrete and dependable tools to operate the system—
21 diverse and flexible resources, adequate amounts of flexible and

⁷ CIGFUR Gorman Direct Testimony at 28-29.

⁸ Public Staff Metz Direct Testimony at 14.

1 dispatchable resources for necessary operational reserves in all operating
2 conditions, resources placed in service in a timely manner prior to
3 retirements and enabling technologies to optimize resources. Without those
4 resource capabilities, the only tool in the System Operator toolbox to
5 address an extreme event would be to shed firm load to protect the grid.
6 Load shedding has occurred in other regions, and it is truly impactful to
7 customers, businesses and communities.

8 **Q. DO THE COMPANIES EXPECT THAT THEIR RELIABILITY**
9 **ANALYSIS WILL EVOLVE IN FUTURE CARBON PLAN**
10 **PROCEEDINGS?**

11 A. Yes. The Companies recognize that measures and metrics traditionally
12 relied upon to confirm reliability in long-term resource planning processes
13 must evolve as the resource mix changes, and they are proactively working
14 to enhance and improve reliability validation analysis and measures. A
15 changing resource mix will drive the need for metrics to more carefully
16 analyze the depth, duration, and source of targeted reliability concerns such
17 as energy adequacy and resiliency, both of which are driving additional
18 scenario-based planning, stochastic modeling, and enhanced resource
19 adequacy metrics. In addition, as NERC advances new Reliability
20 Standards to address recent extreme events and fuel assurance and energy
21 adequacy issues as the grid transitions to a new resource mix, the
22 Companies will evaluate Carbon Plan reliability measures to align with
23 NERC requirements. The Companies are participating in an industry-wide

1 EPRI program in conjunction with NERC that aims to develop more
 2 comprehensive reliability metrics that include depth (Expected Unserved
 3 Energy, or “EUE”), duration (Loss of Load Hours, or “LOLH”) and
 4 available energy uncertainty.⁹

5 **II. MAINTAINING AND/OR IMPROVING UPON RELIABILITY**
 6 **THROUGH AN ORDERLY TRANSITION OF A CHANGING**
 7 **RESOURCE MIX AND A TRANSFORMING GRID**

8 **Q. WHAT IS AN ORDERLY ENERGY TRANSITION THROUGH THE**
 9 **CARBON PLAN FROM THE VIEW OF SYSTEM OPERATIONS?**

10 A. As shown in the Reliability Panel’s Direct Testimony and through broad
 11 industry experience, the energy transition is like rewiring a house while
 12 living in it. Transitioning in an orderly, realistic, and cautious manner is the
 13 only way the Companies can meet HB 951’s mandate to maintain or
 14 improve upon the adequacy and reliability of the grid—a critical guardrail
 15 for customers and communities that must be considered in balance with cost
 16 and CO₂ emissions reductions.

17 The Companies’ System Operators manage the most critical of
 18 critical infrastructure through their Control Centers, supporting the vitality
 19 of the Companies’ customers and communities. From a System Operator’s
 20 view, an orderly transition must ensure that when over 8,000 MW of coal is
 21 retired over approximately the next decade, there is a robust mix of

⁹ EPRI Program 173: Bulk System Integration of Renewables and Distributed Energy Resources, available at <https://www.epri.com/research/programs/067417>.

1 resources that replace the operational capabilities that coal provides—
2 particularly in constrained periods and prolonged weather events.

3 The Companies agree with Public Staff that many factors must be
4 considered as coal retires, including transmission impacts, coal supply, and
5 maintaining adequate operational reserves to manage “system abnormalities
6 that occur outside the model.”¹⁰ An orderly transition requires maintaining
7 a diverse mix of resources and not putting too many eggs in any single
8 technology basket. All resources are needed to balance cost, CO₂ emissions
9 reductions, and reliability.

10 **Q. WHAT IS THE ROLE OF NATURAL GAS IN AN ORDERLY**
11 **TRANSITION?**

12 A. To maintain the grid, System Operators require adequate flexible and
13 dispatchable operational reserves that can *persist* through prolonged
14 extreme weather events. This includes additional gas as a bridge to integrate
15 more renewables and batteries until hydrogen, long-duration storage and
16 ZELFRs are available and can replace at scale what gas contributes to the
17 system. As CIGFUR witness Muller acknowledged:

18 Renewable energy resources are variable resources, and the
19 grid cannot operate without sufficient reliable, dispatchable
20 back-up power. Charlotte Pipe and many other CIGFUR
21 member companies support natural gas and believe it will
22 play a critical role as a bridge fuel to facilitate the energy
23 transition in a way that does not compromise existing
24 reliability.¹¹
25

¹⁰ Public Staff Metz Direct Testimony at 14.

¹¹ CIGFUR Muller Direct Testimony at 15.

1 **Q. WHAT DOES RELYING UPON GAS AS A “BRIDGE” TO CARBON**
2 **NEUTRALITY MEAN TO SYSTEM OPERATIONS?**

3 A. The sheer scale of the changing resource mix and grid transformation
4 necessitates gas as a bridge in order to maintain or improve upon the
5 adequacy and reliability of the grid. While recognizing the vital role of
6 energy storage, NERC CEO James Robb points out that “we have to
7 appreciate the gap that currently exists and the scale that we need to
8 obtain.”¹² In other words, there must be a plan for a significant increase in
9 battery storage and balancing resources (e.g., hydrogen, ZELFRs) *at scale*
10 while retiring significant amounts of baseload generation before the role of
11 natural gas is reduced. For the Companies, this means maintaining enough
12 dependable, flexible, dispatchable resources to maintain or improve upon
13 reliability while retiring over 8,000 MW of high capacity coal over roughly
14 the next decade and placing into service thousands more megawatts of
15 variable energy renewables and energy-limited batteries.

¹² James R. Robb, North Am. Elec. Reliability Corp., Testimony Before United States Senate Committee on Energy and Natural Resources, Full Committee Hearing On The Reliability, Resiliency, And Affordability of Electric Service, at 9, 10 (Mar. 11, 2021), *available at* <https://www.energy.senate.gov/services/files/EB1D7E02-4DFF-A6A9-002341DA34CF>.

1 **Q. MANY INTERVENORS ARGUE THAT BATTERIES AND SOLAR**
2 **PAIRED WITH BATTERY STORAGE CAN DISPLACE THE NEED**
3 **FOR NEW GAS.¹³ DO YOU AGREE?**

4 A. System Operators tend to be agnostic to technologies but *not* agnostic to
5 resources' operational capabilities and limitations and the necessary scale
6 of resources needed to reliably operate in real-world situations. The
7 Companies agree that batteries and renewable-paired batteries will be
8 critically important tools in the toolbox, but they are not a panacea to ensure
9 reliable operations as the resource mix transitions through the Carbon
10 Plan—new gas will still be necessary. As the scale and pace of the energy
11 transition increases, four-hour batteries cannot fully displace the flexible
12 and on-demand nature of nearly 12,000 MW of existing CCs and CTs
13 (winter rating), nor the high capacity factors and seasonal capacity
14 availability of over 9,000 MW of existing coal units, as demonstrated in the
15 2018 extended cold weather period, to achieve the required scale of capacity
16 and energy adequacy.

17 To put the magnitude of this change into perspective, with 2,200
18 MW generation capacity, Belews Creek station represents about a quarter
19 of coal generation planned to retire. Just the Belews Creek station alone
20 provided about 34 GWh of firm dispatchable energy on January 24 of this
21 year, which was a sunny day. This is more than three times the energy

¹³ See, e.g., NCSEA et al. Fitch Direct Testimony at 11-15, 17; CCEBA DiFelice Direct Testimony at 4-5, 17-18.

1 storage capability of every battery installed in the United States as of 2021.¹⁴
2 Additionally, January 21 of this year had relatively gray skies in which the
3 Belews Creek station provided more than 53 GWh of firm dispatchable
4 energy. This amount of generation is five times more than the total energy
5 available in all installed batteries in the United States as of 2021 and almost
6 twice the Bad Creek reservoir energy storage capability.

7 **Q. WHY ARE BATTERIES AND BATTERY STORAGE NOT A**
8 **PANACEA TO ENSURE RELIABLE OPERATIONS AS THE**
9 **RESOURCE MIX TRANSITIONS?**

10 A. Energy storage, including four-hour batteries, will be vitally important to
11 the Companies to deliver Carbon Plan objectives, in concert with other
12 diverse technologies. However, when thinking about storage and even
13 pairing with renewables, scale and operational capabilities must be
14 considered. In terms of scale, the Reliability Panel's Direct Testimony
15 illustrates the significant amounts of solar and four-hour battery storage that
16 it would take to replace the energy that our Roxboro Plant provided during
17 an extreme cold weather week in January 2018—14 GW of solar at an
18 average winter capacity factor of 20% (very optimistic) and approximately
19 12 GW of four-hour battery storage.¹⁵

¹⁴ Wood Mackenzie, U.S. energy storage monitor: Q2 2022, *available at* <https://www.woodmac.com/reports/power-markets-us-energy-storage-monitor-q2-2022-150041387>.

¹⁵ DEC/DEP Holeman & Roberts Direct Testimony at 68-69.

1 In terms of operational capabilities, batteries are energy-limited and
2 always a net energy taker, no matter how they are paired, requiring careful
3 planning of the fuel source and availability of energy to charge the batteries,
4 how those batteries are deployed, and the time-durations of the battery
5 cycles. For example, lithium-ion batteries, and even pumped storage hydro,
6 require approximately 15-20% more energy to charge than they can
7 provide. DEC has decades of experience with long-duration pumped storage
8 hydro. Even with the excellent energy storage capabilities and flexibility of
9 pumped storage hydro, the Companies must carefully plan to optimize when
10 and for what purpose to discharge energy and when and with what resources
11 to pump, or “charge,” the pumped hydro storage—particularly in long-
12 duration, high-demand periods of hot and cold weather. As operational
13 experience is accrued with batteries through operational pilots and scaling,
14 the Companies can determine the best uses of those batteries based on
15 considerations such as specific system needs, weather and operational
16 conditions, maintenance and outage patterns, and battery degradation, to
17 name a few.

1 **Q. AGO WITNESS BURGESS ARGUES THAT RELIANCE ON**
2 **NATURAL GAS INTRODUCES “SIGNIFICANT” RISK IN THE**
3 **EVENT OF SEVERE COLD WEATHER LIKE WINTER STORM**
4 **URI, WHICH DEVASTATED PARTS OF TEXAS. DO YOU**
5 **AGREE?**¹⁶

6 **A.** No. Unlike Texas prior to Winter Storm Uri, the Mid-Atlantic region has a
7 history of weatherization practices and cold-weather preparedness. The
8 outcomes of cold weather events in the Carolinas in 2014, 2015, and 2018
9 compared to the multiple devastating events in Texas in the past decade
10 demonstrate the Companies’ focus on weatherization practices and making
11 improvements from event learnings. Strong DEC and DEP operational
12 performance in 2015 and 2018 cold weather events demonstrated the payoff
13 of activities undertaken by the Companies to apply lessons learned from the
14 2014 polar vortex.

15 FERC, NERC, this Commission, and the Public Service
16 Commission of South Carolina have active focus on cold weather
17 preparedness and evaluating gas-electric coordination as part of those
18 efforts. The Companies are participating in NERC Reliability Standards
19 development that address cold weather preparedness and have shared their
20 extensive practices for weatherization, seasonal, and event readiness

¹⁶ AGO Burgess Direct Testimony at 40-45.

1 through active cold weather and resiliency dockets with this Commission
2 and the Public Service Commission of South Carolina, respectively.¹⁷

3 **Q. CPSA WITNESS HAGERTY DISAGREES THAT THE**
4 **COMPANIES' CONCERNS REGARDING RAMP RATE ISSUES**
5 **CAUSED BY THE ADDITION OF RENEWABLES IS**
6 **SIGNIFICANT.¹⁸ HOW DO YOU RESPOND?**

7 A. Witness Hagerty suggests that “[t]he daily generation profile of solar
8 resources is predictable” and, therefore, the Companies can address any
9 ramp rate issues with flexible resources that can “ramp up,” looking to other
10 markets that are “further along” adopting wind and solar for guidance.¹⁹
11 Unlike California—which experiences a high number of blue-sky days
12 where solar output is very predictable—the Carolinas experience a wide
13 variety of cloud cover weekly and thus, solar output is difficult to predict
14 and can be very volatile on a daily and intra-hour basis as demonstrated by
15 Figures 3, 6, and 9 in the Reliability Panel’s Direct Testimony.²⁰

16 Moreover, ramp rate issues are amplified on sunny, blue-sky days.
17 Figure 1 below shows two consecutive blue-sky days on February 19 and
18 20, 2022. During these two days in February, due to the significant ramping
19 in of solar output in the morning and ramping out of solar output in the
20 evenings, with just over 4,000 MW of solar connected to the Companies’

¹⁷ Docket No. E-100, Sub 173, P.S.C.S.C. Docket No. 2021-66-A.

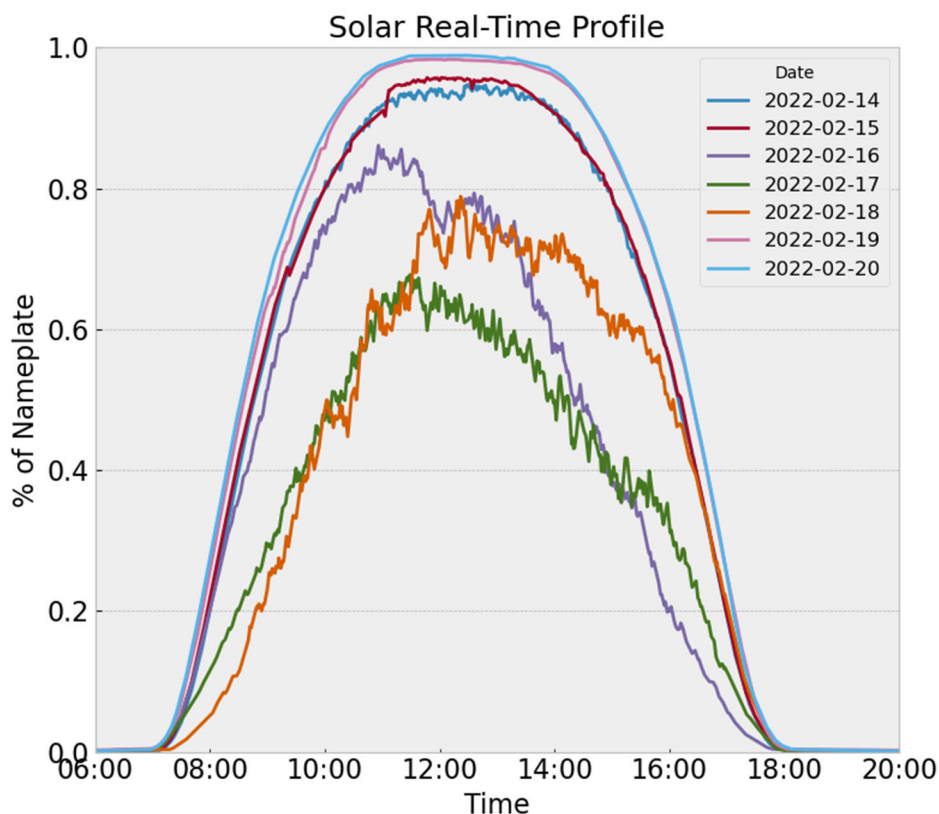
¹⁸ CPSA Hagerty Direct Testimony at 49.

¹⁹ *Id.*

²⁰ DEC/DEP Holeman & Roberts Direct Testimony at 27, 43 and 65.

1 systems, the net demand ramp rates were over 4,500 MW over a two-hour
 2 period in the mornings and over 4,000 MW over a two-hour period in the
 3 evenings.

4 **Reliability Rebuttal Figure 1: 7-Day Solar Output for Feb. 14-20, 2022**



5 Looking to the future with up to 15,000 MW of solar connected to the
 6 Companies' systems, net demand ramp rates could exceed 11,000 MW over
 7 a 2-hour period during the morning and evening net demand ramping
 8 periods on a blue-sky winter day. As reiterated by witness Hagerty²¹, the
 9 Companies will need a significant amount of flexible capability with CTs,
 10

²¹ *Id.*

1 CCs, and storage in combination to be able to manage these ramps, meet
2 NERC BAL Reliability Standards, and avoid significant curtailments of
3 zero-carbon resources. Thus, the Companies look to the flexible capabilities
4 of a fleet of resources as being critical to maintaining reliability due to the
5 expected increase of intra-hour volatility, day-to-day variability, and
6 extreme net demand ramps on blue-sky days that will result from significant
7 integration of solar generation in the Carolinas.

8 As for witness Hagerty's recommendation to seek guidance from
9 other regions, California Independent System Operator ("CAISO") has
10 recognized net demand ramping due to renewable integration as a reliability
11 concern for years, and the Companies review their operational experience.
12 Indeed, CAISO has tracked its evening net demand ramp rates and
13 associated compliance with NERC BAL Reliability Standards, provided
14 corresponding data to NERC, and conducts a Flexible Capacity Needs
15 Assessment to "determine the quantity of flexible capacity needed each
16 month **to reliably address its flexibility and ramping needs** for the
17 upcoming resource adequacy year."²²

²² CAISO, Final 2022 Flexible Capacity Needs Assessment and Final 2022 Availability Assessment Hours, Rulemaking No. 19-11-009 (Cal. P.U.C. May 14, 2021), *available at* <https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/Flexible-capacity-needs-assessment-2022>.

1 **Q. HOW WOULD YOU RESPOND TO WITNESS HAGERTY'S**
2 **CHARACTERIZATION THAT THE AUGUST 2020 HEATWAVE**
3 **IN CALIFORNIA WAS "HISTORIC, ONCE-IN-35 YEARS" EVENT**
4 **WITH LITTLE APPLICABILITY TO THE CAROLINAS?**

5 A. System Operators must learn from all events and not presume they may not
6 occur again, or that they may not occur in their particular region. As a
7 Manager of System Operations at the time, I'm very grateful that I did not
8 succumb to that mindset after the challenging extreme cold weather event
9 on January 7, 2014, but instead implemented lessons learned in preparation
10 for future extreme cold weather events that repeated in 2015 and 2018.

11 **III. OFF-SYSTEM PURCHASES**

12 **Q. DO YOU AGREE WITH NC WARN WITNESS POWERS THAT**
13 **THE COMPANIES MISREPRESENTED THE CAISO OUTAGE**
14 **EVENT OF AUGUST 2020 TO ILLUSTRATE THE**
15 **COMPOUNDING RISK OF OFF-SYSTEM PURCHASES?**

16 A. No. Witness Powers argues that the CAISO 2020 blackouts were caused by
17 market mismanagement.²³ In fact, market mismanagement was just one of
18 many root causes identified in separate reports completed by CAISO and
19 the Western Electricity Coordinating Council ("WECC"), the governing
20 NERC Regional Reliability Entity.²⁴ The root causes of the August 2020
21 CAISO outages cited by CAISO were (1) high demand; (2) resource

²³ NC WARN Powers Direct Testimony at 60-61.

²⁴ Notably, witness Powers stated in his testimony that no independent report was conducted.

1 planning targets during clean energy transition not ensuring sufficient
2 resources; and (3) day-ahead market practices masking the supply
3 challenges.²⁵ WECC identified the following root causes: (1) high demand
4 in summer months created more regional competition for available
5 generation and subsequent generation availability challenges; (2)
6 transmission system constraints limiting regional flows; (3) inaccurate
7 demand and generating forecasting; and (4) resource adequacy issues
8 partially due to variable generation's inability to meet peak demand.²⁶

9 This event demonstrates the compounding risk faced by System
10 Operators when depending on material amounts of off-system purchases.
11 Off-system purchases are a tool in the toolkit to meet demand; however,
12 purchases must be planned with an understanding of associated risks. The
13 Companies point out that a foundational factor to this event was CAISO's
14 reliance on imports that did not materialize during an extreme and
15 widespread heat wave.²⁷ The CAISO system is planned to leverage imports,
16 both firm and non-firm, as pointed out by witness Powers, and on
17 constrained days is a net importer—the WECC report confirms the reliance
18 on those regional flows.²⁸ When imports were compromised in CAISO for
19 a variety of reasons as pointed out by both CAISO and WECC—market

²⁵ California Independent System Operator, Final Root Cause Analysis at 6 (Jan. 13, 2021), available at <http://www.caiso.com/Documents/Final-Root-Cause-AnalysisMid-August-2020-Extreme-Heat-Wave.pdf>.

²⁶ WECC August 2020 Heat Wave Report, available at <https://www.wecc.org/Reliability/August%202020%20Heatwave%20Event%20Report.pdf>.

²⁷ CAISO Final Root Cause Analysis at 78-79.

²⁸ *Id.*

1 issues, wildfires, neighboring system high demand and competition for
 2 available generation—their ability to meet NERC Reliability Standards was
 3 impacted and required rotating outages.

4 **Q. WHY IS IT IMPORTANT TO CONSIDER RISKS OF RELYING ON**
 5 **OFF-SYSTEM PURCHASES FOR RELIABILITY?**

6 A. The Carbon Plan and related testimony describes how the Companies use
 7 both firm and non-firm off-system purchases and how reserve margin
 8 calculation appropriately reflects that position.²⁹ The Companies agree with
 9 Public Staff that “it would imprudent to plan a system that must continually
 10 rely upon non-firm resources.”³⁰ From the Control Center perspective, off-
 11 system purchases equate to compounded risk - where System Operators
 12 now bear the risk of the neighboring system to deliver, of which they have
 13 no control and can be curtailed—firm or non-firm. When System Operators
 14 are faced with situations of relying on material amounts of imports to
 15 maintain NERC Reliability Standards, if adequate imports do not
 16 materialize—due to neighboring system transmission or generation issues,
 17 or curtailment—there may be no other option but to shed load. Further, as
 18 detailed in the Modeling and Near-Term Actions Rebuttal Testimony,
 19 decarbonization of adjacent systems may limit the availability of firm,
 20 flexible and dispatchable generation from neighbors during constrained

²⁹ See Appendix P (Transmission System Planning and Grid Transformation); Appendix E (Quantitative Analysis); Transmission Panel Direct Testimony, Modeling and Near-Term Actions Direct Testimony.

³⁰ Public Staff Metz Direct Testimony at 53.

1 periods when needed the most, as all systems will be vying for those
2 valuable reliability resources.³¹

3 **IV. CONCLUSION**

4 **Q. HOW DO YOU VIEW THE NEAR-TERM SUPPLY SIDE AND**
5 **RESOURCE DEVELOPMENT ACTIONS PROPOSED BY THE**
6 **COMPANIES AS IT RELATES TO MAINTAINING OR**
7 **IMPROVING UPON GRID ADEQUACY AND RELIABILITY ?**

8 **A.** A robust and diverse set of resources emerged from a prudent planning
9 process across all Carbon Plan portfolios. The supply side development
10 activities proposed as the decisive initial step in executing the Carbon Plan
11 appropriately balance the core Carbon Plan objectives of achieving the
12 targeted CO₂ emissions reductions at least-cost while ensuring that
13 execution of this plan maintains or improves upon reliability of the grid.
14 Considering many new resources will not come into service until the latter
15 half of this decade while pursuing coal retirements, the Companies must be
16 vigilant in ensuring appropriate pacing and potential periods of resource
17 overlap to maintain or improve upon grid adequacy and reliability. The end
18 of this decade through 2035 will be a critical period in our energy transition.
19 Pursuing all of the above long lead-time resources—valuable long duration
20 pumped hydro storage along with zero-carbon nuclear and offshore wind -
21 keep options open to pursue a diverse and robust set of tools in the

³¹ Modeling and Near-Term Actions Panel Rebuttal Testimony at 87, 91-94.

1 operational toolbox to facilitate reliable HB 951 CO₂ emissions reductions
2 targets.

3 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

4 **A. Yes.**

Duke Energy Carolina, LLC and Duke Energy Progress, LLC
Summary of Rebuttal Testimony – Reliability Panel
Samuel Holeman IV and Samuel Roberts III
Carolinas Carbon Plan
Docket No. E-100, Sub 179

1 The Reliability Panel’s Rebuttal testimony responds to various parties’ testimony
2 regarding reliability of the Carbon Plan from the perspective of system operations
3 in light of the mandate of the statutory mandate to maintain or improve upon the
4 adequacy and reliability of the grid.

5 Our testimony first addresses the reliability validation step that the Companies ran
6 to ensure the reliability of each portfolio in the Carbon Plan. We explain that the
7 traditional means by which to assess portfolio reliability—planning reserve
8 margin—is not a sufficient consideration, on its own, to determine reliability as the
9 fleet transitions to place greater reliance on generation resources that do not possess
10 the firm, dispatchable attributes that system operators have historically had at their
11 disposal. For this reason, the reliability validation step builds on the planning
12 reserve baseline by checking portfolios against weather, demand, and outage
13 parameters that better reflect what occurs in the Companies’ operating areas,
14 providing confidence the final portfolios will perform under such parameters. The
15 Companies expect that reliability analysis and metrics will continue to evolve to
16 mitigate risks of a changing resource mix as the Companies learn with the industry,
17 gain operational experience, and check and adjust the Carbon Plan every two years.

18 Next, we discuss the criticality of approaching the energy transition in an orderly
19 and realistic manner. The Companies’ System Operators manage the most critical
20 of critical infrastructure through their Energy Control Centers, supporting the
21 vitality of the Companies’ customers and communities. From a System Operator’s
22 view, there must be a robust mix of dependable, flexible, dispatchable resources to
23 replace the operational capabilities of the more than 8,000 MW of coal that will be
24 retired over the next decade—particularly in constrained periods and prolonged
25 extreme weather events. This includes additional gas as a bridge to integrate more
26 renewables and batteries until hydrogen, long-duration storage and ZELFRs are
27 available and can replace *at scale* the essential reliability services that gas
28 contributes to the system.

29 To put the magnitude of this change into perspective, on January 24, 2022—a sunny
30 day—the Belews Creek coal generation facility provided about 34 GWh of firm
31 dispatchable energy to the system. This is more than three times the energy storage
32 capability of every battery installed in the United States as of 2021. Accordingly,
33 while energy storage will be vitally important in executing the Carbon Plan
34 objectives, the Companies must consider both realistic scale and operational
35 capabilities as they plan their systems.

1 The Reliability Panel's testimony also discusses the reliability risks of relying on
2 off-system purchases. From the Control Center perspective, off-system purchases
3 are tools in our operational toolbox, but come with compounding risk as System
4 Operators must rely on neighboring systems to deliver on their commitments,
5 which can be curtailed or otherwise impacted by neighboring system transmission
6 or generation issues over which the Companies have no control.

7 The Reliability Panel believes the supply-side development activities proposed by
8 the Companies appropriately balance the core Carbon Plan objectives of achieving
9 the targeted CO₂ emissions reductions at least-cost while ensuring that execution
10 of this plan maintains or improves upon reliability of the grid.

11 This concludes our summary.

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1 MS. DEMARCO: Thank you. The panel
2 is -- or Mr. Roberts is available for questions.

3 CHAIR MITCHELL: All right.
4 Mr. Roberts, you sure have pulled your fair share
5 here. Check my notes to see who is up first.
6 CCEBA?

7 MR. BURNS: Chair Mitchell, CCEBA
8 reserved time and have no questions.

9 CHAIR MITCHELL: Okay. Thank you,
10 Mr. Burns. CPSA?

11 MR. SNOWDEN: Chair Mitchell, CPSA, same
12 boat, no questions for this witness.

13 CHAIR MITCHELL: SACE?

14 MS. THOMPSON: No questions, Chair
15 Mitchell.

16 CHAIR MITCHELL: Okay. Public Staff?

17 MR. FREEMAN: Public Staff has no
18 questions.

19 CHAIR MITCHELL: All right. Let me
20 check in with Commissioners to see who has
21 questions for Mr. Roberts. Mr. Roberts?
22 Mr. Roberts? Anything for Mr. Roberts?

23 (No response.)

24 EXAMINATION BY CHAIR MITCHELL:

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1 Q. Mr. Roberts, I have to make your stay here
2 meaningful, so I'll ask you a few questions. And
3 they'll be quick. We've talked some -- we talked some
4 with the panel, the Reliability Panel, in direct
5 examination or under direct testimony about operational
6 experience with battery -- with energy storage
7 batteries as well as other types of energy storage.
8 And I understand -- I understood Mr. Holeman to say the
9 Companies have significant experience with the pump
10 storage. And he spoke to the attributes of the pump
11 storage that make it a very valuable tool for your
12 system operators.

13 Talk -- can you help us understand what the
14 Companies' experience is to date with standalone
15 storage? My understanding is the Rock Hill facility is
16 the only standalone storage on the system, and that's
17 DEP at this point in time. So just talk some about
18 how -- the experience you all have been able to gain.

19 A. Yes. So with the Asheville Rock Hill site,
20 it's fairly small -- subject to check, 8 megawatts, I
21 believe -- but anyway, fairly small facility. We have
22 been --

23 Q. Can you help me understand -- I'm gonna
24 interrupt you. I think it's an 8- or 9-megawatt

1 facility.

2 How does that translate into duration of
3 time? Is that a less -- sub-four-hour?

4 A. Right. I'm -- to be honest with you, I'm not
5 sure what the exact duration of the battery is.

6 Q. Okay.

7 A. I know that we use it for, like, frequency
8 regulation, frequency response.

9 Q. Okay.

10 A. So frequency goes below a certain level, it
11 can discharge into the system to help support frequency
12 response. To be honest with you, I don't know a lot
13 about the operations of the Rock Hill battery. It's
14 small and connected to distributions.

15 Q. Oh, it is distribution tied. Okay. Okay.
16 Let's see.

17 (Pause.)

18 Q. Let me just go back through testimony.

19 (Pause.)

20 Q. All right. Mr. Roberts, I don't have
21 anything else for you.

22 CHAIR MITCHELL: Any questions on my
23 question?

24 (No response.)

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1 CHAIR MITCHELL: No? Okay. Okay. All
2 right. Mr. Roberts, you may step down and be
3 excused. Thank you very much for your testimony in
4 this proceeding. We very much appreciate it. All
5 right. I'll take a motion.

6 MR. JIRAK: Chair Mitchell, may I? Just
7 a very brief motion out of an abundance of caution.
8 So over the course of this hearing, Duke has filed
9 a number of late-filed exhibits at the request of
10 the Commission. We filed six late-filed exhibit in
11 total, the sixth of which was already entered into
12 the record as a rebuttal exhibit for the Grid Edge
13 Panel. At this time, with the Chair's permission,
14 we'd like to move into the record, at the
15 appropriate time, the other five late-filed
16 exhibits. So Late-Filed Exhibits Numbers 1 through
17 5 into the record.

18 And then, out of an abundance of caution
19 as well, we would ask that the Commission allow
20 into the record all of the summaries filed for all
21 the testimonies, most of which we believe have
22 already been moved into the record, but again out
23 of an abundance of caution, we would move those in
24 at this time.

1 CHAIR MITCHELL: Okay. Testimony
2 summaries will be copied into the record at the
3 appropriate time for each of the panels proffered
4 by Duke. The late-filed exhibits filed by Duke
5 numbered 1 through 5 will be admitted into evidence
6 identified as Late-Filed Exhibits 1, 2, 3, 4, and
7 5.

8 (Duke Energy Late-Filed Exhibits 1
9 through 5 were admitted into evidence.)

10 CHAIR MITCHELL: Any additional motions
11 from Duke?

12 MR. JIRAK: Not at this time. Thank
13 very much.

14 CHAIR MITCHELL: Okay. Any motions on
15 this study of the room?

16 MS. CRESS: Thank you, Chair Mitchell.
17 CIGFUR II and III would like to move into the
18 record its Late-Filed Exhibit Number 1, which was
19 filed in this docket in Docket Number
20 E-100, Sub 179A yesterday, September 28th.

21 CHAIR MITCHELL: That motion is allowed
22 and the document will be identified as CIGFUR
23 Late-Filed Exhibit 1.

24 MS. CRESS: Thank you.

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1 (CIGFUR Late-Filed Exhibit 1 was
2 admitted into evidence.)

3 CHAIR MITCHELL: To be clear, I don't
4 recall, the Duke late-filed exhibits will be
5 identified as Duke Energy Late-Filed Exhibits 1, 2,
6 3, 4 and 5.

7 Any additional motions on this side of
8 the room? Anybody?

9 (No response.)

10 CHAIR MITCHELL: All right. With that,
11 we've come to the end of the expert witness portion
12 of this proceeding. Our court reporters have been
13 hard at work on preparing the transcript so that
14 it's available. It will be available, in total,
15 very soon.

16 I would like for the parties to file --
17 to make their post-hearing filings by October 24th.
18 You may file proposed orders, you may file briefs,
19 you may file whatever you think would aid the
20 Commission in our making decisions in this
21 proceeding.

22 All right. Any additional questions
23 before we adjourn?

24 (No response.)

1 CHAIR MITCHELL: All right. Before we
2 adjourn, I'd like to say thank you to all of the
3 parties that have participated in this proceeding.
4 This has been a long -- this has been a long
5 hearing, but I know that you-all have been hard at
6 work on these issues for many, many months and that
7 you have put in significant time and effort in
8 preparing your cases. We appreciate the effort
9 that has gone into this proceeding and the skill
10 that you-all have displayed in making your cases to
11 us. So thank you. And with that, we will be
12 adjourned.

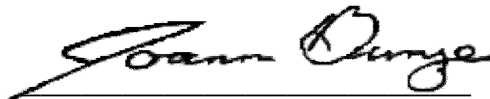
13 (The hearing adjourned at 11:35 a.m. on
14 Thursday, September 29, 2022.)
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16
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24

CERTIFICATE OF REPORTER

STATE OF NORTH CAROLINA)
COUNTY OF WAKE)

I, Joann Bunze, RPR, the officer before whom the foregoing hearing was conducted, do hereby certify that any witnesses whose testimony may appear in the foregoing hearing were duly sworn; that the foregoing proceedings were taken by me to the best of my ability and thereafter reduced to typewritten format under my direction; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this hearing was taken, and further that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.

This the 3rd day of October, 2022.



JOANN BUNZE, RPR

Notary Public #200707300112

