STATE OF SOUTH CAROLINA

(Caption of Case)

)
)
)
)
)
)
)
)
)
)
)
)

BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

COVER SHEET

DOCKET/NDI NUMBER: _____ - _____ - _____

(Please type or print)

Submitted by: frank ellerbe

Address: Post Office Box 11449
columbia, sc 29211

SC Bar Number: 1866
Telephone: 803-929-1400
Fax:
Other:
Email: fellerbe@sowellgray.com

NOTE: The cover sheet and information contained herein neither replaces nor supplements the filing and service of pleadings or other papers as required by law. This form is required for use by the Public Service Commission of South Carolina for the purpose of docketing and must be filled out completely.

DOCKETING INFORMATION (Check all that apply)

☐ **Emergency Relief demanded in petition**

☐ **Request for item to be placed on Commission's Agenda expeditiously**

☐ **Other:** _____

INDUSTRY (Check one)	NATURE OF ACTION (Check all that apply)		
☐ Electric	☐ Affidavit	☐ Letter	☐ Request
☐ Electric/Gas	☐ Agreement	☐ Memorandum	☐ Request for Certification
☐ Electric/Telecommunications	☐ Answer	☐ Motion	☐ Request for Investigation
☐ Electric/Water	☐ Appellate Review	☐ Objection	☐ Resale Agreement
☐ Electric/Water/Telecom.	☐ Application	☐ Petition	☐ Resale Amendment
☐ Electric/Water/Sewer	☐ Brief	☐ Petition for Reconsideration	☐ Reservation Letter
☐ Gas	☐ Certificate	☐ Petition for Rulemaking	☐ Response
☐ Railroad	☐ Comments	☐ Petition for Rule to Show Cause	☐ Response to Discovery
☐ Sewer	☐ Complaint	☐ Petition to Intervene	☐ Return to Petition
☐ Telecommunications	☐ Consent Order	☐ Petition to Intervene Out of Time	☐ Stipulation
☐ Transportation	☐ Discovery	☐ Prefiled Testimony	☐ Subpoena
☐ Water	☐ Exhibit	☐ Promotion	☐ Tariff
☐ Water/Sewer	☐ Expedited Consideration	☐ Proposed Order	☐ Other: _____
☐ Administrative Matter	☐ Interconnection Agreement	☐ Protest	_____
☐ Other: _____	☐ Interconnection Amendment	☐ Publisher's Affidavit	
	☐ Late-Filed Exhibit	☐ Report	

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 1 of 259

SOWELL GRAY ROBINSON
Litigation + Business

FRANK R. ELLERBE, III
DIRECT 803 227.1112 DIRECT FAX 803 744.1556
fellerbe@sowellgray.com

ELECTRONICALLY FILED - 2018 May 15 3:32 PM - SCPSC - Docket # 2018-206-E - Page 2 of 259

May 15, 2018

VIA ELECTRONIC FILING

Ms. Jocelyn Boyd
Chief Clerk & Administrator
Public Service Commission of South Carolina
Synergy Business Park, Saluda Building
101 Executive Center Drive, Suite 100
Columbia, SC 29210

**Re: Duke Energy Carolinas, LLC & Duke Energy Progress, LLC
Notice of Allowable Ex Parte Communication Briefing – May 23, 2018 on Power/Forward Initiative.**

Dear Ms. Boyd:

Pursuant to S.C. Code Ann. Section 58-3-260(C)(6)(a)(v), Duke Energy Carolinas, LLC and Duke Energy Progress, LLC respectfully request that the Public Service Commission of South Carolina post the attached "Notice of Request for Allowable Ex Parte Communication Briefing" on its website.

We have confirmed that the Commissioners and Commission employees identified in the attached Notice, as well as the Acting Executive Director of the Office of Regulatory Staff are generally available and willing to attend the Briefing as described in the attached Notice.

Yours truly,

Frank R. Ellerbe, III

FRE:tch

Enclosure

cc w/enc: Nanette Edwards, ORS Acting Executive Director (via email)
Jeffrey M. Nelson, ORS Director of Legal Services (via email)
Shannon Bowyer Hudson, ORS Deputy Director Legal Services (via email)
Heather Shirley Smith, Deputy General Counsel (via email)
Rebecca J. Dulin, Senior Counsel (via email)

ELECTRONICALLY FILED - 2018 May 23 3:32 PM - SCPSC - Docket # 2018-206-E - Page 32 of 259

NOTICE OF REQUEST FOR ALLOWABLE EX PARTE COMMUNICATION BRIEFING

Pursuant to S.C. Code Ann. § 58-3-260(C)(6)(a)(v) (2015), the Public Service Commission of South Carolina hereby provides the following Notice of a request for an allowable ex parte communication briefing:

Person or Party Requesting the Briefing:	**Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC**
Date and Time of Briefing:	**May 23, 2018, 10:30 a.m.**
Commissioners and Commission Employees Requested to Attend the Briefing:	**Chairman, Swain E. Whitfield** **Vice Chairman, Comer H. "Randy" Randall** **Commissioner John E. "Butch" Howard** **Commissioner Elizabeth B. "Lib" Fleming** **Commissioner G. O'Neal Hamilton** **Commissioner Robert T. "Bob" Bockman** **Commissioner Elliott F. Elam, Jr.** **Jocelyn G. Boyd, Chief Clerk/Administrator** **Dr. James Spearman, Executive Assistant** **Joseph Melchers, General Counsel** **David Butler, Senior Counsel** **Randall Dong, Staff Attorney** **Josh Minges, Staff Attorney** **David Stark, Staff Attorney**
Subject Matter to be Discussed at Briefing:	**Power/Forward Initiative**
Commission Docket Number:	**Not applicable**.

The Public Service Commission of South Carolina will post on its website further information from this allowable ex parte communication briefing within 96 hours of its conclusion.

1401 Main Street, Suite 900

Phone: (803) 737-0800

jnelson@regstaff.sc.gov

Jeffrey M. Nelson
Chief Counsel & Director of Legal Services

May 29, 2018

VIA ELECTRONIC FILING

Jocelyn G. Boyd, Esquire
Chief Clerk & Administrator
Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia, South Carolina 29210

Re: Allowable Ex Parte Communications Briefing held on May 23, 2018
Docket No. 2018-15-E

Dear Ms. Boyd:

Pursuant to the provisions of S.C. Code Ann. § 58-3-260 (2015) and as the acting Executive Director's designee, I am attaching copies of the certified statements from all persons present (see sign in sheets also attached) at the May 23, 2018, Allowable Ex Parte Communication Briefing held by Duke Energy Carolinas, LLC and Duke Energy Progress, LLC – Power/Forward Initiative.

Please find enclosed a copy of the transcript of the briefing and accompanying presentation materials. Any written materials utilized or referenced at the briefing by any of the attendees or Commissioners are provided by those who utilized or referenced them and are included as follows:

ELECTRONICALLY FILED - 2018 May 29 PM 3:20 - SC Public Service Commission - Docket # 2018-15-E - Page 1 of 259

Documents Attached:

1. Presentation Slides
2. Power-Forward Carolinas White Paper
3. Transcript
4. Duke Energy Economic Impact Study (Von Nessen)
5. Sign-In Sheets
6. Certified Statements of Participants

With the documents provided by those who utilized or referenced them during the allowable ex parte briefing, this briefing is hereby certified as being in compliance with S.C. Code Ann. § 58-3-260(C)(6)(ii). If website links and documents were not provided by those who utilized, referenced, or distributed them as required by S.C. Code Ann. § 58-3-260(C)(6)(ii), this certification is null and void.

It is my understanding that the transcript of the briefing will be posted on your website, and this transcript is incorporated by reference in all certified statements. The transcript is intended to satisfy the summary requirement of § 58-3-260(C)(6)(a)(ii).

As required by law, please post all documents relating to these briefings on your website. Thank you for your assistance.

Sincerely,

Jeffrey M. Nelson

Encl.

cc: Frank R. Ellerbe, III, Esquire (Via E-Mail)
Heather Shirley Smith, Esquire (Via E-Mail)
Joseph Melchers, Esquire (via E-Mail)

ELECTRONICALLY FILED - 2018 May 29 PM 3:25 - SCPSC - Docket # 2018-205-E - Page 2 of 2

The Public Service Commission
State of South Carolina

COMMISSIONERS
Swain E. Whitfield, Fifth District
Chairman
Comer H. "Randy" Randall, Third District
Vice Chairman
John E. "Butch" Howard, First District
Elliott F. Elam, Jr., Second District
Elizabeth B. "Lib" Fleming, Fourth District
Robert T. "Bob" Bockman, Sixth District
G. O'Neal Hamilton, Seventh District

Jocelyn Boyd
Chief Clerk/Administrator

Phone: (803) 896-5133
Fax: (803) 896-5246
Jocelyn.Boyd@psc.sc.gov

May 24, 2018

Jeffrey M. Nelson, Esquire
Office of Regulatory Staff
1401 Main Street, Suite 900
Columbia, South Carolina 29201

Re: ND 2018-15-E – Duke Energy Carolinas, LLC and Duke Energy Progress, LLC – Request for an Allowable Ex Parte Briefing – *Power/Forward Initiative*

Dear Mr. Nelson:

Please find enclosed the sign-in sheets, the signed Certified Statements from the participants, and the transcript and/or audio room recording, together with the presentation materials as compiled by the court reporter, from the Allowable Ex Parte Briefing held by the Public Service Commission on Wednesday, May 23, 2018.

Please let me know if you should require any additional information.

Sincerely,

Jocelyn Boyd
Chief Clerk/Administrator

JB/hha
Enclosures

ACCEPTED FOR PROCESSING 2018 May 24 PM 3:29 PSC SC Docket # ND-2018-15-E - Page 1 of 1 259

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10/18/2018 3:26 PM PSC SC Docket # 2018-206-E - Page 1 of 19

BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

COLUMBIA, SOUTH CAROLINA

PROCEEDING #18-11727 MAY 23, 2018 10:33 A.M.

ALLOWABLE EX PARTE BRIEFING - ND-2018-15-E

Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC - Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative

TRANSCRIPT OF ALLOWABLE PROCEEDINGS **EX PARTE BRIEFING**

COMMISSION MEMBERS PRESENT: Swain E. WHITFIELD, CHAIRMAN; Comer H. 'Randy' RANDALL, VICE CHAIRMAN; and COMMISSIONERS John E. 'Butch' HOWARD, Elliott F. ELAM, Jr., Elizabeth B. 'Lib' FLEMING, Robert T. 'Bob' BOCKMAN, and G. O'Neal HAMILTON

ADVISOR TO COMMISSION: Joseph Melchers, Esq.
General Counsel

STAFF: Jocelyn G. Boyd, Esq., Chief Clerk/Administrator; F. David Butler, Esq., Senior Counsel; James Spearman, Ph.D., Executive Assistant to Commissioners; B. Randall Dong, Esq., Josh Minges, Esq., and David W. Stark, III, Esq., Legal Advisory Staff; Douglas K. Pratt, Thomas Ellison, and John Powers, Technical Advisory Staff; Jo Elizabeth M. Wheat, CVR-CM/M-GNSC, Court Reporter; and Afton Ellison, Hope Adams, and Calvin Woods, Hearing Room Assistants

APPEARANCES:

HEATHER SHIRLEY SMITH, ESQUIRE, representing and ***Bobby Simpson*** [Director, Grid Improvement Plan Integration / Duke Energy] presenting for **DUKE ENERGY CAROLINAS, LLC, AND DUKE ENERGY PROGRESS, LLC**

JEFFREY M. NELSON, ESQUIRE, representing the **SOUTH CAROLINA OFFICE OF REGULATORY STAFF**

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10-E - 10/31/2018 3:26:29 PM - SCPSC - Docket # 2018-206-E - Page 2 of 92

I N D E X

PAGE

OPENING MATTERS 3-6
Mr. Nelson 3
Ms. Smith 6

PRESENTATION

Bobby Simpson 6
[Director, Grid Improvement Plan Integration / Duke Energy]

Question(s)/Comment by Vice Chairman Randall 47
Question(s)/Comment by Commissioner Howard 50
Question(s)/Comment by Commissioner Hamilton 55
Question(s)/Comment by Commissioner Fleming 61
Question(s)/Comment by Commissioner Elam 71
Question(s)/Comment by Commissioner Bockman 73
Question(s)/Comment by Vice Chairman Randall 74
Question(s)/Comment by Commissioner Fleming 75
Question(s)/Comment by Mr. Melchers 78
Question(s)/Comment by Chairman Whitfield 80

CLOSING MATTERS 88

REPORTER'S CERTIFICATE 90

Note: For identification of any additional referenced materials and/or links for same, please see Certification correspondence filed by the Office of Regulatory Staff.

Please note the following inclusions/attachments to the record:

- PowerPoint Presentation Slides (PDF)
- *The Economic Impact of Duke Energy: A Statewide and Regional Analysis*
- *Power/Forward Carolinas: A 10-Year Plan to Modernize South Carolina's Energy Grid*

ELECTRONICALLY PROCESSED - 2018 May 21 3:26 PM - SCPSC - Docket # 2018-206-E - Page 3 of 59

P R O C E E D I N G S

CHAIRMAN WHITFIELD: Please be seated. I'll call this allowable ex parte briefing to order and ask our attorney, Mr. Melchers, to read the docket. And then we'll hear from South Carolina Office of Regulatory Staff.

Mr. Melchers?

MR. MELCHERS: Thank you, Mr. Chairman.

And, Commissioners, we're here pursuant to a Notice of Request for Allowable Ex Parte Communication Briefing.

The parties requesting the briefing are Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC. The briefing is scheduled for today, here in the Commission hearing room, May 23rd, 10:30 a.m. And the subject matter to be discussed at the briefing today is: The Power/Forward Initiative.

Thank you, Mr. Chairman.

CHAIRMAN WHITFIELD: Thank you, Mr. Melchers.

Mr. Nelson, South Carolina Office of Regulatory Staff.

MR. NELSON: Good morning, Mr. Chairman. Thank you.

Commissioners and everybody else, my name is Jeff Nelson, if you don't know me, and I'm Chief

ACCEPTED FOR PROCESSING 2018-201-E - Page 4 of 9 5/23/2018 3:26:09 PM SCPSC Docket # 2018-206-E - Page 4 of 9

1 Counsel for the Office of Regulatory Staff. I'm
2 here today as the designee of the Executive
3 Director of the Office of Regulatory Staff at this
4 allowable ex parte briefing being presented by Duke
5 Energy Carolinas and Duke Energy Progress.
6 It is to be conducted in accordance with the
7 provisions of South Carolina Code Annotated Section
8 58-3-260(C).
9 As the ORS representative, it's my duty to
10 certify the record of this proceeding to the Chief
11 Clerk of the Public Service Commission, Ms. Boyd,
12 within the next 72 hours, and to verify that this
13 briefing was conducted in accordance with the
14 provisions of 58-3-260.
15 The requirements of that statute are, in part,
16 that the allowable ex parte be confined to the
17 subject matter which has been noticed, and on this
18 basis, as Mr. Melchers has already indicated, the
19 subject is the Power/Forward Initiative.
20 Therefore, I would ask that the presenters and
21 Commissioners and Staff all please attempt to
22 refrain from discussing any matters not
23 specifically related to that topic.
24 Under the provisions of 58-3-260(C),
25 participants, Commissioners, and Commission Staff

ACCEPTED FOR PROCESSING 10/31/2018 3:26:29 PM SCPSC Docket # 2018-206-E - Page 5 of 259

1 are prohibited from requesting or giving any
2 commitment, predetermination, or prediction
3 regarding any action by any Commissioner as to any
4 ultimate or penultimate issue which is before or is
5 likely to come before the Commission. I ask the
6 presenters, Commissioners, and Staff try and
7 refrain from referencing any reports, articles,
8 statutes, or documents of any kind that are not
9 specifically included in today's materials. I
10 notice that the company has provided both the
11 briefing materials, as well as two other documents
12 today. Anything outside of those, we would ask you
13 please try and refrain from referring to, because
14 we would have to get copies of those and then we'd
15 have to provide those in the record, and we have a
16 very short turnaround time when we need to provide
17 these documents.
18 Finally, I would ask everybody in attendance
19 today, please read and sign the form which you
20 should've picked up. You should've both signed in
21 when you came in and you should have picked up a
22 form. I ask you please read and sign those, and
23 make sure they get turned back in before you leave
24 this morning.
25 Thank you. That's all I have, Mr. Chairman.

ACCEPTED FOR PROCESSING 10/31/2018 3:26:29 PM SCPSC Docket # 2018-206-E - Page 6 of 259

CHAIRMAN WHITFIELD: Thank you Mr. Nelson. Ms. Smith?

MS. SMITH: Good morning. As Mr. Nelson mentioned, we have provided some documents to the Commission. One, of course, is the presentation that Mr. Simpson will walk through. The other two documents were recently referred to by Mr. Simpson at our workforce development ex parte. These two documents were filed with the Commission in connection with that ex parte, as you can note from the filing stamp, and Mr. Simpson will refer to these documents, and we wanted to provide them to you today for your convenience. For others in the room, we have brought extra copies if a member of the public is also interested in seeing them.

And with that, I'm happy to turn it over to Mr. Simpson.

MR. BOBBY SIMPSON [DUKE]: Good morning.

CHAIRMAN WHITFIELD: Thank you, Ms. Smith.

MR. BOBBY SIMPSON [DUKE]: Can you hear me on the microphone? I want to make sure before we get started. Okay.

[Reference: Presentation Slide 1]

Well, thanks for taking the time to meet with us again. We were here just a few weeks ago, so we

ACCEPTED FOR PROCESSING 5/23/2018 2:26 PM SCPSC Docket # 2018-206-E - Page 7 of 259

1 really do appreciate you taking the time to listen
2 to what we want to talk about with respect to
3 Power/Forward Carolinas. And I mentioned the last
4 time I was here — I described my role as one who is
5 responsible to make sure the grid is fit for the
6 future. And just to kind of refresh on that, what
7 that means is a smart-thinking energy grid that's
8 strong enough to weather storms, physical and
9 cyber-security, one that's intelligent enough to
10 anticipate power outages and restore service
11 automatically, and then one that's flexible enough
12 to enable renewable technologies and then meet the
13 changing energy needs that we're seeing in years
14 ahead.
15 So our commitment to you is we want to be
16 transparent and help develop an understanding as to
17 why Power/Forward is important to do and what it
18 consists of, and also to listen and explore your
19 feedback.
20 So the presentation today will be kind of in
21 two parts, and the intended takeaways are — you
22 know, the first part would be to talk about the
23 vision and the problem statements. So how did we
24 arrive at this vision? What problems are we trying
25 to solve? What opportunities are we pursuing, and

what are the benefits?

The second part will focus on the proposed solution, so those takeaways would be: What decision-making process did we use? What is our rationale for doing what we're doing? And then how did we assign dollars and how flexible is the plan? And you will recall from the last ex parte on workforce development, you know, those takeaways were, you know, that this is a people-driven transformation of the grid. It'll support thousands of jobs in the communities across the State, and we are very actively involved in recruiting and training to fill the workforce development pipeline.

[Reference: Presentation Slide 2]

So I'd like to start with a story here. So, this took place in 1992 in a little town called Olanta, near Florence. And at that time, I was the Florence district manager for what was then CP&L. And I was out with a line crew on this particular day, and we were building a power line across a soybean field to serve an irrigation pump. And while we were doing that, the farmer who owned the land came driving up over the ruts in his truck, got out, and said, "Hey, when you get finished, can

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 07-SCPSC-Docket #2018-206-E - Page 8 of 259

ACCEPTED FOR PROCESSING 2018-201, 2018 3:26 PM SCPSC Docket # 2018-206-E - Page 9 of 259

you come get my lights on?" We said, "Yes, sir. How long have they been out?" And he said, "Oh, about a week." And the whole point is, this man's standard practice was, when he saw a truck while he was riding his fields, he would come and, if he had an issue that the company needed to know about, he'd tell us, and that's the way he worked. So his mindset was to be adaptive and self-sufficient.

And I share this story just to contrast it with what we all know is true today, and that is, you know, minutes after power goes out anywhere, people start twittering about it, and I think the mindset is to kind of shut down and wait for it to get back on, and things come to a standstill.

So, you know, the words on this slide here — "What got you here won't get you there" — is the name of a book by a leadership coach by the name of Marshall Goldsmith. And the reason I wanted to use that, because my takeaways from that book really apply here with what we're doing, and that is, we take our responsibility to serve very seriously and we care about getting better as a utility in the industry.

[Reference: Presentation Slide 3]

And so this slide, you saw last time. And I

ELECTRONICALLY PROCESSED 2018 May 21 3:26 PM - SCPSC - Docket # 2018-206-E - Page 10 of 259

1 just wanted to reiterate a few points here. We all
2 know that technology's transforming South Carolina.
3 It's really hard to find a key social structure
4 that's not dependent upon electricity. What we're
5 seeing is that customers' needs have changed, and
6 they've grown beyond what today's grid was designed
7 to do, because customers want a new experience and,
8 with the electric power grid really being the
9 backbone of our State's digital economy, customers
10 deserve an energy grid that's reliable and that is
11 built to weather the storms. And to make all of
12 these things happen that we think are necessary for
13 the future, there's three or four things we have to
14 think about that I'm going to talk about in some
15 detail: Reliability, reducing consumer/customer
16 disruption and being ready for severe weather,
17 really before it strikes; number two, being
18 vigilant and preparing now for physical and cyber-
19 attacks, which are a very real threat; responding
20 to growing consumer expectations; and, finally,
21 with renewable energy technologies, as they become
22 more affordable and accessible, it's something
23 that's really good for the future, but they're
24 having a profound impact on the way the grid
25 operates. So we have to take steps now to ready

the grid to support this growth. So, for us, it's no longer about powering lights, as it was in the '90s; it's really about powering lives.

[Reference: Presentation Slide 4]

So we find ourselves at a fork in the road where the left-hand turn is maintaining our grid components, and it's what we do every year; we maintain the grid year over year, so we invest in that and we refer to it often is "customary spin," but it's the investment in maintaining the grid that we make to make sure the assets are used and useful. And it is a well-maintained grid. But the grid is a machine, and wear and tear is happening on the grid and it's becoming less resilient, and there's evidence of that. The evidence is in the metric that we call SAIDI, S-A-I-D-I, which I'm going to explain in more detail in a minute, but that's one of the indicators that things are changing.

So we're seeing a worsening trend; it's been statistically validated. And so our conclusion is that maintaining today's infrastructure is really not the solution, going forward. And so we need to make this right-hand turn and go down the road of transformation, and that's what Power/Forward

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 17 of 29

ACCEPTED FOR PROCESSING 2018-201 8/13/2018 2:29 PM 07-SCPSC-18-0206-E - Page 12 of 29

Carolinas is about; it's about transforming the grid to the 21st century. And so what that means, specifically, is a grid that's more flexible and accessible, hardened and resilient, secure, and a smarter grid. And to be more specific, it's adding things like two-way power flow; it's turning the reliability trend from worsening to improving; it's installing smart-thinking grid features; and it's integrating wires and non-wires approaches to the way the grid works.

So Power/Forward Carolinas, it's a broad-reaching, diverse portfolio of elements that work together, and it's investing in the right thing in the right place on the grid to get the right outcome. So it's got to be transformed over a period of time to integrate with the future, and we just have to do more to anticipate what customers want and need, and we have to avoid the reliability issues that we believe lie ahead if we don't take action today.

So, the way I've described the left-hand turn is more like maintaining the road; the right-hand turn is about building a better energy highway, is a way to think about it. So the reality is that today's grid, while it's well-maintained, is simply

not engineered to handle the growth that we're seeing in renewables and some of the weather impacts.

[Reference: Presentation Slide 5]

So, while many of these benefits might seem intuitive, what may not be clear is why we didn't make these investments before, why are we building Power/Forward now. It really starts with what we can see now versus what we could see just a few years ago. So for a plan like Power/Forward to be successful, it has to be built on reliable data. And, so, data is at the heart of what we're doing here, and we have a whole team of data scientists that are working to help us figure out the most cost-effective thing to do with the grid.

So we've got substantial knowledge now, information, and expertise around what works and the positive impacts that implementing improvements in scale on the grid can have on performance. So we just didn't have a powerful enough lens with the data in the past to see beyond the system average and define the problems at individual points and subsystems of the grid. So I'll talk about the subsystems of the grid here in a minute. And even if we did, if we did identify points to improve,

ACCEPTED FOR PROCESSING 10/31/2018 3:26:09 PM SCPSC Docket # 2018-206-E - Page 13 of 259

the technologies that were needed to make those improvements were still being invented in the utility industry.

So here's a way to think about it: If you go back to 2007, that's when we started putting a lot of devices out on the grid. You know, the grid is a 50-something thousand square miles of geography it serves. We put thousands of devices out on the grid. And when you do that, you know, you can communicate with them and it brings a lot of data in. So IT people call that big data. So we had — we're gathering all this data, but the ability to analyze it and do that efficiently in a way that you can make really good, informed decisions is something that has only recently become — we've been able to do. And we've done that by leveraging the solutions that the businesses that have data as their business model — like the Amazons and the Googles, they're the ones that figured out how do you really harness data and process huge amounts of data to make informed decisions. So that'll just give you a feel for it has really been in the recent past that the data and the capability has come to bear, and we are applying that now.

So the advanced communication and networking

ACCEPTED FOR PROCESSING 2018-201 3:26 PM 07 SCPSC Docket # 2018-206-E - Page 12 of 29

technologies, automated restoration capabilities, grid management systems, which you might think of as the brain of the grid, these are technologies that have been evolving concepts to practical application, and they're coming to bear now. And the advanced predictive analytics that I just described have recently come to bear. So we've been able to leverage that and translate that into how do you build a smart-thinking grid.

[Reference: Presentation Slide 6]

So Power/Forward Carolinas, we think of it as an intelligent blueprint for the future. It's built on millions of data points to tell us clearly and precisely where to make the right investments to maximize benefits. And by targeting these investments, we can keep costs lower for customers while preparing the grid for new technologies that will benefit communities and the environment in the State. So data is the foundation of the smart-thinking grid.

[Reference: Presentation Slide 7]

So I want to shift gears here a little bit and talk not only about the need for Power/Forward but talk about the benefits. I'll be on this slide for a while, because I think it's really important to

ACCEPTED FOR PROCESSING 2018-10-1 21:32:29 PM 10/2018 SCPSC Docket # 2018-206-E - Page 15 of 259

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 07 SCPSC Docket # 2018-206-E - Page 12 of 25

1 put things in perspective. So I said a minute ago
2 that the grid is a machine and that, like any
3 machine, the more stress it experiences, the less
4 resilient it becomes. And so what's happening
5 here, there's a couple of things going on that
6 we've been looking into that are putting new
7 demands and more wear and tear on the grid. The
8 evidence is showing up in the number of outage
9 events that are happening. And the way we measure
10 that is a metric that we call SAIDI. So the
11 acronym is S-A-I-D-I, SAIDI. It stands for system
12 average interruption duration index. It's an IEEE
13 metric, IEEE being the Institute of Electrical and
14 Electronics Engineers. And it's a measure,
15 frankly, that doesn't mean anything to most people,
16 but it means a lot to us, because we use that to
17 make informed decisions about how, where, and when
18 to invest. So it's really important, from that
19 standpoint.
20 So here's a way to think about it, the math
21 behind it: What it's telling you is how long is the
22 average customer out in a year — keyword being
23 "average." So, think of it this way: So we have
24 60-70,000 outages that happen in a year. So if you
25 think of the whole grid, lights go out upwards of

ACCEPTED FOR PROCESSING 5/23/2018 2:26 PM SCPSC Docket # 2018-206-E - Page 17 of 259

60-70,000 times over the course of the year, and that would be the whole Carolinas system. And we measure that in terms of customer minutes of interruption, so, for example, if one customer was out for an hour, that's 60 customer minutes of interruption. If 1000 customers were out for four hours, that's 1000 customers times 240 minutes: 240,000 customer minutes of interruption.

So all those outages create customer minutes of interruption; you add all of those up over the course of the year, and that's the numerator of SAIDI. You divide it by the number of customers served, and it gives you that average.

So I wanted to explain exactly how that works, and if you look at this graph here, on the left-hand side is DEP, on the right-hand side is DEC. And so DEP is about 239, so that's around four hours. So the average customer's out four hours in DEP. And for Duke Energy Carolinas, it's 169, so that's a little bit less than three hours. I just wanted to explain what you're looking at, here, in terms of the graph. And those are the 2017 numbers that I just described.

So what we're showing here is a projection of where reliability will go, if we keep doing what

ACCEPTED FOR PROCESSING 5/23/2018 2:26 PM PSC SC Docket # 2018-206-E - Page 18 of 259

we're doing on, the left-hand side of the road. So the forecasted worsening increase over the next 10 years is without Power/Forward. The forecast that's in blue is with Power/Forward. And that's really the point of this whole slide, and that is the benefit.

So I want to talk a little bit about what's driving that. So we have seen a significant increase in severe weather events in recent years, and that's one of the things causing more wear and tear on the grid. And we asked ourselves about the weather, is it different? Is it having an impact, and does it matter? And we engaged a research economist and academic to do a statistical evaluation to take a hard look at this.

And just a few quick data points when it comes to the weather: When you look at what meteorologists call convective weather events, convective weather events are — you might think of them as thunderstorms, but they're events that create damaging winds and extreme precipitation. So in the U.S., those events over the past 20 years are up 40 percent. In the Southeast, it's almost doubled. In North and South Carolina, it's more than doubled since the year 2000. And if you look

at the DEP and DEC area, these events are up 31 percent since the year 2006. So that's the weather, just looking at the weather in terms of is it different. And then we looked at the statistical correlations. This is why we engaged a statistician. And the correlation is what a statistician says is strong. And what that means is, more than half of the variation in the outage events that we're seeing can be explained by the number of changes in these convective weather events. And that is unusual, for a single factor to capture more than 50 percent of the change.

So a way to think about that is a real estate example. So, in real estate, when pricing houses, you know, there's a number of things that real estate agents use to price a house: location, comparables, square footage, those types of things. And it usually takes four or five variables to influence significantly the price of a house. This is a case where one variable is having over 50 percent of the impact. So I just wanted to try and put that into context.

So if you look this graph here again, what we've seen — and there's two windows of time we're looking at. So what's happened with the

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 10-2018 SCPSC Docket # 2018-206-E - Page 25 of 29

reliability between 2006 and 2012, compared to what's happened to reliability between 2013 and 2017. So in DEP, we've had a flat to slightly improving trend between the years 2006 and 2012, but since 2013 it's worsened by about 1½ percent. If you look at DEC, it's more dramatic. So in DEC, between 2006 and 2012, the reliability performance — SAIDI — was improving by 4 percent, but since 2013 it's worsened by 6 percent.

So the conclusion is that there's a 95 percent confidence level that this is not random or chance and it will continue to worsen, that there's been a clear change in the data pattern. We kind of refer to this as the new normal. So we can see, over a period of 10 years, anywhere from a 35 to a 50 percent worsening in the reliability performance, and so we see this as an opportunity to act now.

So that's the weather. I wanted to talk a minute about renewables. So we've also seen a tremendous growth in renewable energy across the State. We're seeing increased adoption of emerging technologies that are putting new demands on the system. And while they've introduced a lot of positive benefits, they've also introduced intermittent two-way power flow to a system that

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 10/7/2018 SCPSC Docket # 2018-206-E - Page 26 of 129

was engineered and designed for one-way power flow.

So just a couple of things to put that in perspective: So the number of megawatts on our distribution grid is around 2000, right now, today. And there's about 2500 megawatts in the queue that are being studied. And we have validated that there's more solar megawatts on the distribution grid, on Duke Energy's distribution grid, than of any other utility in the country. And that's really because we've always been open and tried to promote the integration of renewables, dating all the way back to 2007 when things just started to ramp up in that space. But it's starting to tax the grid and put a strain on it, and there's reliability issues that we're seeing that range from voltage flicker that causes equipment regulators to operate real frequently, so that's a wear-and-tear example, we're seeing higher losses on the grid, and we're seeing this thing called magnetizing in-rush. So when solar comes on, if there's enough concentration in an area, it's kind of like if you have a water hose and you've got the water turned on at the spigot, and you hit the nozzle and the water bursts out until it stabilizes. When solar transformers come on,

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM SCPSC Docket # 2018-206-E - Page 27 of 129

that's the kind of hit they make to the grid, which can create more wear and tear. I just wanted to try and give some practical examples.

So, while the system can maintain a certain amount of these new technologies, as I said, the reality is the grid wasn't engineered for what amounts to two-way power flow. So just to kind of wrap up the story here, you know, just from the statistics, because I think this is an important part of it, statistical analysis looked at whether the trend in reliability is different in one period of time compared to another; the answer is yes. We're finding that it's gone from flat, to improving, to worsening. We saw the change starting to happen in 2012 and, since it occurred, it's continuing. And so the research is telling us that there's a 95 percent confidence level it's not random or chance and it'll continue for the reasons I've described.

So, really, a point I want to make here is, if you go back to the fork-in-the-road analogy, we've got evidence that's emerged to only continue maintaining the grid, we're concerned we're going to have disruption that will not be acceptable in the future, that could even be threatening, whereas

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 22 of 225

the right-hand turn is opportunity. And what opportunity really means is, we see it and we've got time to change it if we act now. In fact, that's really my bottom-line point: So the benefit being, Power/Forward can improve core reliability by 40 to 60 percent.

[Reference: Presentation Slide 8]

So another set of benefits I wanted to mention is with major storms. So, Power/Forward does reduce major storm impacts. So if you look at the text just to the left of the picture here, it's talking about major storm impacts in the Carolinas. And so homes and businesses that are impacted annually by major-event days — so here's another acronym, MED, and it stands for major event days — what those are is these are cases where you have these big storms that create so many outage events so quickly that you've got a lot in the queue and you've got a lot of damage and it's a multi-day storm restoration effort, and mobilizing resources across your own service area or from other utilities is essentially mandatory to minimize the number of days these things take to restore power. So on average, homes and businesses in South Carolina experience 12 hours of interruption from

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 23 of 259

ACCEPTED FOR PROCESSING 10/18/2018 3:26:29 PM SCPSC Docket # 2018-206-E - Page 24 of 259

these things. And to put it in context — so there's a lot of numbers on this slide, but let's just pick one. So if you look at, in the far right at the top, you see "210 million customer minutes of interruption"? We've already talked about customer minutes of interruption, so I think it's a good number to use. So what this is showing is the yearly average for the past 10 years of customer minutes of interruption in South Carolina because of these major storm events I just described; it's 210 million. So let's — let me just elaborate on that a bit. So these major storms, it's not a huge number of storms; it's things like ice storms, these big thunderstorm squall lines that might start at 5 or 6 o'clock in the evening and it's 2 a.m. the next day before they clear out. Those are the kind of things I'm talking about that, on average, are creating 210 million customer minutes of interruption a year over the past 10 years.

So let me give you a contrast of two extremes. If you look at the entire DEP service area, both North and South Carolina — this [indicating] is just the South Carolina number here, but if you just put North and South Carolina together for DEP — just normal weather days, you know, a day like

today, in a year you get just shy of 200 million customer minutes of interruption. So the point being, a few big storms can have the same impact of customer minutes of interruption that take a whole year to accumulate just under normal circumstances. So it is a big deal, and there are benefits from Power/Forward that can reduce this impact.

Here's the other extreme: Hurricane Matthew. Hurricane Matthew in the DEP area was almost 400 million customer minutes of interruption. So when you think about a Matthew, that was a roughly six-day storm restoration effort. The benefits of Power/Forward is to reduce the number of outage events that happen in these big storms by up to 30 percent. And if you translate that into days of response, if Matthew was a six-day storm, this can take a storm like Matthew down to three or four days, just by taking those events, stopping outages from happening in the first place. And it really helps with the resources, because these storms just really consume resources, which is why it becomes so slow towards the end in restoring power.

And there's other operational benefits that come from this, that's actually in the — we call it the Executive Technical Overview, the white paper.

ACCEPTED FOR FILING PROCEEDINGS 2018-201 5/23/2018 2:29 PM SCPSC Docket # 2018-206-E - Page 25 of 229

ACCEPTED FOR PROCESSING 2018-201-E - Page 26 of 29

I think you have a copy of that. But on page 11, it talks about operational benefits, and you can think of it in terms of truck rolls. So out restoring outages, reducing truck rolls, resource efficiency, just some of the benefits from taking lines out of the exposure of trees, it will show you in the white paper almost $11 million annually of operational benefits just by making these improvements.

[Reference: Presentation Slide 9]

So another benefit that's worthy of note is, I've talked a lot about disruption, and the concern about not acting today. We can be in a situation where disruption will be worsened. And, so, homes and businesses, and disruption being a big concern of ours, we did ask Joseph Von Nessen, with the University of South Carolina, to do an economic impact study. And that economic impact study, which you also have a copy of, looked at not only the impact of the economic investment through Power/Forward but also what is the impact of reliability, of disruption, increasing or reducing disruption, and how does that compare? And that's what we're looking at here is what are the benefits of the reliability improvements from an economic

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10-E - Docket # 2018-206-E - Page 27 of 29 - 10/31/2018 3:26:29 PM

1 perspective.
2 So if you look at the curve here, of the
3 things I'll point out here, the red curve that you
4 see up there is the impact of a rate increase
5 associated with the cost of Power/Forward. So what
6 we did is we had our Rate Department provide Dr.
7 Von Nessen the numbers to put in his economics to
8 model and put in the economic study: What's the
9 rate impact over a 10-year period? So it starts
10 out at about $84 million in 2018 and it grows to
11 $520 million by the year 2028.
12 That's a lot of money, and the cost impact is
13 something that's very important for us to manage,
14 and we're concerned about that. But this shows you
15 that rate impact. The other thing I'll point out
16 is, if you look at the green curve and the black
17 curve, what that's showing is the long-run annual
18 benefits for businesses and households by 2018
19 that's associated with the reliability improvements
20 that will likely range somewhere between $500
21 million and $724 million.
22 So the point being, the benefits do outweigh
23 the rate impacts when we looked at what are the
24 benefits of improving reliability from an economic
25 perspective, because of the impact it has on

ACCEPTED FOR PROCESSING 5/23/2018 2:26 PM SCPSC Docket # 2018-206-E - Page 28 of 259

1 people's homes, businesses, and industry.
2 [Reference: Presentation Slide 10]
3 And this is a slide that you've seen before,
4 at the last ex parte. So this is a refresher on
5 the job impacts, and the capital investments,
6 they'll support an average of nearly 3300 jobs.
7 And at the peak of Power/Forward, it will expand to
8 5400 jobs. There's almost $200 million in new
9 salaries and wages that will be generated, on
10 average, with nearly $315 million being generated
11 during the peak construction years. And as we
12 noted in the last ex parte on workforce
13 development, our goal is to recruit the best people
14 and make sure they're well-trained and have the
15 skills that are needed to enable Power/Forward.
16 [Reference: Presentation Slide 11]
17 And so Power/Forward, I mean, it's first and
18 foremost about transforming the customer
19 experience, but it will also have a powerful and
20 positive impact on the State's economy. And that's
21 why we had the study done, because we wanted to
22 make that apparent. So the result would be a total
23 economic output of about $5.8 billion in 10 years.
24 And so the $330-or-so million a year, that would
25 rank second among all capital investments

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 07-SCPSC-Docket #2018-206-E - Page 25 of 29

1 announcements in South Carolina, according to the
2 Department of Commerce.
3 Then the other point that's made in the paper
4 is that this investment is roughly equivalent to
5 three automotive manufacturing announcements in the
6 State.
7 [Reference: Presentation Slide 12]
8 So now I'm going to shift gears a little bit
9 again, because we talked about benefits. I want to
10 talk more — I think it's really important to dive a
11 little bit deeper and talk about what is in this
12 thing we're calling Power/Forward. What's in it?
13 How are the dollars assigned? What is the
14 flexibility around it?
15 So what you see here in this slide is there's
16 seven strategic programs. There are layered
17 benefits, so all of these programs contribute in
18 some way to the ultimate benefits that I've been
19 talking about. You can see the way the costs are
20 allocated across the bottom of the blue boxes
21 there. It is a diverse portfolio of investments.
22 It is flexible and adaptable. We can scale up the
23 work, in any one of these things, or scale them
24 down, based on how we are progressing towards the
25 benefits goals. Again, these things are about

ACCEPTED ELECTRONICALLY PROCEEDING 2018-10-E - Page 30 of 259

1 helping customers better manage their energy usage,
2 reducing outage frequency and duration,
3 accelerating storm restoration, protecting against
4 physical and cyber-security, and better managing
5 distributed energy resources. So it's doing the
6 right thing in the right place, to get the right
7 outcome.
8 Another benefit I'll talk more about in a
9 minute as part of the Power/Forward scope is what
10 we refer to as non-wires alternatives. So a couple
11 slides from now, I'm going to elaborate on that
12 some more.
13 But I want to give you an analogy, because I
14 think it helps understand the rest of the
15 conversation as it relates to the grid itself. So,
16 I mentioned subsystems a few minutes ago? So the
17 grid has — the distribution part of the grid has
18 three subsystems. We break it down into three
19 subsystems, so we can call it the backbone, the
20 intermediate, and the edge. Backbone,
21 intermediate, and edge.
22 So the backbone is that part of the grid —
23 that's where the big wire is, it's at the source,
24 and it's mostly in the urban areas and there tends
25 to be more interconnection here. The backbone.

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 10/2018 SCPSC Docket # 2018-206-E - Page 37 of 129

The intermediate part is what's taking power from the backbone to the neighborhoods, and there's thousands of those lines and circuits that are delivering power from the backbone to the neighborhoods. And then you've got the edge. And these are the lines that go throughout the neighborhoods to deliver power to the customer's meter.

So those are the three subsystems, but a way to think about this is the analogy of a bicycle wheel. So if you think of a bicycle wheel with a hub, spokes, and a rim, the hub is equivalent to the backbone, the spokes are equivalent to the intermediate part of the grid I just described, and then the rim is equivalent to the edge.

The reason I like that analogy is it helps make a point that the grid was engineered and designed for one-way power flow, from the hub out to the rim of the wheel. So that's just, hopefully, a simple way to kind of think about this distribution grid that we have.

So what I'm going to do over the next several slides is, if you look at it, the targeted undergrounding, hardening and resiliency, and self-optimizing grid I'm going to talk about in more

ACCEPTED FOR PROCESSING 05/23/2018 1:01:26 PM SCPSC Docket # 2018-206-E - Page 32 of 259

1 detail so you can get a feel for what is it we're
2 doing when we talk about these programs and when we
3 say the words "Power/Forward." I'll also talk
4 briefly about smart meters.
5 But I think a point is, if you go back to the
6 data conversation, the point I made about the data,
7 you know, the data is what we've used to figure
8 out: Don't do the same thing in these different
9 subsystems. Some are not cost-effective to do;
10 they're more cost-effective in a different
11 subsystem. So figuring out what you do where to
12 get the right outcome, to make sure it's cost-
13 effective, is a key part of the whole Power/Forward
14 approach and decision-making process.
15 [Reference: Presentation Slide 13]
16 So I'm going to start with targeted
17 undergrounding. So, targeted undergrounding, you
18 know, this is one of the key programs that'll
19 improve storm response and reliability, because
20 it's using the data to identify the most outage-
21 prone overhead lines and move those lines
22 underground. So, when completed, it'll reduce
23 outage events by up to 30 percent. It will also
24 reduce costs and quicken restoration times after
25 major events. And it gets rid of — or reduces or

gets rid of tree and vegetation work that's needed for these hard-to-access lines. And that's a key part of that.

And these are lines that roughly 15 — that are 15 percent of the overhead miles, is what we're talking about going after here in the edge. This is the edge part of the grid. But they're responsible for 50 percent of all the outages that happen on the overhead system. So the targeted undergrounding in the edge part of the grid, these are lines that go out a lot. Some customers see 20 outages in a year. So this is about stopping outages from happening in the first place, reducing 30 percent of them, and the data is what helps us go find what I refer to as needles in a haystack. So it's hard to find these things, but being able to go to the line segment where the problems are and identify those, that is the key thing that the data brings to the table. So targeted undergrounding on the edge not only will reduce 30 percent of the events, it also improves SAIDI by 10 to 15 percent. So those are the benefits of targeted undergrounding.

Let's talk a little bit about what we're doing. So this is an example of something.

ACCEPTED ELECTRONICALLY PROCEEDING 2018-201-E - Page 33 of 225 - 5/21/2018 3:26:29 PM - SCPSC - Docket # 2018-206-E

Hopefully this will start making it real.

[Reference: Presentation Slide 14]

So this is a subdivision in Spartanburg called Quiet Acres. And in Quiet Acres, it's about a quarter-mile line segment — a quarter-mile overhead line segment — that's seen almost 100 outages over the past 10 years. So, on average, 10 outages a year. So, that's a big number. And so you can imagine the numbers of truck rolls associated with going to this quarter-mile segment of line. So this is a good example of where, you know, it takes the surgical data to go find these segments, but if you can find those and take and do things that make outages stop happening in the first place, it has a huge impact.

The important thing to note here, of course, is that this is a very customer-relations-intensive program.

CHAIRMAN WHITFIELD: So it really is quiet acres.

MR. BOBBY SIMPSON [DUKE]: It might get a little noisy.

[Laughter]

It's very customer-intensive. And, you know, so that's — and the reason I want to talk through

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM SCPSC Docket # 2018-206-E - Page 34 of 259

some of these things is we had to take all of this, what I'm about to talk about, into account in terms of the cost. Okay? So it's one thing to do math and get a cost, but to really build in some of the factors that can happen that are controllable, so that you treat the customer right, is a really big part of this.

So before we can move forward with a line segment like this, we have to get updated easements from all the customers. And by the way, in this case, we've gotten all but one of them, and the feedback we're getting has been really positive. Most customers are acting excited about it, because it's the kind of thing where, in these places — you know, if you think of a place that's seen 100 outages over 10 years, well, after a while, that's your normal and you get used to it. So when we bring to the table the opportunity to convert it underground and it's going to make these outages go away in a big way, I mean, it does generate some excitement. There's some hard stuff to work through, because we have to address things like property owners that don't live on-site, so some of them could be rental homes; ownership between siblings with one of the owners living out of town.

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM PSC SC Docket # 2018-206-E - Page 35 of 259

Sometimes we might have to put an underground pad-mounted transformer on Customer A's piece of property so Customer B can be served, and they don't want it on there. We have to work through all of those things. Those are the kind of things that we're working through. But at the end of the day, it all comes back to making outages go away that are high in number and that just really needs to be addressed.

[Reference: Presentation Slide 15]

So that's Quiet Acres. So to give you a feel for what's happening across the State, so this is a table and it's in the Executive Technical Overview, or white paper. So it shows each county and the number of miles. So we're talking about, over a period of 10 years, around 2300 miles of these line segments to convert from overhead to underground, and you see the spread across the counties. But to give you a feel for what's happening right now, in the DEC South Carolina area, we've got work planned in four counties in 2018 and nine counties in 2019, with the majority of the conversions by line miles being in Spartanburg County. In DEP South Carolina, there are three counties in 2018, 11 counties in 2019, with the majority occurring in

ACCEPTED ELECTRONICALLY PROCEEDING 2018-201-E - Page 36 of 225
SCPSC - Docket # 2018-201-E - Page 36 of 225

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 37 of 259

Sumter County in 2018, in Florence County in 2019.

So that's your targeted undergrounding.

[Reference: Presentation Slide 16]

I want to move now and talk about — so this is moving from the edge or the rim of the wheel, to the spokes. This is where we do the hardening and resiliency. So to talk about this a little bit, you know, the performance in the intermediate subsystem of the grid, or the spokes of the wheel, is certainly better than what we find on the edge where we're doing this targeted undergrounding, but that doesn't mean work doesn't need to be done. There are programs that we need to invest in that will not only stop outages but they'll reduce the impact when outages do occur. So there's thousands of spokes, and these are our circuits, thousands of these circuits that are carrying power from the backbone or the hub of the wheel, to the edge or the rim of the wheel.

And if you look at the slide here, the table on the left — and we call these hardening and resiliency programs. As I've said already, hardening is stopping outages from happening in the first place; resiliency is minimizing the impact when they do occur. And so there's some programs

listed here that we're doing, and, you know, one thing that we've found can be confusing is this work that we're talking about here, it is not the left-hand road. So I talked about maintaining by taking a left on the red curve? This is not the left, it's the right. And the reason it's the right is because it's very targeted line-hardening and it's also expediting off of the grid some of these components that are just repeat offenders, in terms of causing outages. There's hundreds of thousands of them out there, and our customary spend investment is just not going to make the problems go away quick enough.

And so I think of this — I use the solid rock or sinking sand analogy. If you really want a solid foundation in terms of your grid, you have to get the spokes right. And this ensures the value of all the other investments in Power/Forward.

So, some specifics: It's raising equipment in flood-prone areas; it includes that. It's the targeted hardening and expediting of these problematic components that I just mentioned. It's also the physical and cyber-security investments, are in this part of the grid.

The other thing I want to mention is what we

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 38 of 259

1 call long-duration outage areas. So if you look at
2 the right-hand side of the slide, you'll see some
3 pictures and some places. So these were places —
4 and I just put examples on the slide — where, when
5 we have outages, they tend to be for a long time.
6 I like to use the Town of Aynor to make a point.
7 So the Town of Aynor is somewhere between Florence
8 and Kingstree, that area. And I just always
9 remember when I was in Florence in the early '90s,
10 the mayor of Aynor used to wear me out, because
11 when the power went out, it always took eight to
12 ten hours to get that community back on, because it
13 crossed multiple fields, a lot of it was off-road.
14 And if you go look at Aynor today, not much has
15 changed in terms of the way we serve it, and the
16 time is now because you have rural communities that
17 are more populated. You have business districts
18 where all of this matters. And so this is a case
19 where we look at, is it better to build in an
20 alternative feed, so you've got two sources coming
21 in, so when one goes out, you get it right back on
22 and you go fix the problem? There are some areas
23 where a non-wires alternative might be a better
24 cost-benefit analysis. So, an example would be,
25 instead of building another line in, you might put

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 10/2018 SCPSC Docket # 2018-206-E - Page 45 of 125

in a micro-grid, batteries and solar. So there's places in the mountains where that makes a lot more sense. Those are the kinds of things that not only are we looking at and doing cost-benefit analyses on, we have dollars in the Power/Forward portfolio to do these things. That's a key part of the Power/Forward plan.

And so the hardening and resiliency piece will reduce or improve SAIDI 10 to 15 percent and it reduced events by 5 to 10 percent. So you can see all of these things in the different subsystems are contributing to the overall 40 to 60 percent SAIDI improvement I mentioned a minute ago.

[Reference: Presentation Slide 17]

So now, if we go to the self-optimizing grid, so this is — sometimes we use the term "smart-thinking grid." So this is where investing in a smart-thinking grid, it will mean fewer outages and faster restorations, so it will build a network. So it's taking that hub-and-spoke one-way power flow and it's creating a mesh, because you're tying circuits together into a network, so that — and you're putting smart devices out there. So it instantly reroutes power when an outage occurs and keeps power on for most customers. So it's

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 10/2018 SCPSC Docket # 2018-206-E - Page 46 of 259

automated, it's making real-time decisions, it's isolating it.

So the way I like to describe it is, if you can just imagine that when a tree hits a line or a piece of equipment fails or a car hits a pole, so instead of 2000 to 3000 people being out until you fix it, what the smart-thinking grid does when you build it is, you've got the switches out there and you've got the interconnection, so when a car hits a pole, the switch can say, "I saw that. Did you see that?" And they open and close, as needed, so you segment only 300-400 customers that need to be out until you fix it; everybody else comes back on quickly. That's the smart-thinking grid that we're talking about.

And so this is what you do on the backbone. And so, the backbone is something that does not go out much, but when it does, it is a big impact because there's lots of customers on the backbone. It's mostly in the urban areas where you're coming out of these big substations. So this would improve SAIDI by 30 to 40 percent. This is the biggest contributor to the SAIDI improvement. It doesn't stop outages; it deals with them instantly when they happen.

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM SCPSC Docket # 2018-206-E - Page 47 of 125

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM PSC SC Docket # 2018-206-E - Page 42 of 259

[Reference: Presentation Slide 18]

And so, just to give you a feel for what that looks like, so, what you're looking at here, there's two substations in the Greenville area. One of them is called Oneal and one of them is called Pebble Creek. So, Oneal serves about 1300 customers, Pebble Creek serves about 800. Well, these substations, they're not tied together, and if you look at the pictures, it's what I think is a black box at the top — that little black-box symbol — is the substation. And, currently, they're not tied together. So smart-thinking grid involves what I call capacity, connectivity, and control; I call them the three Cs. Capacity, at capacity, so you can back up each other. Connectivity, connect substations together. And put in automation to control it.

So if you look at this picture here, the blue line represents the fact that we're building a line to tie Pebble Creek Substation to Oneal Substation. So there comes your connectivity, and you put in the capacity so they can back up each other. Then the red and green boxes are the switches that we're putting in place that talk to each other, like I just described.

So what happens when you do this, you've got the smart-thinking grid in this Pebble Creek/Oneal area in Greenville, so when you have an outage, instead of somewhere between 800 and 1300 customers being out, it's more like 300-500. But I really want to make this point: On many of our substations when this happens, it can be 2000-3000 people out. You know, this is a smaller number of customers on these substations. So, a lot of them, it's 2000-3000, so you're going from 2000-3000 to 300-400. So that's what the smart-thinking grid does.

[Reference: Presentation Slide 19]

And to show you what we're doing here — this is also in the white paper. But it's really about tying the circuits so that you have no more than several hundred customers between these switches. So about 50 percent of the circuits in South Carolina — it's about 50 percent of the circuits serve about 80 percent of the customers in the State, so they'll be upgraded to these new guidelines. And to be more specific, in the DEP area, there's 81 projects in 2018 to start doing this work, 78 in 2019. The top three areas are Greenville, Spartanburg, and Anderson Counties, but there's also work planned in Chester, Greenwood,

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 49 of 259

Lancaster, Oconee, Pickens, and York Counties. Then in the DEP area, there are 38 projects in 2019. So we won't move into DEP until 2019. The top three areas, though, are Florence, Sumter, and Darlington Counties, but also projects planned in Chesterfield, Clarendon, Dillon, Kershaw, Lee, and Marlboro Counties.

This will give you a feel for what's really happening out there in terms of the real work that's behind, you know, the philosophy and vision that we talked about here with Power/Forward.

[Reference: Presentation Slide 20]

So now I'm going to move to my next-to-the-last slide. This is about smart meters. And I think we all know that customers want more when it comes to their interaction with the utility. So the smart meter work that we're doing, you know, I mean, if you get down to the bottom line of "Why do smart meters," I mean, it certainly helps us in terms of operational efficiency, because you don't have to go read the meter, you don't have to drive by the meter, and you can ping it to see if the power's on or off, and that's a huge benefit when it comes to restoration. But from a customer standpoint, it's about bill accuracy, no estimated

ACCEPTED FOR PROCESSING 2018-May-23 2:26 PM SCPSC Docket # 2018-206-E - Page 50 of 259

bills. From a customer experience standpoint, you're talking about equipping them to make informed decisions, no surprises, more interaction and control over saving money in terms of what they do behaviorally that costs them money. And there's features and programs that a lot of people like, like pick your own due date, prepay, and those types of things. So the smart meter's definitely a key part of Power/Forward Carolinas.

[Reference: Presentation Slide 21]

So on my last slide here, I just real quickly will wrap this up to say, what are we solving with Power/Forward Carolinas? And it's these things that I've already talked about. We're seeing an emergence of what I call a new normal, in terms of a high probability of a worsening reliability trend, as much as 35 to 50 percent over a 10-year period, with a resulting growth in consumer disruption, if that happens, which affects homes, businesses, and industry in this State. And you couple that with the growing reliance on power in a 21st-century digitized society. So that's number one.

Number two, this is a grid that needs to be re-engineered to support renewables, because good

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM PSC SC Docket # 2018-206-E - Page 45 of 229

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 07-20-18 SCPSC Docket # 2018-206-E - Page 46 of 259

1 utility practice is enabling renewables, but don't
2 compromise reliability.
3 Number three, the physical and cyber-attacks.
4 We've got to be vigilant about this, because the
5 attacks, they're advanced and they're persistent.
6 And the Department of Homeland Security, in June
7 2017, essentially put the energy sector, which is
8 the utilities in this country, on notice about all
9 of this because of what they were seeing.
10 And then number four, just the changing
11 customer expectations, so it's the collective wants
12 and needs of customers with things like smart
13 meters addressed.
14 So the left-hand side of the road: maintain.
15 It's really an outdated grid that we need to
16 transform. It's well-maintained but it's becoming
17 outdated. So we've got to also go down the right-
18 hand road and transform it, so that it is more
19 flexible and accessible; it is harder and more
20 resilient; and it is secure; and it is smart-
21 thinking. And the key point is, we see the
22 evidence, we have time to change, and we need to
23 act now and do it over a reasonable period of time.
24 So a simple way to sum it up is, we feel like
25 we've got a plan that, over the next decade, we can

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201-E - Page 47 of 259

invest in our energy structure in a way that we believe will power South Carolina into a future that may look different than it does today, but it will position the State for great success, meet customer expectations, and drive economic development. And as we discussed in the last ex parte on workforce development, it will increase the need for skilled labor in South Carolina, and we're working closely with our utility partners to address the workforce needs.

So that concludes my presentation. I'll be glad to take questions. Thanks for listening.

CHAIRMAN WHITFIELD: Thank you, Mr. Simpson.

Commissioners, questions for Mr. Simpson? Commissioner Randall.

VICE CHAIRMAN RANDALL: Thank you, Mr. Chairman.

Mr. Simpson, welcome back again.

MR. BOBBY SIMPSON [DUKE]: Thank you.

VICE CHAIRMAN RANDALL: That was — a couple of things I'm just interested in. I know the last time, I asked about underground lines. I know Cojo was getting on me about that. I see your total miles of your underground lines. What's your average? I know the average length — is it just

depending on what's going on in that area, that you're doing an underground?

MR. BOBBY SIMPSON [DUKE]: The average length of what we convert?

VICE CHAIRMAN RANDALL: Uh-huh?

MR. BOBBY SIMPSON [DUKE]: You know, I don't know that exactly, but it —

VICE CHAIRMAN RANDALL: Just done according to need in that particular area?

MR. BOBBY SIMPSON [DUKE]: Yeah, it can range from short segments, like 1000 feet, to several miles, because it's anything from a segment of line with a few homes, but it's just causing a huge number of outages that affect the whole rim —

VICE CHAIRMAN RANDALL: Yeah?

MR. BOBBY SIMPSON [DUKE]: — or it can be major subdivision developments. And we're purposely starting small, because of the things we want to learn the right way and not trip over ourselves, because of all the customer things that we want to make sure we understand and do right.

VICE CHAIRMAN RANDALL: I was — only other thing I wanted to ask you about, I was — when you were talking about spots where you're trying to connect, reconnect, go around certain situations in

ACCEPTED FOR PROCESSING 10/31/2018 3:26:29 PM SCPSC Docket # 2018-206-E - Page 48 of 259

your spots like in the mountains or other areas where you're talking micro-grid with batteries and solar, how reliable — I mean, are batteries getting more reliable and cost-effective now, to be able to do a micro-grid like that?

MR. BOBBY SIMPSON [DUKE]: They are. They are. And I can't quote specific numbers, but I can tell you we've got 25 to 30 people in our company that are focusing on non-wires things, which includes batteries. And so I talk to them periodically. The price points are definitely coming down. We've got cases that we're doing it right now where the cost-benefit proves out. Because usually with batteries, you get into what we call stacked benefits, so it helps the reliability thing but it's also something you can use in peak to relieve the grid. So that's like two benefits, instead of one.

VICE CHAIRMAN RANDALL: Thank you, sir.

MR. BOBBY SIMPSON [DUKE]: You're welcome.

VICE CHAIRMAN RANDALL: Thank you, Mr. Chairman.

CHAIRMAN WHITFIELD: Thank you, Commissioner Randall.

Commissioner Howard.

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 45 of 259

COMMISSIONER HOWARD: Mr. Simpson, I enjoyed your presentation.

MR. BOBBY SIMPSON [DUKE]: Thank you.

COMMISSIONER HOWARD: When we're talking about modernizing the grid or grid improvement – whatever term you want to use – in your mind, what percentage of that is transmission versus distribution lines?

MR. BOBBY SIMPSON [DUKE]: As far as the overall investment?

COMMISSIONER HOWARD: Any way you want to put it. You can use the 10-year plan, your seven icons up there.

MR. BOBBY SIMPSON [DUKE]: Most of the investment is in the distribution grid.

COMMISSIONER HOWARD: Can you put a percentage on it?

MR. BOBBY SIMPSON [DUKE]: It's roughly 70-ish percent. All those programs, and I talked about the subsystems, they represent about 70 percent of the investment. Transmission is just shy of 20 percent.

COMMISSIONER HOWARD: Well, I agree with you that technology is changing the whole landscape, and I'm going from years ago. But do you have a

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM SCPSC Docket # 2018-206-E - Page 56 of 229

cost per mile for underground versus overhead? And I know there's a lot of variables in underground going under pavements, going open area, and new development, and this kind of thing. Is there any kind of average cost you've got for underground versus overhead today, versus, what, 10 years ago, five years ago?

MR. BOBBY SIMPSON [DUKE]: We do have those numbers. I can't quote them at the moment, but I can tell you that the cost — it used to be that overhead was always cheaper, and that's not the case anymore. It gets into the failure rate and the number of outages which goes into the cost equation. So the answer now is: It depends, and you have to look at each one on a case-by-case basis.

But I will say that the most cost-effective place to do the undergrounding is this place I call the edge or the rim of the wheel, because those are areas where they're causing a lot of outages but they're also the least cost because they're not in these major developed areas with concrete and other things that add to the cost, if that makes sense.

COMMISSIONER HOWARD: Yeah. We've always heard, and if it's still the case — is it still the

ACCEPTED FOR PROCESSING 2018-201 21/3/2019 2:29 PM 07 SCPSC Docket # 2018-206-E - Page 57 of 92 59

case that there's this big disadvantage of underground is it's so difficult to repair — locate and repair? Is that technology changing that statement any?

MR. BOBBY SIMPSON [DUKE]: Technology has changed it. The technology to find the problem, I mean, it used to — the old technology, you had to risk damaging the cable — we called it thumping — to find it, and it was hard to find. Today there's radar type technology so you can home in on exactly where it is and not damage the cable, and find it faster. So there's clearly advancements that have been made in terms of finding problems. Plus, the cable failure rate, the quality of the underground cable today is just orders of magnitude better than the original underground cable. It's a better quality, lasts longer, and it's easy to find, compared to the old days.

COMMISSIONER HOWARD: You had a portion of your presentation on Quiet Acres — is it? — in Spartanburg?

MR. BOBBY SIMPSON [DUKE]: Yes.

COMMISSIONER HOWARD: The cost of that, who bears the cost of that?

MR. BOBBY SIMPSON [DUKE]: We do.

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM SCPSC Docket # 2018-206-E - Page 52 of 259

VICE CHAIRMAN RANDALL: The whole — it is in the rates? It goes in the rates, right? Do you put that in the rates?

MR. BOBBY SIMPSON [DUKE]: It would.

COMMISSIONER HOWARD: So all Duke ratepayers would pay for the cost of Quiet Acres; is that right?

MR. BOBBY SIMPSON [DUKE]: Yeah, the cost of Power/Forward, the intent would be to recover the cost through rates, yes, but the targeted undergrounding is not something that on a case-by-case we're charging those customers for that work.

COMMISSIONER HOWARD: Explain that again, case by case you're —

MR. BOBBY SIMPSON [DUKE]: We're not charging customers for the targeted undergrounding.

COMMISSIONER HOWARD: I know, you know —

MR. BOBBY SIMPSON [DUKE]: It will pass through rates.

COMMISSIONER HOWARD: — every urban area, just about, you know, particular members of the General Assembly wants this particular area's cable underground and this kind of stuff. And the general comeback is, "Okay, if your neighborhood pays for it, we can do it," but the cost is so

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM 07 SCPSC Docket # 2018-206-E - Page 59 of 259

exorbitant that they don't go there. Is that still a problem with you, as —

MR. BOBBY SIMPSON [DUKE]: Well, those are cases where it's usually wanted for aesthetic reasons?

COMMISSIONER HOWARD: Correct.

MR. BOBBY SIMPSON [DUKE]: So nothing changes there, because Power/Forward targeted undergrounding is strictly reliability/performance-based. It's got to reduce outages, and it's got to meet a certain criteria.

COMMISSIONER HOWARD: I don't know if there's a definite answer to this, but when you go underground, how deep do you put the wires? And my mindset is gas lines; I mean, you always have, you know, a contractor or something breaking gas lines. In a situation like this, how deep are the lines buried in relationship to a gas line?

MR. BOBBY SIMPSON [DUKE]: They're deeper. So the power line has to be at least three feet deep — a power line with high voltage. Gas lines are something less than that — I can't remember the exact number. But I do know we're the deepest in terms of what the code requires.

COMMISSIONER HOWARD: I have to admit I have

ACCEPTED FOR PROCESSING 10/31/2018 3:26:09 PM SCPSC Docket # 2018-206-E - Page 50 of 125

not read your white paper. I looked over it and I'm looking forward to reading it. But thank you for your presentation.

MR. BOBBY SIMPSON [DUKE]: Thank you, sir.

CHAIRMAN WHITFIELD: Thank you, Commissioner Howard, for your questions.

Commissioner Hamilton.

COMMISSIONER HAMILTON: Thank you, Mr. Chairman.

Mr. Simpson, I've enjoyed your presentation. I just wondered if they'd asked you to make this 20 years ago, what it would've been like? Or 10 years ago? It wouldn't resemble what we've heard today, would it?

MR. BOBBY SIMPSON [DUKE]: Yes, sir, that's an interesting thing for me to think about, though.

CHAIRMAN WHITFIELD: Commissioner Hamilton, can you pull that mic —

COMMISSIONER HAMILTON: Okay [indicating].

CHAIRMAN WHITFIELD: — a little closer?

COMMISSIONER HAMILTON: I don't ever do that right, do I?

Mr. Simpson, to follow up on what Commissioner Howard was talking to you about, Quiet Acres, how much of this is a pushback from the residents for

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM PSC SC Docket # 2018-206-E - Page 55 of 259

vegetation control?

MR. BOBBY SIMPSON [DUKE]: So, your question is how much is —

COMMISSIONER HAMILTON: How much is —

MR. BOBBY SIMPSON [DUKE]: — concern about —

COMMISSIONER HAMILTON: — pushback — the reason that you're having the number of outages is because of the pushback from residents to allow vegetation control in a subdivision?

MR. BOBBY SIMPSON [DUKE]: So what we have found with these lines is it's not because the right-of-way is not being trimmed on cycle; it's because of trees outside of the right-of-way. That's most of the reason. You can keep it trimmed, stay on point with your maintenance cycle, but the foliage is so dense that trees outside of our authorized right-of-way, things fall and take it out. That's a lot of the reason these are a problem. Did I answer your question?

COMMISSIONER HAMILTON: I think we're getting close to it, anyway. Let me ask you, most of the lines that you're doing in areas like Quiet Acres are trunk lines and not residential distributive lines?

MR. BOBBY SIMPSON [DUKE]: They're — well,

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 2018 May 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 56 of 259

they're primary lines, so they're high-voltage lines.

COMMISSIONER HAMILTON: Right.

MR. BOBBY SIMPSON [DUKE]: But they're the smaller wire that's —

COMMISSIONER HAMILTON: Yeah.

MR. BOBBY SIMPSON [DUKE]: — taking it to local smaller groups of people.

COMMISSIONER HAMILTON: Yeah. The smaller lines, you aren't putting underground, are you?

MR. BOBBY SIMPSON [DUKE]: Well, these are some — well, if you're talking about lines that go from the transformer to the house?

COMMISSIONER HAMILTON: Yes, sir.

MR. BOBBY SIMPSON [DUKE]: If that's what you're asking, those would be put underground, also, if it makes sense, because — and it's going to almost always make sense. The reason it wouldn't make sense is if there's some reason the customer doesn't want it that way, or there's a big sacred tree in the way and they don't want us digging in the yard for some reason. But the intent is to put the services underground, as well, and have the whole thing turnkey underground. There will be cases where you'll have a pole still

ACCEPTED FOR PROCESSING 10/18/2018 3:26:29 PM SCPSC Docket # 2018-206-E - Page 57 of 259

sitting there because the customer doesn't want their service to the house underground.

COMMISSIONER HAMILTON: That would be unusual, wouldn't it?

MR. BOBBY SIMPSON [DUKE]: I think it would, but it's early.

[Laughter]

COMMISSIONER HAMILTON: Let me look, if you would, look at the slide on the Statewide benefits and help me understand it. We had earlier said this would be a cost to the ratepayer.

MR. BOBBY SIMPSON [DUKE]: This slide [indicating]?

[Reference: Presentation Slide 9]

COMMISSIONER HAMILTON: Yes, sir.

MR. BOBBY SIMPSON [DUKE]: Okay.

COMMISSIONER HAMILTON: All right. I think the customer cost is the red line, which over the next, what, ten years, eight to ten years —

MR. BOBBY SIMPSON [DUKE]: Yes, sir.

COMMISSIONER HAMILTON: — is going to bring an increase to the customer of approximately $300, somewhere in that neighborhood?

MR. BOBBY SIMPSON [DUKE]: I'm not sure about the $300.

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM PSC SC Docket # 2018-206-E - Page 58 of 259

COMMISSIONER HAMILTON: I was just looking at your — I was trying to read your scale.

MR. BOBBY SIMPSON [DUKE]: Right.

COMMISSIONER HAMILTON: And I might not be — I might not be —

MR. BOBBY SIMPSON [DUKE]: That is —

COMMISSIONER HAMILTON: Help me interpret it. If I'm making a mistake, I'd like to be sure.

MR. BOBBY SIMPSON [DUKE]: Well, there's actually something not on the slide that should be. It's in millions.

COMMISSIONER HAMILTON: Okay.

MR. BOBBY SIMPSON [DUKE]: It's in millions, so that's not even on there, I'm noticing.

COMMISSIONER HAMILTON: Okay, well, thank you. That helps me. But the customer benefits are a slim line between that, on this chart, and the customer. But on Statewide Benefits, it increases substantially till all of a sudden it takes a trip right. Am I reading this right when I see the blue line, the Statewide Benefits, drop as dramatically as it does?

MR. BOBBY SIMPSON [DUKE]: Yeah, so let — let me take some time to explain that. So, the blue line is the economic benefits from the investment

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 5/23/2018 3:26 PM - SCPSC - Docket # 2018-206-E - Page 59 of 259

itself.

COMMISSIONER HAMILTON: Right.

MR. BOBBY SIMPSON [DUKE]: Right? And the reason it drops like it does from 2026 to 2028 is because the investment would end. So Power/Forward is a 10-year program, so at the end of 10 years, it would tail down. So what it's generating to the economy stops when the program is finished. That's what that blue line is representing.

COMMISSIONER HAMILTON: It would appear that the benefits would continue, even though the project was completed — but maybe I just don't understand.

MR. BOBBY SIMPSON [DUKE]: So maybe you're asking about that little blue segment on the very end?

COMMISSIONER HAMILTON: I'm talking about the top line that goes on the Statewide Benefits, which is the top line that you're talking about, and you see how it almost takes a dive?

MR. BOBBY SIMPSON [DUKE]: Yes. Yes. The reason it takes a dive is because we finish the program and we're not spending money building it anymore. So those things the economist look at, like gross-domestic-product impact and all that,

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 5/23/2018 2:26 PM - SCPSC - Docket # 2018-206-E - Page 60 of 259

we're not contributing to that from the Power/Forward investment anymore, because the investment is ended.

VICE CHAIRMAN RANDALL: Okay. All right. Thank you, sir. I appreciate your explanation.

MR. BOBBY SIMPSON [DUKE]: Thank you.

CHAIRMAN WHITFIELD: Thank you, Commissioner Hamilton.

Commissioner Fleming.

COMMISSIONER FLEMING: Good morning.

MR. BOBBY SIMPSON [DUKE]: Good morning.

COMMISSIONER FLEMING: Thank you for bringing this back today and giving a more detailed explanation of what Power/Forward is all about. I think we all got a little distracted by — we were so interested in it that we kind of gave workforce development kind of a little lower rating last time, so I appreciate your coming back.

MR. BOBBY SIMPSON [DUKE]: It's my pleasure. Thanks for listening.

COMMISSIONER FLEMING: Yeah, it — this sounds very like — it's very exciting, actually, to hear your plans for what the future will be for Duke Energy Carolinas and Progress.

I wanted to ask you — I wanted to ask about

ACCEPTED FOR PROCESSING 2018-10-1 21:32:29 PM 10-2018 SCPSC Docket # 2018-206-E - Page 37 of 92 59

the economic benefits, as well —

MR. BOBBY SIMPSON [DUKE]: Okay.

COMMISSIONER FLEMING: — on page 10.

MR. BOBBY SIMPSON [DUKE]: [Indicating.]

[Reference: Presentation Slide 10]

COMMISSIONER FLEMING: And when you said that approximately 3300 jobs would be created for the State — so are you — I was wanting to know in what capacity those jobs would be created, but are you saying they're only going to be created with the construction of the Power/Forward?

MR. BOBBY SIMPSON [DUKE]: Yes, those are associated with doing the work, the construction.

COMMISSIONER FLEMING: Okay. So those jobs would — so it won't have that kind of benefit long-term; it will just be for the 10 years.

MR. BOBBY SIMPSON [DUKE]: That's correct. What this is showing is the impact of the investment.

COMMISSIONER FLEMING: Okay.

MR. BOBBY SIMPSON [DUKE]: Doing the work creates those jobs.

COMMISSIONER FLEMING: Okay. So the $200 million in new salaries will only be for the 10-year period.

ACCEPTED FOR PROCESSING 2018-10-1 21:32:26 PM 10/7/2019 SCPSC Docket # 2018-206-E - Page 28 of 259

MR. BOBBY SIMPSON [DUKE]: Right, that's what they apply to, although we believe that when the work is finished, just the fact that the grid is different, I mean, I think it will — I think it will — continue to generate job opportunities.

COMMISSIONER FLEMING: Well, that was my next question. With all of the improvements to the grid and with that workforce being here, you would think that — so you don't have any statistics, though, of what that looks like?

MR. BOBBY SIMPSON [DUKE]: I do not. But it will take a workforce to operate and maintain it.

COMMISSIONER FLEMING: Okay.

MR. BOBBY SIMPSON [DUKE]: I think that's going to have a positive impact on jobs.

COMMISSIONER FLEMING: And could you talk a little bit more about the non-wires that you had mentioned earlier, exactly where you see that going? You know, you hear a lot about that. And in addition to the micro-grid, that also includes energy efficiency and demand-side management, doesn't it?

MR. BOBBY SIMPSON [DUKE]: Yes, it does. It does.

COMMISSIONER FLEMING: Okay. Could you talk a

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM SCPSC Docket # 2018-206-E - Page 63 of 259

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10-E - 5/23/2018 3:26:29 PM SCPSC Docket # 2018-206-E - Page 70 of 259

little bit more in depth about —

MR. BOBBY SIMPSON [DUKE]: The non-wires?

COMMISSIONER FLEMING: Yes.

MR. BOBBY SIMPSON [DUKE]: Sure.

COMMISSIONER FLEMING: How you see that moving forward, and what percentage of, I guess, improvement you would see.

MR. BOBBY SIMPSON [DUKE]: Okay. So tell me if this addresses your question. So, I'll start with, you know, I talked about the smart-thinking grid and self-optimizing. And you may remember I mentioned that roughly 50 percent of the circuits, once you connect them together, about 80 percent of the customers are on that grid? Well, the further you go from these urban centers and get in more rural areas, it may not be cost-effective to do the full smart-thinking grid; it may be more cost-effective just to build alternative feeds into these rural communities. And I always like to characterize the rural communities as just because they're rural doesn't mean there's not a significant size of people and business districts that matter, and so we want to make sure that they're seeing the same reliability. So in these rural areas where we're building alternate feeds,

it may be more cost-effective to put in, beside a substation, a battery and a solar farm, so that that's your backup, so that their backup is not the grid; the backup is off the grid. So, I mean, that's the specific example. And there are cases where we've already done it somewhere in the Duke Energy system or we're doing it. And there's others under evaluation.

COMMISSIONER FLEMING: And that's — from what I've understood, that's less expensive than actually putting the transmission line in, to carry the power there. Correct?

MR. BOBBY SIMPSON [DUKE]: If it's transmission, I would —

COMMISSIONER FLEMING: Or distributed energy. The grid, whether it be distributed or transmission, I guess.

MR. BOBBY SIMPSON [DUKE]: Right. Well, if it's transmission, I would conjecture that there's a higher probability it may be more cost-effective to do something non-wires.

COMMISSIONER FLEMING: Like the micro-grid in that situation?

MR. BOBBY SIMPSON [DUKE]: Right. But we look at those on a case-by-case basis. So there's a

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM PSC SC Docket # 2018-206-E - Page 67 of 259

very comprehensive financial analysis done on each one.

COMMISSIONER FLEMING: Okay. And the energy efficiency and demand-side management would bring relief to the customer, as well, if they take advantage of that?

MR. BOBBY SIMPSON [DUKE]: If they take advantage, yes.

COMMISSIONER FLEMING: Have you looked at areas that already have this smart-thinking grid in place?

MR. BOBBY SIMPSON [DUKE]: As far as other utilities?

COMMISSIONER FLEMING: Yes.

MR. BOBBY SIMPSON [DUKE]: We do.

COMMISSIONER FLEMING: To kind of build on what their best —

MR. BOBBY SIMPSON [DUKE]: Yes.

COMMISSIONER FLEMING: — what the best practices are?

MR. BOBBY SIMPSON [DUKE]: Yes, we do.

COMMISSIONER FLEMING: Could you talk a little bit about some of those areas?

MR. BOBBY SIMPSON [DUKE]: We've talked with Florida Power & Light, in terms of — they call them

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201-E - Page 67 of 229 5/23/2018 2:29 PM - SC PSC Docket # 2018-206-E

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201-E - Page 67 of 229

self-healing teams?

COMMISSIONER FLEMING: Uh-huh?

MR. BOBBY SIMPSON [DUKE]: But it's essentially the predecessor of the smart-thinking grid I describe. So they're doing this; we've talked to them about it, compared notes on that. The targeted undergrounding, we've been talking with Dominion, because they've got about a three-year lead on us in Virginia doing that work. Georgia Power is another company that we've talked with. And we're doing — we're not finished with it yet; we're doing a lot of research on what other utilities around the country are doing. What we're finding is virtually every utility is doing things that look the same, and when you start peeling the onion to understand it better, there are some differences, because there's differences on their system. But I would just say, in general terms, modernizing and transforming the grid along the way I'm talking about, everybody is moving in that direction to some degree. It's just how quick and how much the investment is, is the only big difference.

COMMISSIONER FLEMING: So you are looking at — this is not like it's experimental. You know that

it works. You're building on the best practices of other areas.

MR. BOBBY SIMPSON [DUKE]: Definitely. We know that it works.

COMMISSIONER FLEMING: And with renewables — I think I asked you this last time, and you kind of went around it. But with the interconnection challenges that are happening, especially in North Carolina, this — it sounds like this is one of the things that can remedy what those challenges are.

MR. BOBBY SIMPSON [DUKE]: Yes. And please don't let me go around it again.

COMMISSIONER FLEMING: Okay.

MR. BOBBY SIMPSON [DUKE]: Because I want to —

COMMISSIONER FLEMING: Well, you said it was political, last time.

MR. BOBBY SIMPSON [DUKE]: I think I remember doing that.

[Laughter]

So I want to make sure I'm clear. So the investment is about — I've used the words "one-way power flow" and "two-way power flow." So if you think of the overall grid, it was not engineered and designed for two-way power flow. So when you start putting these renewables on here, they

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM 107 PM SCPSC Docket # 2018-206-E - Page 84 of 259

introduce two-way power flow. And it works for a while, but as it starts getting more dense, especially in some of these rural areas, it starts creating reliability issues. That doesn't change the fact that, when a solar developer wants to put solar on the grid somewhere, you've still got to study it, because you need to know what is that particular installation going to do to the grid in that place, so you can remedy that and make sure it's ready. I mean, a simple way to think about it is, you may have the highways that enable growth in a big area, but if you put a big condominium development in a neighborhood, that kind of messes everybody up; you've got to look at the local roadway impacts. It's that kind of thing that we still have to be diligent with the interconnection studies, but the bigger picture is just the overall grid getting that two-way power flow capability so it's designed for something that didn't even exist when it was designed.

COMMISSIONER FLEMING: So this enables that to move forward.

MR. BOBBY SIMPSON [DUKE]: Yes. Yes, ma'am.

COMMISSIONER FLEMING: And in a successful way. And let me ask you, have you taken advantage

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM PSC SC Docket # 2018-206-E - Page 75 of 225

of some of the national labs? I know I've been involved with a group that works some with national labs, and they have so many resources out there, especially I know the national lab outside of Denver, NREL, I think deals directly mostly with renewables. Are you all taking advantage of that resource?

MR. BOBBY SIMPSON [DUKE]: I have read papers from NREL that have come into the company. We have a group of 25 to 30 people that are — they get up and come to work every day about non-wires things, and I know they are connected with those types of laboratory things. I just can't speak to any specifics.

COMMISSIONER FLEMING: Okay. I was just wondering if Duke is taking advantage of that opportunity, as well, as you're looking into this development.

MR. BOBBY SIMPSON [DUKE]: Yeah.

COMMISSIONER FLEMING: It looks — it's just a very positive thing for South Carolina — South Carolina and North Carolina. Thank you, very much, for your presentation.

MR. BOBBY SIMPSON [DUKE]: Thank you.

CHAIRMAN WHITFIELD: Thank you, Commissioner

ACCEPTED FOR PROCESSING 2018-201 3/23/2018 3:26:29 PM 07 SCPSC Docket # 2018-206-E - Page 70 of 259

Fleming.

Commissioner Elam.

COMMISSIONER ELAM: Good morning.

MR. BOBBY SIMPSON [DUKE]: Good morning.

COMMISSIONER ELAM: I know that Mr. Ellerbe would be really disappointed if I let a hearing go by without trying to throw in a telecom reference, so, there's a concept out there right now with broadband installation that talks about digging once. When you are relocating lines from poles to underground, is there any effort — I mean, there may be other wires on your poles, distributionwise.

MR. BOBBY SIMPSON [DUKE]: Yes.

COMMISSIONER ELAM: Are you trying to work with telecom companies, or whoever, to try to, in essence, dig once and get the whole area at the same time?

MR. BOBBY SIMPSON [DUKE]: Yes. Yes, sir, we are. We're working with cable and phone companies, because it's the dig-once thing but it's also get the pole out of there.

COMMISSIONER ELAM: Right.

MR. BOBBY SIMPSON [DUKE]: So that's — it's definitely one of the challenges. There will be cases where they're not going to come off quick

ACCEPTED ELECTRONICALLY 10/31/2018 3:26 PM PSC SC Docket # 2018-206-E - Page 77 of 129

ACCEPTED FOR PROCESSING 2018-201-E - Page 72 of 229

enough, if at all. And in that case, we would — they'd have to buy the pole from us and maintain it, and the pole would still be there. And at first, that was a worry of mine, but at the end of the day, the customer, the way they're looking at it is the Quiet Acres thing? So you're talking about taking — their lights aren't going to go out that often anymore? I mean, they're ready to sign up and let the pole remain.

COMMISSIONER ELAM: Do your —

MR. BOBBY SIMPSON [DUKE]: We are coordinating with them, is the point.

COMMISSIONER ELAM: Okay. Do your cost estimates reflect somehow that there is that opportunity for cost-sharing of the expense, the cost, of digging? Or are you just — do you know how you're handling that?

MR. BOBBY SIMPSON [DUKE]: I know that it's handled through joint-use contracts that we have, and I'm not familiar with the details of those contracts. But there are people that their job is to make sure that there is cost-sharing when appropriate.

COMMISSIONER ELAM: Okay. Thank you.

MR. BOBBY SIMPSON [DUKE]: You're welcome.

ACCEPTED ELECTRONICALLY PROCEEDING 2018-201-E - Page 73 of 229

CHAIRMAN WHITFIELD: Thank you, Commissioner Elam.

Hold on one second.

[Brief pause]

CHAIRMAN WHITFIELD: Commissioner Bockman.

COMMISSIONER BOCKMAN: Good morning, Mr. Simpson.

MR. BOBBY SIMPSON [DUKE]: Good morning.

COMMISSIONER BOCKMAN: Thank you, so much, for your informative presentation. I just have a question or two, related to your Slide 8, which talked about reducing major storm impacts?

MR. BOBBY SIMPSON [DUKE]: This one [indicating]?

[Reference: Presentation Slide 8]

COMMISSIONER BOCKMAN: Yes.

MR. BOBBY SIMPSON [DUKE]: Yes.

COMMISSIONER BOCKMAN: What criteria applies to make an overhead tap line so vulnerable that it becomes a candidate for undergrounding? I mean, how do you determine what line to put underground?

MR. BOBBY SIMPSON [DUKE]: We look at the number of outages it's experienced over the past 10 years. So it has to exceed a certain threshold of events per mile over the past 10 years.

COMMISSIONER BOCKMAN: And that was my question. What's the threshold? If a certain number of events is the threshold, what would that be?

MR. BOBBY SIMPSON [DUKE]: The number — so, it's 20. Well, it's somewhere between 10 and 20. So we've got events per mile. Bhe worst case, they start at 20 events per mile.

COMMISSIONER BOCKMAN: Over the 10-year period.

MR. BOBBY SIMPSON [DUKE]: Over the 10-year period. And as you work down the list, you're getting lower and lower events per mile, and so we've got the flexibility to stop. You know, it's not something for perpetuity. You know, we may stop shorter than going, you know, below the number 10 — I'm just making that up, to make a point.

COMMISSIONER BOCKMAN: Thank you, Mr. Simpson.

Mr. Chairman, that's all I have for Mr. Simpson. Thank you.

CHAIRMAN WHITFIELD: Thank you, Commissioner Bockman.

Commissioner Randall, I think, has another question for you.

VICE CHAIRMAN RANDALL: Just one quick one,

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM SCPSC Docket # 2018-206-E - Page 80 of 129

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10 2018-206-E - Page 75 of 229

going back to the micro-grid and battery thing. When those are designed, will they be — when you've got an outage, will they be able to provide 100 percent of the power for — I'm sure you're still looking at this, but for how long would that work? You know, is it a few hours or for a day or for a week?

MR. BOBBY SIMPSON [DUKE]: Well, that's the key criteria. So if you just take — I'll just take the Town of Aynor, to make a point. I don't know that we would do one there. But we would look at history; so when outages happen in Aynor, if they typically take eight to ten hours, the battery's got to last longer. The battery can't run out while we're repairing it. So that's a key decision-making criteria that we do on a case-by-case basis.

VICE CHAIRMAN RANDALL: Okay. Thank you. Thank you.

CHAIRMAN WHITFIELD: Thank you, Commissioner Randall.

Commissioner Fleming, I think, had another one for you, also.

COMMISSIONER FLEMING: Yeah. I meant to ask — I know the cost of the grid is something to be

ACCEPTED FOR PROCESSING 2018-201, 21 3:26 PM 07 2018 SCPSC Docket # 2018-206-E - Page 76 of 229

1 considered, but at the same time, have you done
2 studies of what the economic benefit to a community
3 is, to not lose their power or to have it turned on
4 quickly? And what really makes me think about
5 that, when I was on City Council, during the
6 holiday season one year, lights were out for about
7 two weeks. I mean, all of the — the country club,
8 all of the restaurants, the venues were just in a
9 panic because they were losing — that was a big
10 moneymaker for them. So I would think that, even
11 though you may have a certain dollar figure, that
12 could be counterbalanced with the economic benefit
13 to the community in not losing power. And so have
14 you done studies that can give you those kind of
15 figures?
16 **MR. BOBBY SIMPSON [DUKE]**: Yeah, and that's
17 contained in Dr. Von Nessen's report. So when you
18 look into the report, you'll see it quotes — I
19 happen to remember this number, I've had to look at
20 it so much — $334 million is the current losses,
21 and this is Statewide in terms of our system. $334
22 million a year is what residents, business,
23 industry lose. And so the point is made that it
24 could double in 10 years, given the reliability
25 worsening that we project. Then the graph that I

showed showed the range of around $500-$700 million benefit by improving the reliability. It doesn't take it below the State level, though.

COMMISSIONER FLEMING: So that would be on a yearly basis.

MR. BOBBY SIMPSON [DUKE]: Yes, ma'am.

COMMISSIONER FLEMING: Okay. Thank you. Oh, and one other thing. Have you looked at what putting distributed energy resources will do? There have been some studies in some places, done, that it actually helps with the resiliency of the grid. Have you all done any studies on the benefits of those to the grid?

MR. BOBBY SIMPSON [DUKE]: As far as, you mean, like solar?

COMMISSIONER FLEMING: Yeah. Yeah. Any of the — yes, like solar, like any of the distributed energy resources. So that's just something you're not prepared to talk about.

MR. BOBBY SIMPSON [DUKE]: Well, the way I look at resiliency is you reduce impact on customers when an outage happens. So the micro-grids provide a way to backstand an area that's not — so it wouldn't be on the grid; it's backstood by a micro-grid. And that, to me, is improving

ACCEPTED FOR PROCESSING 2018-May-23 2:26 PM 07:20 PM SCPSC Docket # 2018-206-E - Page 73 of 229

ACCEPTED FOR PROCESSING 2018-10-1 21:32:29 PM 10/2018 SCPSC Docket # 2018-206-E - Page 78 of 259

resiliency because it's reducing impact when an outage happens, because you get them back on faster instead of them having to wait until we fix it.

COMMISSIONER FLEMING: Okay. All right. Thank you.

MR. BOBBY SIMPSON [DUKE]: Thank you.

CHAIRMAN WHITFIELD: Thank you, Commissioner Fleming.

Mr. Simpson, you've had a good presentation. You've been awful patient, but we do have a couple more questions for you.

MR. BOBBY SIMPSON [DUKE]: Sure.

CHAIRMAN WHITFIELD: And hopefully, I think that's going to about wrap it up. So, first, our attorney, Mr. Melchers, has a question for you.

MR. BOBBY SIMPSON [DUKE]: Okay.

MR. MELCHERS: Thank you, Mr. Chairman.

Quick question: You mentioned several times that the advent of two-way flow creates resiliency and reliability issues. Why?

MR. BOBBY SIMPSON [DUKE]: The lack of two-way flow.

MR. MELCHERS: But your system is designed for one-way —

MR. BOBBY SIMPSON [DUKE]: Correct.

MR. MELCHERS: — and you talked about how distributed generation has created changes in the way the system is being used. What is it about the design of the system that that change stresses it?

MR. BOBBY SIMPSON [DUKE]: Yeah, great question. So here's what goes on. So if you think of that hub-and-spoke analogy, in general, the way the grid was designed and built is wire gets smaller the further away you get from the source, and the locations that most of this solar is being put — so far, today — is out in rural areas where the wire is small. So you end up with small wire that can't handle the intermittency that comes with the solar, so you get a lot of voltage flicker; it makes voltage regulators operate a lot. You also have cases where, because it gets put in rural areas, you can have a large concentration of solar out in a rural area, and it actually makes — creates more losses rather than improving losses, because essentially you're making the distribution grid something that's hauling power, and it wasn't designed to transmit power back and forth; it was really one-way to get it to the meter. Does that help?

MR. MELCHERS: Thanks. Appreciate it.

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 85 of 125

CHAIRMAN WHITFIELD: Is that it?

MR. MELCHERS: Yeah.

CHAIRMAN WHITFIELD: Thank you, Mr. Melchers.

Mr. Simpson, I've got just a couple for you and I think this is going to wrap it up. If you could — and I'm going to ask you maybe to turn to some slides as I ask these.

MR. BOBBY SIMPSON [DUKE]: Sure.

CHAIRMAN WHITFIELD: — first of all, if you could go to, I think it's page nine, that slide where Commissioner Hamilton was asking you a question about that particular graph there and the blue line. I don't want to speak for him, but he seemed a little bit still confused when he finished asking his question. And if he's not, I am. So I want to ask you —

MR. BOBBY SIMPSON [DUKE]: Okay [indicating].

[Reference: Presentation Slide 9]

CHAIRMAN WHITFIELD: — about the blue line.

MR. BOBBY SIMPSON [DUKE]: Okay.

CHAIRMAN WHITFIELD: Where that peak comes down looks like the end of 2024 and the beginning of 2025, to me. And my question to you — I don't know if this is where his confusion is, but it's certainly mine — is that where the spending on

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM PSC SC Docket # 2018-206-E - Page 86 of 129

Power/Forward or the investment in Power/Forward stops?

MR. BOBBY SIMPSON [DUKE]: Yes.

CHAIRMAN WHITFIELD: At the peak of that blue line. And you said it was a 10-year plan, so that would put you back to the end of 2014-2015. Am I hearing you correctly, or is it just an eight-year plan or could you explain that just a second?

MR. BOBBY SIMPSON [DUKE]: Yes, sir. It's a 10-year plan, and the 10 years start in '17 and run through '26.

CHAIRMAN WHITFIELD: Okay. So you still are investing or spending — making investment past 2025, up to 2027; is that correct?

MR. BOBBY SIMPSON [DUKE]: Yes. The intent of this analysis was to show that we're going to ramp up spending, and that is investing capital in the economy, and then we would ramp it down. So, you know, I'd have to go back and look at the numbers to see exactly what he used in '26 and '27, but I think the point is we're going to peak in our investment and that's the point of the blue curve, and then we're going to ramp it down.

CHAIRMAN WHITFIELD: Okay.

MR. BOBBY SIMPSON [DUKE]: The official 10-

ACCEPTED FOR PROCESSING 2018-10-01 21:32:26 PM SCPSC Docket # 2018-206-E - Page 87 of 129

year window is 2017 to 2026. And it does show a ramp-down that takes you into 2027, and that's just a reflection of the fact that it takes time to ramp down spending. You don't just cut it off. Does that help?

CHAIRMAN WHITFIELD: A little. I guess what I'm confused about is, I think of the blue line — and maybe Commissioner Hamilton was thinking the same way. I think of the blue line as being Statewide benefits and not necessarily your spending. So if your spending is — or investment, rather, is decre- — I'm trying to correlate where the — I understand that, as you've stopped the investment, that your benefits are going to go down, but I'm trying to match or correlate the two together by this graph, and I'm having a hard time doing it, I guess is what I'm saying.

COMMISSIONER HAMILTON: Mr. Chairman?

CHAIRMAN WHITFIELD: Yes, sir, Commissioner Hamilton.

COMMISSIONER HAMILTON: My concern, I thought he was — this was economic benefits to the State.

CHAIRMAN WHITFIELD: And that's what I'm thinking, too. Is that not what that is?

MR. BOBBY SIMPSON [DUKE]: It is. It's

ACCEPTED FOR FILING PROCEEDINGS 2018-201-E - Page 82 of 229

absolutely what it is. So, the blue curve is showing — you know, as it says on the slide — the change in gross output. You know, the fact of the matter is there's details in that report that I'd have to get Dr. Von Nessen to explain, because I'm not the expert on it. But the intent is to show, in economic terms, such as gross domestic output, you know, what the benefits will be as a function of when we invest.

So as we ramp up the investment, the economic output benefits ramp up; and as we ramp down the investment, which starts in the year, according to the graph, 2025 or '26, those benefits are going to start to tail off, because the investment is tailing off.

CHAIRMAN WHITFIELD: Okay.

MR. BOBBY SIMPSON [DUKE]: But it's measured in economic output terms.

CHAIRMAN WHITFIELD: And I see your Statewide economic benefits curtailing. I guess what I don't — what I'm unable to kind of correlate to it is where the investment — I think you've said, though, verbally, 2017 to 2027, or a 10-year period. I'm just trying to visualize that on the graph. But, anyway, you've answered my question.

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 89 of 129

MR. BOBBY SIMPSON [DUKE]: Okay.

CHAIRMAN WHITFIELD: And, next, if you could go to page 16 of your slides —

MR. BOBBY SIMPSON [DUKE]: [Indicating.]

[Reference: Presentation Slide 16]

CHAIRMAN WHITFIELD: — I just want to thank you for recognizing — like you mentioned specifically, Aynor, but I want to thank you for recognizing Longtown. I bet you you and I are the only people in this room that know where Longtown is. And that is very close to where I live, and, yes, I've seen the outages out there. And we're also, unfortunately, in a situation — I know you can't do anything about this — as Commissioner Elam said about telecom, we have almost zero cell service out there, too. So certainly that's got to be one of your most remote areas, and I appreciate you sharing it on a slide like this and bringing attention to it, because it certainly is a remote area and an area that I know you've had trouble with.

Lastly, I've got a couple of questions about percentages. If you could explain those to me, I think that will about do it. On page seven of your slides, early on —

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM 07 SCPSC Docket # 2018-206-E - Page 90 of 225

MR. BOBBY SIMPSON [DUKE]: [Indicating.]

[Reference: Presentation Slide 7]

CHAIRMAN WHITFIELD: — where you discuss DEC and DEP, you really talk about SAIDI indexes and SAIDI numbers, and that's certainly something we deal with a lot on the Critical Infrastructure Committee at NARUC, but why is DEC, shown on those graphs, worse than DEP? Why does the Duke Energy Carolinas territory seem to have worse numbers than Duke Energy Progress? When you talk about rural areas and older systems, I typically think of the DEP, the Progress area, the old Carolina Power & Light area being more remote, more rural, and I would've thought the SAIDI numbers would've been worse there. Could you explain those two graphs?

MR. BOBBY SIMPSON [DUKE]: Well, actually, the SAIDI numbers are worse for DEP, which is on the left. You know, lower is better? Does that make sense? So the DEP SAIDI is 239, almost four hours, and the DEC —

CHAIRMAN WHITFIELD: I'm sorry.

MR. BOBBY SIMPSON [DUKE]: Yeah.

CHAIRMAN WHITFIELD: I am looking at right to left. I'm sorry. I was thinking the one on the left was DEC. Okay. You've fixed that one.

ACCEPTED FOR PROCESSING 2018-10-1 21:32:29 PM SCPSC Docket # 2018-206-E - Page 85 of 229

The next deals with a percentage also. You mentioned — and last time, also, in your allowable ex parte you mentioned — that the targeted underground program would significantly reduce outages by, I think, 30 percent, which is what you're stating today.

MR. BOBBY SIMPSON [DUKE]: Yes, sir.

CHAIRMAN WHITFIELD: And you also said — again, we're talking about the underground program would reduce SAIDI — did I get it right? Because this is on page — I don't see a number, but it's the targeted underground slide. But I think you said SAIDI would reduce by 10 to 15 percent? That's not on the slide. Page 13, that's it.

MR. BOBBY SIMPSON [DUKE]: [Indicating.]

[Reference: Presentation Slide 13]

CHAIRMAN WHITFIELD: You've said — the first bullet point — significantly reduce outages by 30 percent, is what I had down. But you also had that it would reduce SAIDI by 10 to 15 percent. Correct?

MR. BOBBY SIMPSON [DUKE]: That's correct.

CHAIRMAN WHITFIELD: Is that correct? And there was something else you said, something else by 5 percent. What was that?

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM 107 PM SCPSC Docket # 2018-206-E - Page 82 of 229

MR. BOBBY SIMPSON [DUKE]: I don't remember saying 5 percent.

CHAIRMAN WHITFIELD: It was something, another event, and I had events — other events by 5 percent. It was a lesser number than the SAIDI number.

MR. BOBBY SIMPSON [DUKE]: I may have been moving on to the hardening and resiliency.

CHAIRMAN WHITFIELD: Maybe it was —

MR. BOBBY SIMPSON [DUKE]: So what I tried to do is represent each of those three subsystem programs, in terms of event production and SAIDI reduction.

CHAIRMAN WHITFIELD: Maybe it was outage — you called that last part outage causing line faults. I don't know. But there was something else — I just wondered what the 5 percent number was that you said, and then when you — if you could, skip over the page 17.

MR. BOBBY SIMPSON [DUKE]: [Indicating.]

[Reference: Presentation Slide 17]

CHAIRMAN WHITFIELD: You're referring to the self-optimizing grid as improving SAIDI numbers by 30 to — did you say 30 to 40 percent?

MR. BOBBY SIMPSON [DUKE]: Yes, sir.

ACCEPTED FOR PROCESSING 2018-10-31 3:26 PM SCPSC Docket # 2018-206-E - Page 87 of 259

CHAIRMAN WHITFIELD: Okay. So you've got several different things that can improve SAIDI, be it from the targeted underground program to the self-optimizing grid, or smart-thinking grid as you say.

MR. BOBBY SIMPSON [DUKE]: That's correct. Yeah, the point being that it gets back to the layered benefits and they work together. So some programs stop outages, some programs reduce impact when outages do occur. And so the self-optimizing grid is what — it doesn't stop an outage. It reacts to outages quickly and just reduces impact. That's why the SAIDI number — its contribution to SAIDI is higher than targeted undergrounding, which is an event stopper.

CHAIRMAN WHITFIELD: I see. Well, I think everything else that I had has certainly been asked by my fellow Commissioners. And at this time, I don't see any further questions. I certainly thank you for a very thorough presentation all by yourself up here, and we certainly appreciate it. It was very informative and very valuable for us to hear this and to be able to ask you these questions. So, we thank you.

And if there's nothing further — I'm going to

ACCEPTED FOR PROCESSING 2018-10-01 3:26 PM SCPSC Docket # 2018-206-E - Page 84 of 259

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10-E - 10/31/2018 3:26:29 PM - SCPSC - Docket # 2018-206-E - Page 95 of 129

look over at Mr. Nelson and see if ORS has anything or your attorney, Ms. Smith, has anything?

MS. SMITH: [Shaking head.]

CHAIRMAN WHITFIELD: Anything further?

MR. NELSON: No, sir.

CHAIRMAN WHITFIELD: Well, if not, we thank you, and this allowable ex parte is adjourned.

[WHEREUPON, at 12:15 p.m., the proceedings in the above-entitled matter were adjourned.]

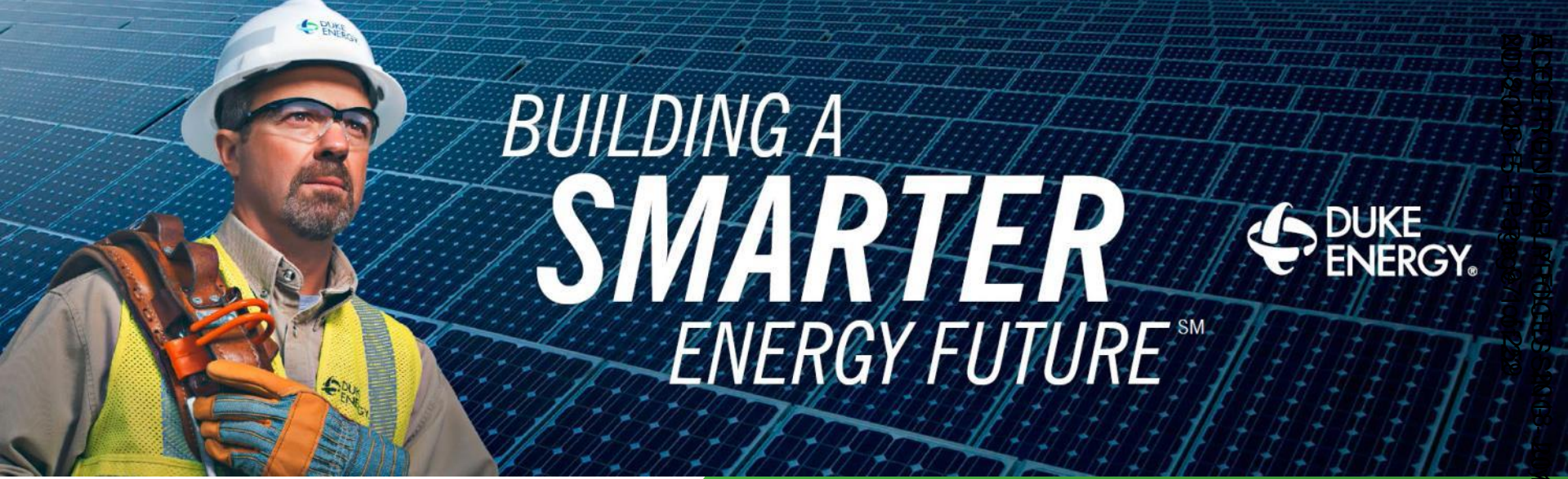
ACCEPTED FOR PROCESSING 2018-May-21 3:26 PM PSC SC Docket # 2018-206-E - Page 90 of 259

C E R T I F I C A T E

I, Jo Elizabeth M. Wheat, CVR-CM-GNSC, do hereby certify that the foregoing is, to the best of my skill and ability, a true and correct transcript of all the proceedings had in an Allowable Ex Parte Proceeding held before THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA in Columbia, South Carolina, according to my verbatim record of same.

IN WITNESS WHEREOF, I have hereunto set my hand, on this the 25th day of May, 2018.

Jo Elizabeth M. Wheat, CVR-CM/M-GNSC
Hearings Reporter, PSC/SC
My Commission Expires: January 27, 2021.



POWER/FORWARD CAROLINAS

Bobby Simpson | Director, Grid Improvement Plan Integration | Duke Energy

Allowable Ex Parte Briefing before the Public Service Commission of South Carolina

May 23, 2018; NDI 2018-15-E

ELECTRONICALLY FILED - SC PUBLIC SERVICE COMMISSION - 5/23/2018 2:17 PM - Docket # 2018-15-E - Page 1 of 23

DUKE ENERGY®

Olanta

“What Got You Here Won’t Get You There”

Marshall Goldsmith

ACCEPTED/CONFIDENTIAL PROTECTED MATERIAL SUBMITTED TO SCDOC Docket # 2021-2-E - May 21, 2021 - 1:01 PM
ND-2018-15-EP - Page 82 of 229

The Need is Clear

Customer expectations have changed.

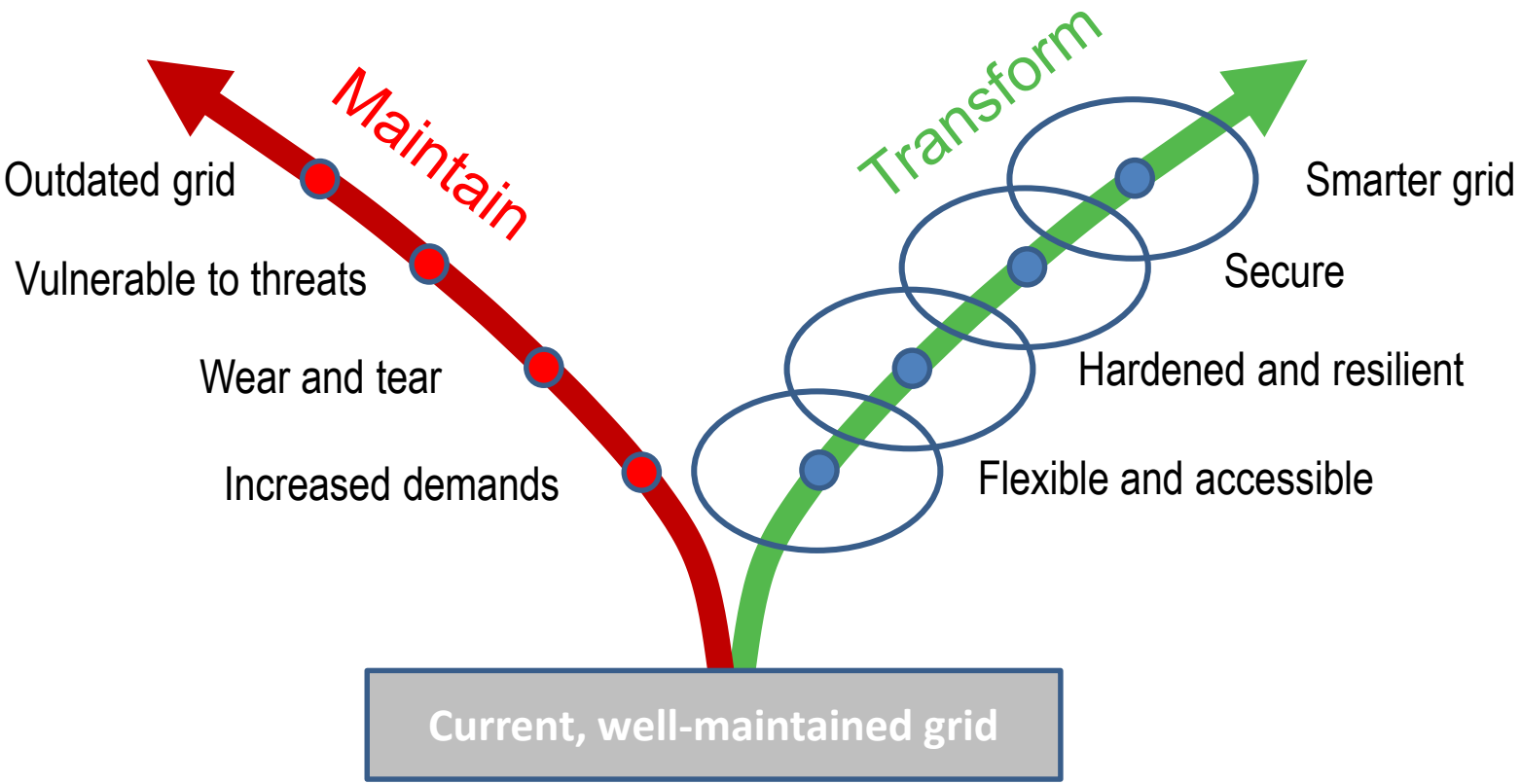
People rely on electricity more than ever to power their lives and businesses. Power is no longer a convenience, nor is it a luxury.

Severe weather events are increasing, and **cyber and physical attacks** on the grid are real.

Technology is available to enable a transition from a mechanical grid that is aging, to a more modern digitalized grid.

ACCEPTED/CONFIDENTIAL PROPRIETARY
2021-May-26 PM 03:50 PM
SCPSC Docket # 2021-215-E - Page 3 of 22

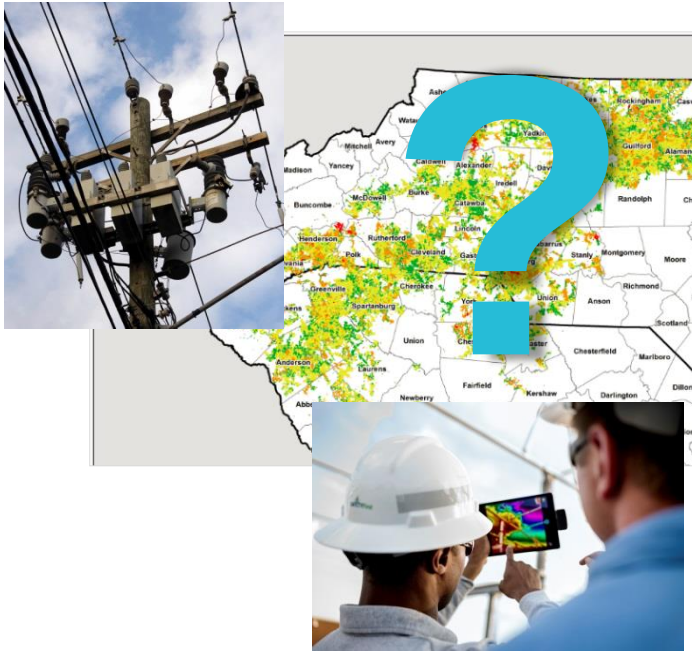
Maintenance vs. Transformation



ACCEPTED FOR FILING: 2018-10-01 21:29 PM SCDOCKET # 2018-15-EP - page 10 of 259

Why not before?

- The data science didn't exist to see the grid the way we can today
- Automated technologies were still maturing
- Grid components were not networked
- The grid didn't have a brain
- Predictive analytics and decision making was still evolving



ELECTRONICALLY FILED - SCPSC - 10/8/2021 - 2:29 PM
Docket # 2018-215-E - Page 101 of 259

DUKE ENERGY®

Power/Forward CAROLINAS

Building a smarter grid for CUSTOMERS

IMPROVE RELIABILITY
to avoid outages and speed restoration

HARDEN THE GRID
against physical and cyber impacts

GIVE MORE OPTIONS AND CONTROL
over energy use and tools to save money

EXPAND SOLAR AND RENEWABLES
across a two-way, smart-thinking grid

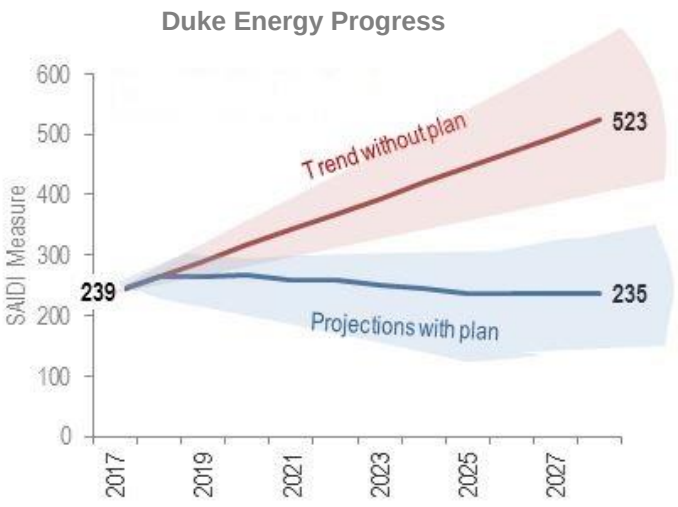
ELECTRONICALLY FILED - SCPSC - 10/21/2021 2:19 PM - SCPSC - Docket # 2018-215-E - Page 62 of 229

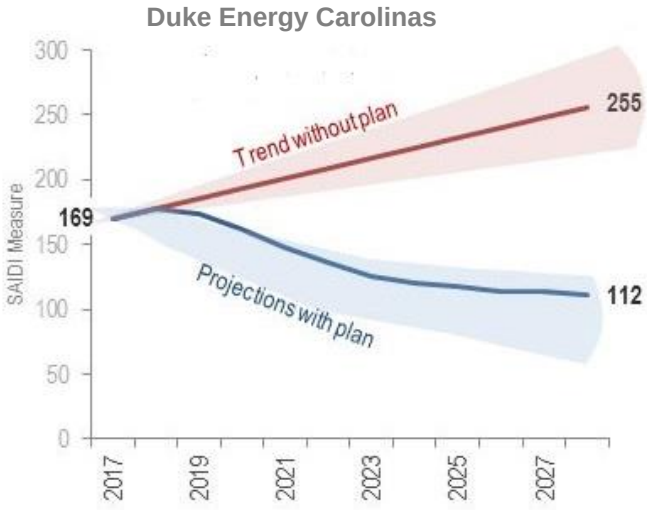
Core Reliability Improvements

Power/Forward can improve core reliability by 40-60%

by reducing the number and duration of everyday outages, as well as reducing customer momentaries

Sustained Outages





SAIDI trend

Power/Forward SAIDI savings

SAIDI – System Average Interruption Duration Index

ELECTRONICALLY FILED - SCPSC - 10/21/2020 9:29 PM - SCPSC - Docket # 2018-15-E - Page 103 of 229

Reduced Major Storm Impacts

REDUCTION IN MAJOR STORM IMPACTS	Customers Interruptions (CI)	Customer Mins Interrupted (CMI)
10-year historical average, SC	232,271	210M
Estimated reduction (%)	30%	30%
Forecasted MED impacts after Power/Forward	**154,187**	**147 million**

Power/Forward reduces major storm impacts by around 30% by undergrounding the most vulnerable overhead tap lines on the grid.

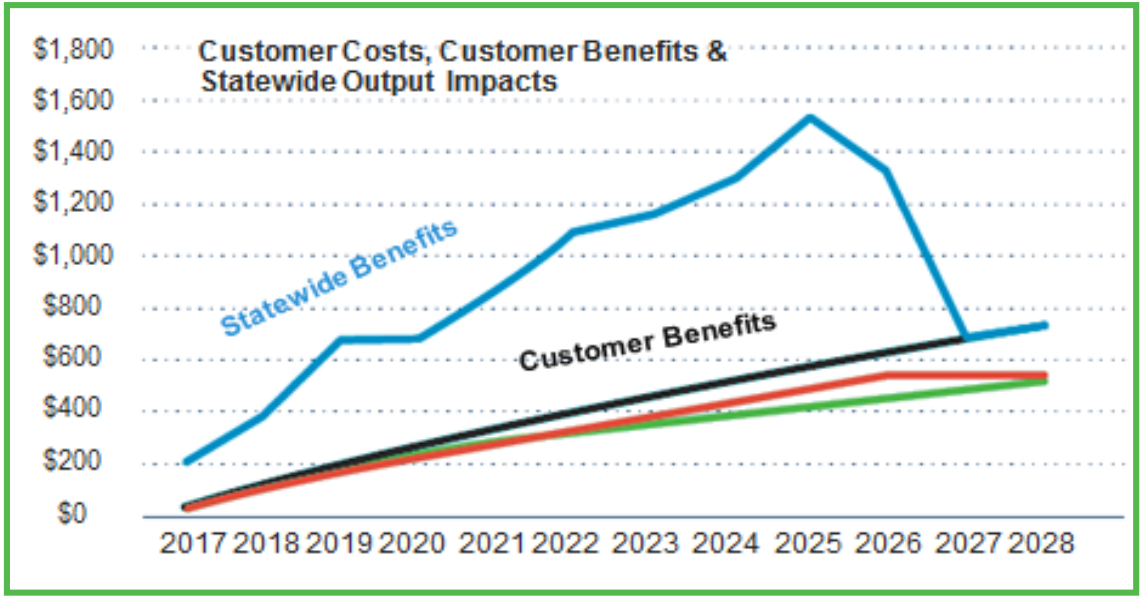
Major storm impacts in the Carolinas

Homes and businesses that are impacted annually by major event days (MEDs) experience, on average,

12 hours of interruption

ELECTRONICALLY FILED - SCPSC - 10/8/2021 3:26 PM - SCPSC - Docket # 2018-215-E - Page 101 of 229

Statewide Economic Impact (SC)



Source:Von Nessen Study

Customer cost: increased electricity rates

Customer benefits: Reduction in outage-related costs

Customer benefits: Reduction in outage-related costs plus potential increase in business sales

Statewide benefits: Total change in gross output

	Economic Output from Capital Investment	Annual Cost (rate ▲)	Reduced outage-related costs	Annual Net Benefit (after rate ▲)
SC	$5.8B at end of P/F	$84M (2018) to $530M (2028)	$503 million to $724 million (2028)	Up to $194M by year 10

ACCEPTED FOR FILING
May 29 2018 10:08 AM
SCPSC
Docket # 2018-15-E - Page 105 of 259

Jobs and Community Growth

People Future

Building the energy future will put thousands to work throughout the Carolinas.

- Approximately 3,300 jobs created for the state of South Carolina the Duke Energy grid investment, with 5,400 at peak.
- $200 million in new salaries and wages, with nearly $315 million at peak
- Economic contribution equivalent to three major automotive manufacturing announcements

ACCEPTED ELECTRONICALLY
DOCKET # 2018-215-E - Page 10 of 22
Date: 1/31/2019 2:19 PM
SCPSC

DUKE ENERGY

(2017 – 2028)

$10.5 billion

SC - STATEWIDE ECONOMIC BENEFIT

$5.8 billion economic output

2,400 jobs created

Power/Forward CAROLINAS

$4.7 billion economic output

3,000 jobs created

INVESTMENT

RELIABILITY

$3.1 billion initial investment

making the grid smarter, more reliable and more secure, while stimulating economic growth

ELECTRONICALLY FILED - 2018 May 29 2:10 PM - SCPSC - Docket # 2018-215-E - Page 11 of 12

Seven Strategic Programs

Targeted Underground

- Reduced outages and momentary interruptions
- Faster response to major storms
- Improved customer satisfaction

$1.3 B

Hardening & Resiliency

- Reduced asset failures (hardening)
- Rapid outage recovery (resiliency)
- Updated system design & security

$704 M

Self-Optimizing Grid

- Automated fault isolation and power rerouting
- Modern circuit segmentation standards
- Support two-way power flow

$385 M

Smart Meters

- Enhanced billing options
- Detailed usage data
- Improved outage detection

$107 M

Transmission Improvements

- System intelligence / monitoring
- Flood mitigation
- Physical and cyber security

$533 M

Communication Network Upgrades

- Secure high-speed, high-bandwidth comm pathways
- Enablement of more smart grid devices

$74 M

Advanced Enterprise Systems

- Intelligent device management & monitoring
- Self-optimizing technology enablement

$23 M

ACCEPTED FOR FILING, 2/13/2018 10:21:29 AM SCPSC
ND-2018-15-EP - Page 18 of 252
ELECTRONICALLY FILED - 2018 February 12 PM 3:08 - SCPSC - Docket #

Targeted Underground

Using advanced data to strategically move thousands of miles of the most outage-prone overhead power lines underground

TARGETED UNDERGROUND PROGRAM

- Significantly reduce outages
- Reduces power blips and blinks
- More efficient storm restoration efforts

Targeted Underground Program drives **higher reliability** by significantly reducing risk of outage-causing line faults on susceptible power line segments.

ACCEPTED/CONFIDENTIAL PROCEEDINGS 2018-10-31 2:16:29 PM
2018-15-EP-page 10 of 22

Targeted Underground

PROJECT EXAMPLE:
QUIET ACRES – SPARTANBURG, S.C.

- Extended tap line
- Overhead service count: 20
- Number of easements needed: 21
- Overhead miles: 0.2584
- Events / target miles over 10 Years: 96.75
- Total customer minutes interrupted (CMI): 28,735.35

ACCEPTED
ELECTRONICALLY FILED - 2023 July 21 4:29 PM - SCPSC - Docket # 2023-15-E - Page 14 of 22
2023-15-E - Page 14 of 22

Targeted Undergroun

IMPROVEMENTS ACROSS THE STATE

COUNTY	TUG MILES
Abbeville	4.09
Anderson	291.16
Cherokee	38.58
Chester	37.53
Chesterfield	32.03
Clarendon	26.80
Darlington	95.04
Dillon	32.10
Fairfield	2.35
Florence	152.53
Georgetown	8.04
Greenville	529.71
Greenwood	63.18
Horry	2.29

COUNTY	TUG MILES
Kershaw	9.11
Lancaster	100.25
Laurens	29.26
Lee	21.35
Marion	45.34
Marlboro	17.31
Newberry	5.43
Oconee	22.63
Pickens	72.11
Spartanburg	410.73
Sumter	106.31
Union	1.10
Williamsburg	38.87
York	80.67

ACCEPTED
ELECTRONICALLY FILED - 2023 July 21 3:26 PM
SCPSC - Docket # 2018-215-E - Page 115 of 229

Distribution Hardening & Resiliency

HARDENING

Lower system risk from physical and cyber risks and prevent outages from occurring

Grid Integrity and Event Elimination

- Transformer retrofit
- Deteriorated conductor / UG cable Replacement
- Oil filled equipment replacement

RESILIENCY

Minimize event impacts and speed restoration

Event Impact Reduction & Recovery

- Sectionalization
- Rural circuit ties
- High impact sites
- Capacity margin

GSP Airport

Cheraw Pee Dee River Crossings

Aynor

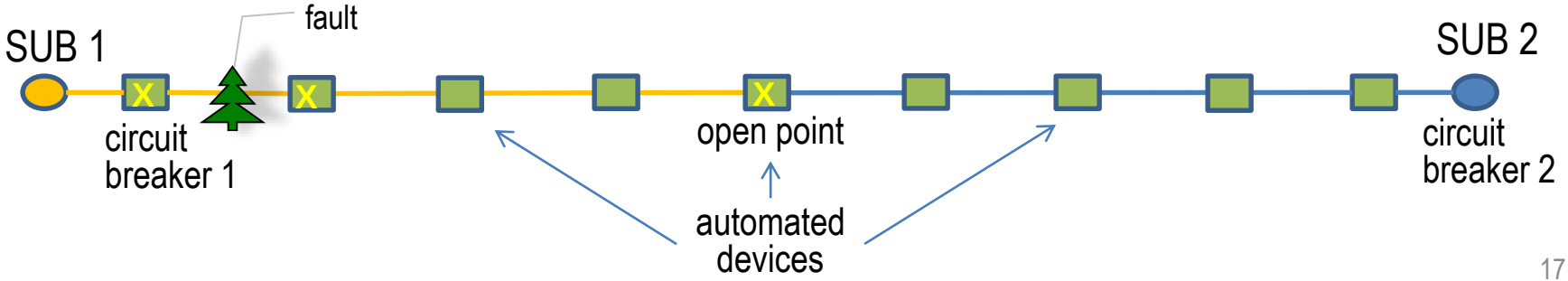
Longtown

ELECTRONICALLY FILED - SCPSC - 10/21/2020 2:19 PM - SCPSC - Docket # 2020-215-E - Page 16 of 22

Self-Optimizing Grid

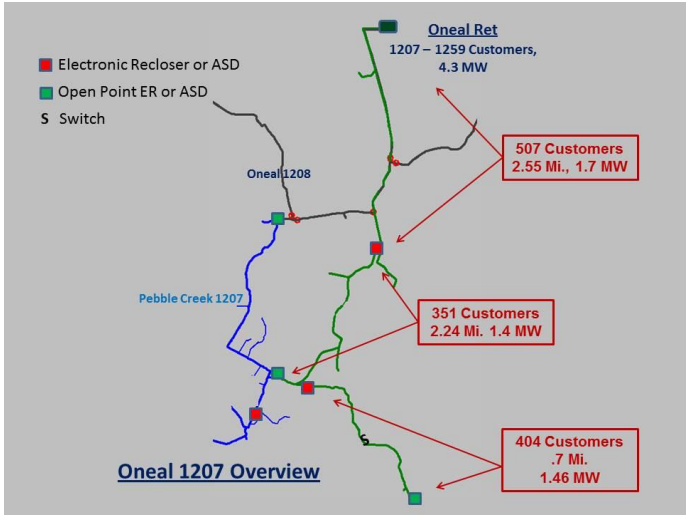
SELF-OPTIMIZING GRID anticipates outages and intelligently reroutes service to keep power on for customers. This smart-thinking grid will also automatically optimize itself and will support the two-way power flow needed to support the growth of technologies like rooftop solar, battery storage and micro-grids.

- ✓ **Connectivity**: multiple pathways for flexibility and outage avoidance
- ✓ **Capacity**: better infrastructure to support new technology and faster restoration
- ✓ **Control**: intelligent automation to optimize the grid



ACCELERATED DISTRIBUTION GRID PROJECTS
2018-2020 - 15-1-PP-08 - 10/1/2018 - 12/31/2020
Docket # E-7, Sub 1214
Page 17 of 22

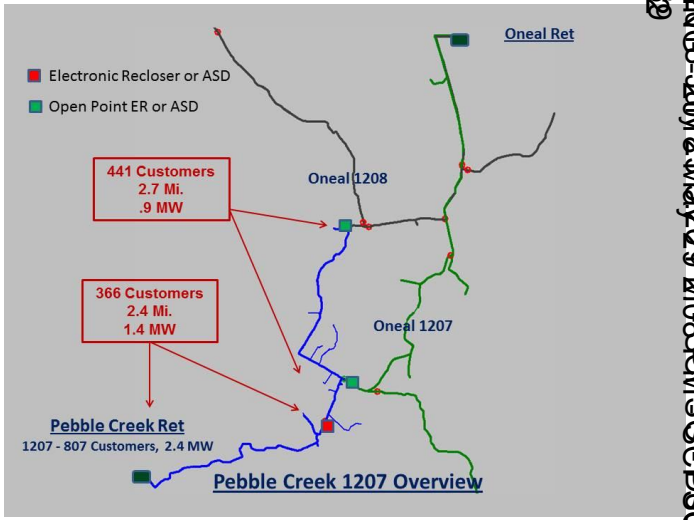
PROJECT EXAMPLE: GREENVILLE, S.C.



Two substations – Oneal and Pebble Creek

Benefits

- Automatic restorations
- Up to 75% fewer customers impacted by outage
- Two-way power flow



ELECTRONICALLY FILED - 2018 May 29 PM 03:50 - SCPSC - Docket # 2018-15-E - Page 18 of 22

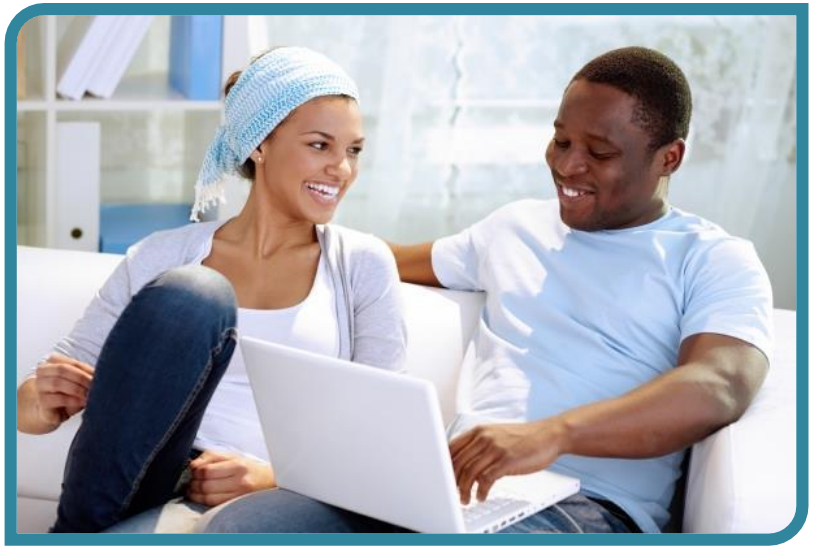
IMPROVEMENTS ACROSS THE STATE

			DEC		DEP	
Program Description	**Unit**	**Cost/Unit**	**# Units**	**Total $M**	**# Units**	**Total $M**
Automation	Automated Switches	$50,000	1,300	$65.0	300	$15.0
Capacity & Connectivity	Circuit	$650,000	360	$234.0	110	$71.5
	10-Year SC Total		**DEC**	**$299.0**	**DEP**	**$86.5**
			Grand Total $M		**$385.5**	

ELECTRONICALLY FILED - SCPSC - 10/21/2021 2:19 PM - SCPSC - Docket # 2018-215-E - Page 15 of 22

More options. More control. More convenience.

Power/Forward investments will improve the customer experience in many ways.



- Improving reliability and avoiding outages
- Restoring power faster by anticipating outages and intelligently rerouting power
- Offering customers more information about how they use energy, and new tools to save energy and money
- Modernizing the customer experience with improved communications, customized service and new programs

ELECTRONICALLY FILED - SCPSC - 10/21/2020 - 2:29 PM
SCPSC Docket # 2020-215-E - Page 120 of 252

DUKE ENERGY®

Key Tenets

- Customer-focused results
- Targeted work to maximize outcomes
- Layered benefits across the state
- Flexible and future-focused

Power/Forward CAROLINAS

Our Power/Forward Plan

10-year
grid improvement plan

$3 billion
initial SC investment

strategic & targeted
to maximize value

making the grid smarter, more reliable and more secure, while stimulating economic growth

ELECTRONICALLY FILED - SCPSC - 10/21/2020 3:01 PM
DOCKET NO. 2020-15-E - Page 17 of 22
Docket #

ELECTRONICALLY FILED - SCPSC - 10/21/2020 - 2:19 PM
Docket # 2020-215-E - Page 12 of 22

DUKE ENERGY®

The Economic Impact of

DUKE ENERGY®

A Statewide and Regional Analysis

ACCEPTED FOR PROCESSING 2018 May 29 PM 1:05 SC PSC Docket # 2018-206-E - Page 1 of 259

Prepared by:

Joseph C. Von Nessen, Ph.D.

Research Economist

Commissioned by:

DUKE ENERGY®

October 2017

ACCEPTED FOR PROCESSING - 10/18/2017 9:21 AM - Docket No. E-2, Sub 1142 - Page 2 of 259

Executive Summary

Duke Energy is one of the largest electric power holding companies in the United States, with approximately 7.5 million U.S. customers and $22.7 billion in total annual operating revenues. A significant portion of this customer base is located in South Carolina, with Duke Energy servicing 30 of the state's 46 counties. As such, Duke Energy has long maintained a sizable economic presence in South Carolina through its role as a major employer that invests heavily in the local region. Not only does Duke Energy employ many high-wage, high-skilled workers, but it also supports an extensive local supply chain that extends to virtually every county in South Carolina. In addition, the recent $3 billion grid improvement project that Duke Energy has committed to in South Carolina – known as the Power/Forward Carolinas Initiative – represents one of the largest capital investments to the state in recent years and will help boost the state's rate of economic growth in the coming decade. It will also reduce the number of unanticipated power outages to both commercial and residential customers, thereby helping to avert economic losses that result from these outages. The purpose of this study is to specifically quantify each of these economic benefits to South Carolina – both at the state and county levels. The key findings of this study are as follows:

- The annual economic impact of Duke Energy on the state of South Carolina currently totals approximately $6.6 billion. This figure reflects the dollar value representing all final goods and services produced in South Carolina that can be attributed (either directly or indirectly) to Duke Energy. This impact corresponds to 15,189 jobs and $969.4 million in labor income that would not exist otherwise.

- This $6.6 billion impact extends to every county in South Carolina, with the highest impacts occurring in the counties of York ($1.1 billion), Oconee ($1.1 billion), Greenville ($838.3 million), Darlington ($756.8 million), and Spartanburg ($686.4 million).

- Duke Energy purchases a relatively high percentage of its raw materials from local vendors relative to other South Carolina firms because of the need to minimize lead times, reduce transportation costs, and have access to knowledge and experience with respect to local geographic conditions. This local purchasing behavior, in turn, dramatically increases the economic impact of Duke Energy relative to other firms of similar size by generating additional rounds of local spending activity.

- The employment multiplier effect associated with the current, ongoing activities of Duke Energy is estimated to be approximately 3.6. In other words, for every 10 jobs created by Duke Energy, another 26 jobs, on average, are created elsewhere in South Carolina. This employment multiplier is one of the highest among all industries in South Carolina and is largely the result of the relatively high percentage of local expenditures the company makes within the state.

- Duke Energy also contributes to a high-quality workforce as measured by wage levels. The average job supported by Duke Energy (either directly or indirectly) pays an annual wage that is approximately 53.8 percent higher than the average job in South Carolina.

- The net annual contribution that Duke Energy makes to South Carolina gross state product is approximately $2.6 billion. This implies that Duke Energy generates economic activity that brings in about $132.9 million in tax revenue annually for the state of South Carolina.

- Capital investments associated with the ten-year Duke Energy Power/Forward Carolinas Initiative will generate $5.8 billion in total economic output for the state between 2017 and 2026. The peak investment period will occur in the year 2025, with an anticipated economic impact of $961.9 million that will support a total of 5,409 jobs across South Carolina.

- The contribution to South Carolina's overall rate of economic growth resulting from capital investments associated with the Power/Forward Carolinas Initiative project is substantial. In particular, the grid improvement project is anticipated to boost South Carolina's annual rate of employment growth over and above its baseline rate by up to 0.4 percentage points. This implies that Duke Energy's contribution to statewide economic growth in the coming decade will likely be comparable to the contribution of one of advanced manufacturing's major sub-sectors (e.g., aerospace, automotive, or tires).

- The grid improvement project will also generate long-term economic gains by helping to prevent future unanticipated power losses to residential, commercial, and industrial customers. Specifically, this study estimates that by the year 2028 these reliability improvements will generate gross benefits for business and households that will total between $503 million and $724 million annually. This will be partially offset by rate increases that will total approximately $530 million annually by 2028.

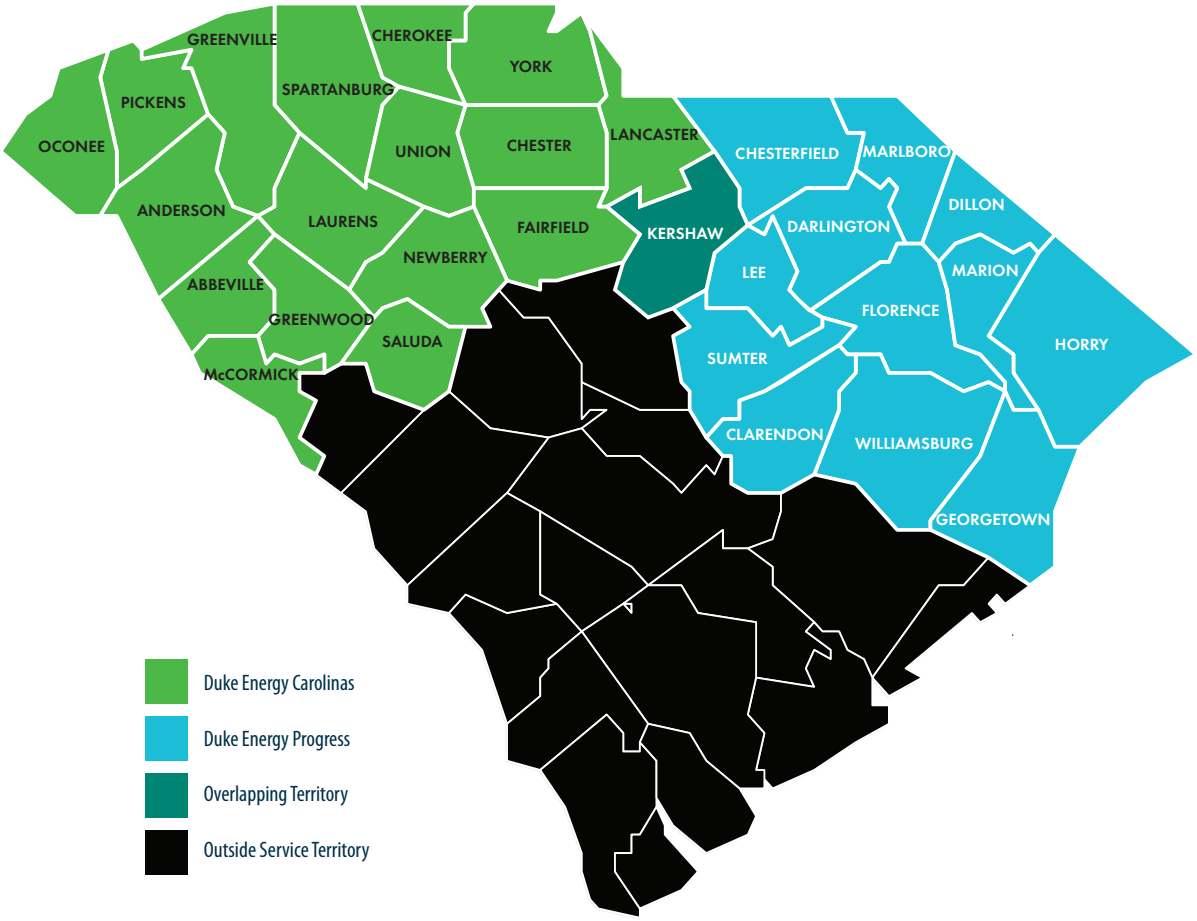
ACCEPTED FOR PROCESSING - 2018 May 29 PM 03:09 SCPSC Docket # 2018-206-E - Page 3 of 259

Section I – Overview

Duke Energy is one of the largest electric power holding companies in the United States, which supplies and delivers 52,700 megawatts of electric generating capacity to approximately 7.5 million U.S. customers. Headquartered in Charlotte, North Carolina, Duke Energy serves six states in the Southeast and Midwest and owns and operates a diverse array of power generation assets – including a portfolio of renewable energy assets. With total operating revenues of $22.7 billion across its six state region, the economic footprint of Duke Energy is significant.

In South Carolina, Duke Energy serves 30 of the state's 46 counties and is a major driver of the Palmetto State's economy – particularly within the Upstate, Rock Hill, and Florence/Pee Dee regions. As a Fortune 125 public utility that provides the energy needs for a large customer base consisting of both residential and commercial clients, Duke Energy employs a sizable workforce and also supports an extensive supply chain network throughout the state that generates considerable economic ripple effects across many industries. These ripple effects include additional indirect job creation that supports higher incomes for South Carolina residents and a substantial increase in overall economic activity. Figure 1 highlights the South Carolina counties in which Duke Energy directly operates.[1]

Figure 1 - Duke Energy Service Territory in South Carolina by County



[1]Note that Duke Energy Carolinas (DEC) and Duke Energy Progress (DEP) are both subsidiaries of the Duke Energy Corporation

ACCEPTED FOR PROCESSING - 10/18/2018 3:27:21 PM - SCPSC - Docket # 2018-206-E - Page 12 of 259

In addition to these current operations, Duke Energy is also planning a new $25 billion 10-year capital investment project across its six-state region to modernize its electric grid - $3 billion of which will be specifically invested in South Carolina. Known as the Power/Forward Carolinas Initiative, this project will represent one of the largest capital investments in South Carolina that the state has experienced in many years and will generate a significant uptick in economic growth across the state. To put this into perspective, note that the South Carolina Department of Commerce (Commerce) documented that capital investment in South Carolina for the 2016 calendar year totaled approximately $3.4 billion. Thus, the grid improvement project represents a nearly 10 percent increase in total capital investment for the state for each of the next ten years. Put another way, the average annual capital investment of the grid improvement project - $333 million – would rank 2nd among all capital investment announcements by Commerce in 2016. Table 1 illustrates this hypothetical ranking.

Table 1 – Top 10 S.C. Department of Commerce Economic Development Announcements in 2016[2]

Ranking	Company Name	County	Capital Investment
1	Teijin Ltd.	Greenwood	$600 million
N/A	*Duke Energy*	*Multiple Counties*	*$333 million*
2	China Jushi	Richland	$300 million
3	Michelin North America	Spartanburg	$270 million
4	Adger Solar	Clarendon	$200 million
5	Robert Bosch LLC	Dorchester	$175 million
6	Blackbaud	Berkeley	$154 million
7	Evonik Industries	Berkeley	$120 million
T8	NARENCO	Allendale	$85 million
T8	Ritrama, USA	Spartanburg	$85 million
T10	Techtronic Industries	Anderson	$75 million
T10	Tower Automotive	Greenville	$75 million

The grid improvement project will specifically consist of incorporating new technologies to improve the customer experience and to increase efficiency as well as to help better prepare for and address various weather-related and physical attacks on the grid. It is also designed to help to reduce the number of unplanned in-state power outages to residential, commercial, and industrial customers, thereby reducing the current economic losses that arise each year as a result of these outages.

Thus, the total economic impact of Duke Energy in South Carolina in the coming years will arise from both its ongoing operations as well as from its new grid improvement project. The economic impact of Duke Energy is also relatively unique in that it serves a critical need of South Carolina – namely through providing employment opportunities for South Carolinians in rural areas of the state to an extent that few other organizations are able to do.

The purpose of this study is to estimate the economic impact of Duke Energy on the state of South Carolina at both the state and county levels. This economic impact will consist of three components as outlined above: (1) estimating the current total economic impact of Duke Energy on South Carolina – including all ongoing operations and associated business activities; (2) estimating the economic impact of the multi-year Power/Forward Carolinas Initiative, which in South Carolina will total approximately $3 billion worth of capital investment; and (3) assessing the economic impacts that would arise from any decrease in power outages resulting from the improved infrastructure and thus improvements in reliability – both at the industry and household levels.

[2]https://www.sccommerce.com/sites/default/files/2016_year_end_results_final_report_0.pdf

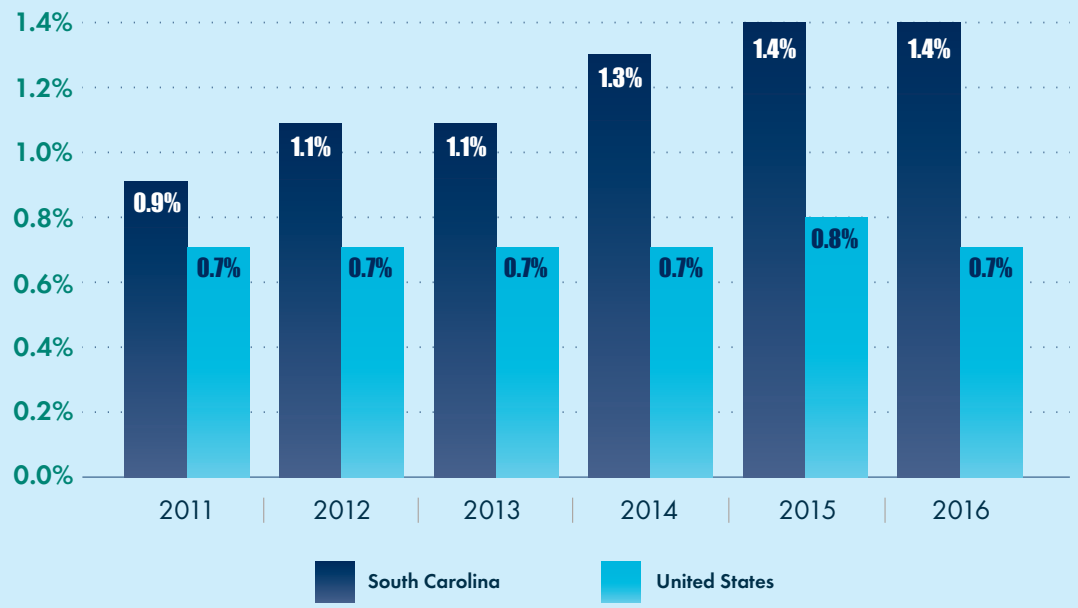
ACCEPTED FOR PROCESSING - 10/18/2018 3:27:09 PM - SCPSC - Docket # 2018-206-E - Page 5 of 259

ACCEPTED FOR PROCESSING - 2018 May 29 PM 03:09 SCPSC Docket # 2018-206-E - Page 12 of 259

Accommodating the Increasing Demand for Electricity in South Carolina

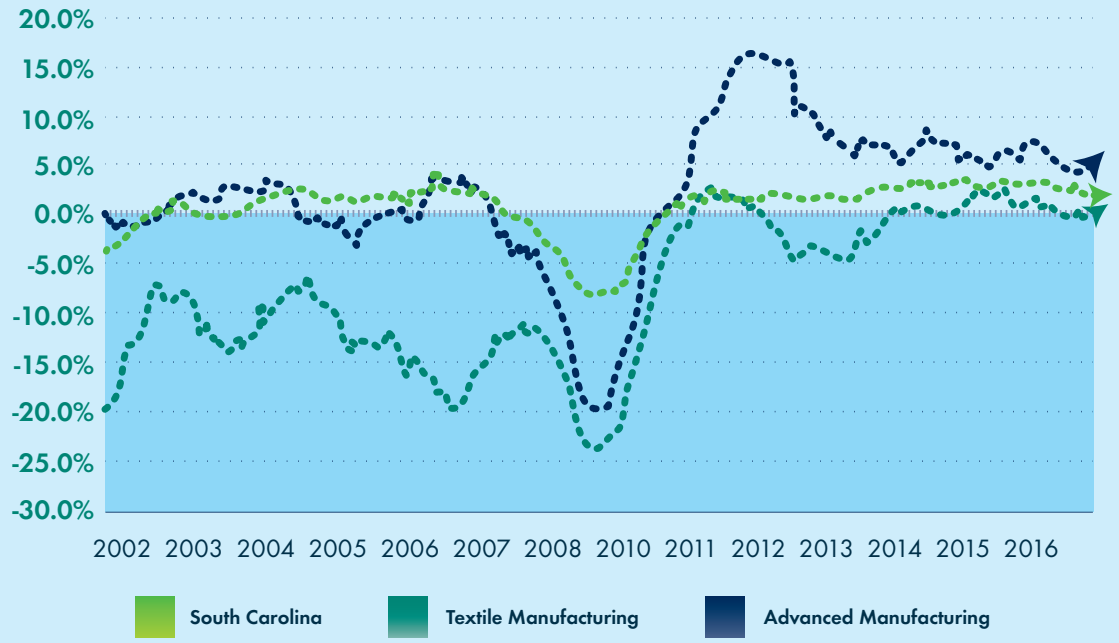
Since the year 2000, South Carolina has been experiencing several trends that – from an economic perspective – have greatly benefitted the state. The first of these trends is a relatively high rate of population growth. With the aging of the United States population and the accompanying retirement of the baby-boomer generation, more Americans are now looking to re-locate to retirement destinations that have (among other things) a low cost of living, a pleasant climate, and access to both natural and recreational amenities. South Carolina provides many of these advantages and has long been known as a prime retirement destination. As such, South Carolina's rate of population growth has increased in recent years as the baby-boomers transition into retirement. Figure 2 highlights the changing demographics of the South Carolina population, much of which is due to in-migration. Notice that South Carolina has consistently outpaced the population growth of the United States since 2011 by roughly 0.5 percentage points. This population growth serves to support the tourism, housing, and leisure and hospitality industries – among others.

Figure 2 - Annual Population Growth in South Carolina and the United States
Source: U.S. Census Bureau



The second trend that has benefitted South Carolina's economy in recent years is the resurgence that has occurred in the state's manufacturing industry. Specifically, South Carolina has experienced significant growth in the automotive, aerospace, and tire sectors – collectively known as advanced manufacturing – which has been the primary driver of economic growth in the state since 2010. These sectors have replaced textile manufacturing, which has been in steady decline since the early 1990s as a result of increased globalization. Figure 3 specifically illustrates how the steady decline in South Carolina's textile industry was replaced by advanced manufacturing and how advanced manufacturing has been generating employment gains at more than twice the rate of the state's overall average.

Figure 3 - Annual Employment Growth in South Carolina
Source: U.S. Bureau of Labor Statistics (QCEW)



The U.S. Energy Information Administration (EIA) currently projects that total national energy consumption will increase at an average annual rate of approximately 0.3 percent through the year 2050.[3] Because of the twin forces of population growth and advanced manufacturing employment growth in South Carolina – both of which exceed the national average – it is likely that there will be an accompanying increased demand for energy in the coming years in South Carolina that exceeds the national average for residential, commercial, and industrial consumers. The Power/Forward Carolinas Initiative is largely the result of the efforts of Duke Energy to accommodate this anticipated increase in statewide demand.

[3]Source: U.S. Energy Information Administration, Annual Energy Outlook 2017

ACCEPTED FOR PROCESSING - 10/18/2018 3:27:27 PM - SCPSC - Docket # 2018-206-E - Page 7 of 259

Providing Job Opportunities Outside of Metropolitan South Carolina

Although South Carolina has been consistently outpacing the United States in its rate of economic growth throughout the eight-year expansion that has followed the Great Recession, this rate of growth has not extended to all regions of the state. For example, of the 46 counties in South Carolina, only 6 currently have unemployment rates that are below that of the state average (4.0%).[4] Much of the employment gains that the state has experienced has been concentrated within the three major metropolitan regions of the state: Greenville/Spartanburg, Columbia, and Charleston.

Spotlight on Rural South Carolina

One ongoing priority for South Carolina has been to create additional employment opportunities for residents living in non-metropolitan areas of the state. Duke Energy has helped to generate these opportunities and support economic activity in these regions through its large presence that extends to both the metropolitan and rural areas of the state.

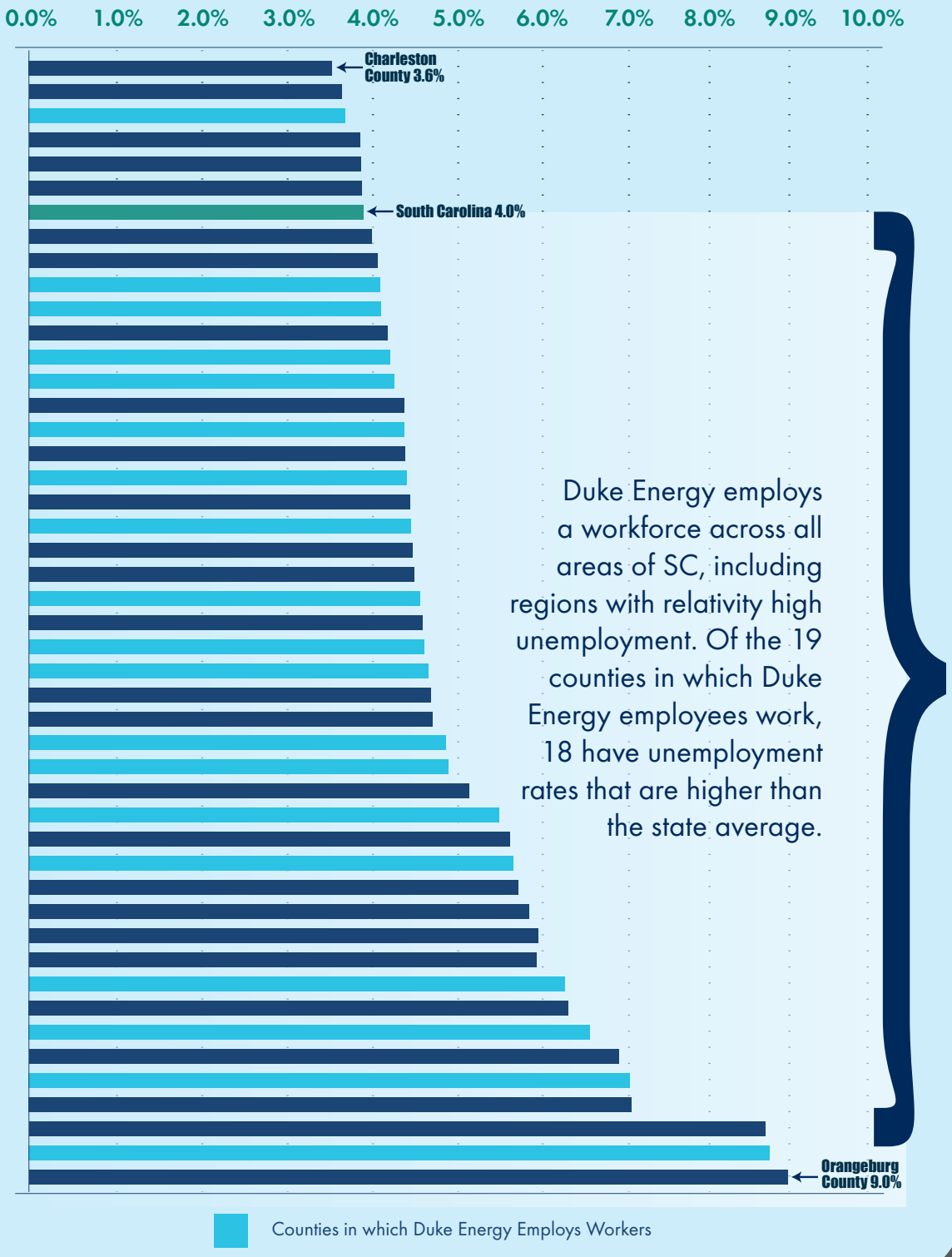
Specifically, Duke Energy currently employs workers in 19 of South Carolina's 46 counties. Of these 19 counties, 18 currently have unemployment rates above the state average. Figure 4 ranks the 46 counties by their unemployment rates and illustrates (in light blue) the counties in which Duke Energy employs a workforce. Note that Duke Energy employs workers in counties ranked among the highest in unemployment – including Williamsburg (6.7%), Marion (7.2%), and Fairfield (8.9%). The Power/Forward Carolinas Initiative will generate additional employment opportunities for these counties and increase overall economic growth in the coming decade.

[4]All unemployment rates listed in this report reflect the August 2017 figures provided by the U.S. Bureau of Labor Statistics (BLS).

DOCKET NO. E-7, SUB 1214
ATTACHMENT 1
Page 8 of 259

ACCEPTED FOR PROCESSING - 2018 May 29 PM 1:05 SCPSC Docket # 2018-206-E - Page 9 of 259

Figure 4 - South Carolina Unemployment Rates by County
Source: U.S. Bureau of Labor Statistics (LAUS): August 2017



Given the growth trends in South Carolina's industry and population base, the importance of Duke Energy will continue to grow in the coming years. This includes Duke Energy's role as both a primary electricity provider servicing the state's population and as a major economic driver for South Carolina that supports a sizable employment base in both the rural and metropolitan regions of the state.

Section III – Economic Impact Methodology

Duke Energy is an electric power holding company operating in South Carolina that employs a large workforce and supports an extensive supply chain network throughout the state in order to facilitate its ongoing operations. The expenditures made by Duke Energy through various purchases with local businesses and through wages and salaries paid to employees introduce new spending activity at a statewide and regional level that would not exist otherwise. As a result, the presence of Duke Energy provides a stable base of activity that also helps contribute to long-run economic growth.

Yet these activities do not provide a complete picture of the impact of Duke Energy to South Carolina's economy. The expenditures that occur as part of the ongoing operations of Duke Energy represent direct economic activity within the region. However, these expenditures also lead to additional job creation and economic activity throughout the local region by way of the economic multiplier effect (or economic ripple effect).

Economic multiplier effects can be divided into direct, indirect, and induced impacts. The direct effect represents the initial change in economic activity. This includes, for example, the initial dollars that are injected into the economy of South Carolina directly through any ongoing maintenance efforts on the part of Duke Energy. This would include any employee wages and benefits, construction materials purchased, transportation equipment, or other overhead and administrative costs. This spending increases demand for goods and services and leads to the creation of new jobs and more income for employees and suppliers of the construction maintenance firms hired by Duke Energy.

The indirect effect reflects all of the additional economic impacts resulting from inter-industry linkages between other local businesses in South Carolina. For example, consider an equipment purchase that is made by Duke Energy to replace and upgrade existing infrastructure as part of standard grid maintenance. In this situation, the equipment provider would, as a result of Duke Energy's purchase, experience an increase in demand. This would require this equipment provider to purchase additional raw materials to accommodate the new increase in demand and to potentially hire additional employees if the increase in demand were high enough. The vendors of the equipment providers would then experience an increase in demand and have to purchase additional inputs as well, and so on. These indirect effects ripple through the economy of South Carolina.

ACCEPTED FOR PROCESSING - 2018 May 21 PM 03:07 SCPSC Docket # 2018-185-E - Page 10 of 259

ACCEPTED FOR PROCESSING 10/21/2021 SCDOCKET #2018-206-E - Page 112 of 1259

The induced effect reflects additional economic activity that results from increases in the spending of household income. For example, when the aforementioned equipment provider hires new workers to satisfy an increase in demand, these workers will earn incomes. They will then spend part of this new income locally on, for example, food, entertainment, or housing. These industries will then see an increase in demand for their goods and services, which will lead to higher incomes for some of their employees, part of which will also be spent locally.

These successive rounds of indirect and induced spending do not go on forever, which is why a specific value can be calculated for each of them. In each round, money is "leaked out" for a variety of reasons. For example, firms may purchase some of their supplies from vendors located outside of the local area. In addition, employees will save part of their income or spent part of it with firms located outside of South Carolina. In order to determine the total economic impact that will result from an initial direct impact, economic multipliers are used. An economic multiplier can be used to determine the total impact (direct, indirect, and induced) that results from an initial change in economic activity (the direct impact). Multipliers are different in each sector of the economy and are largely determined by the size of the local supplier network as well as the particular region being examined. In addition, economic multipliers are available to calculate not just the total impact, but also the total employment and income levels associated with the total impact.

To estimate the economic impacts in this study, a detailed structural model (known as an input-output model) of South Carolina that contains specific information on economic linkages between all industries within the state was used. Separate input-output models were also created for each of the 46 county regions within South Carolina such that county-level estimates of Duke Energy's economic impact could also be determined. The input-output modeling software IMPLAN was used to calculate all estimates.

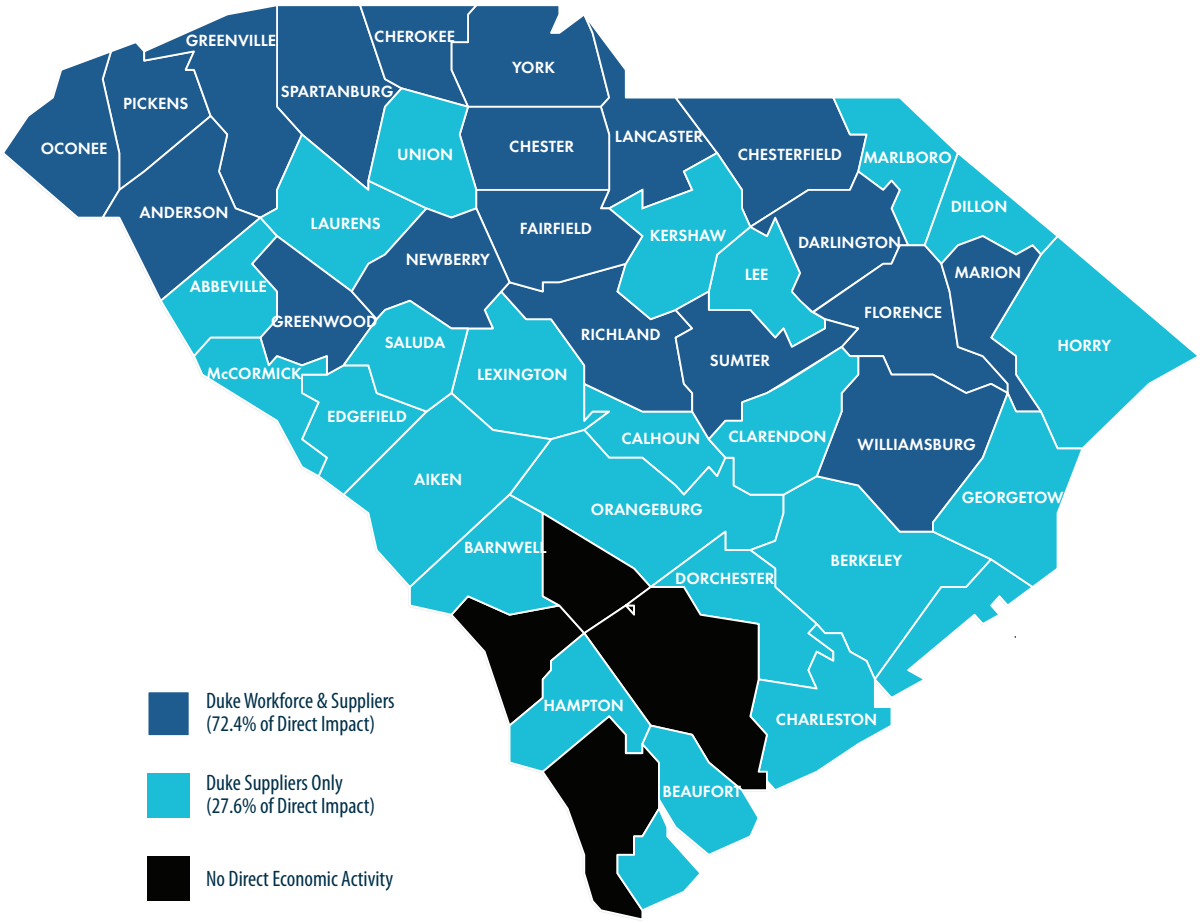
ACCEPTED FOR PROCESSING - 10/18/2018 3:27:09 PM - SCPSC - Docket # 2018-206-E - Page 12 of 59

Section IV – The Economic Impact of Duke Energy on South Carolina

Current Economic Activity of Duke Energy

During the 2016 calendar year, Duke Energy – including both Duke Energy Progress (DEP) and Duke Energy Carolinas (DEC) – employed a workforce of 4,224 FTEs accompanied by total non-labor expenditures of approximately $567.0 million.[5] These non-labor expenditures include capital equipment purchases, professional services, construction/remodeling efforts, and other general operating expenses associated with the ongoing business activities of Duke Energy. Although the Duke Energy workforce is primarily concentrated within the 19-counties in and around its service territory, the economic impact of Duke Energy extends to all virtually all counties across South Carolina. The $567.0 million in non-labor expenditures cited above represent purchases made with in-state suppliers that are spread across 42 of South Carolina's 46 counties. Figure 5 specifically highlights the counties in which Duke Energy employees work and the additional counties in which Duke Energy has a direct economic impact solely through the various non-labor expenditures it makes. Note that approximately 72.4 percent of Duke Energy's direct economic activity occurs within the 19-county region in which its employees are located. Thus, even though the 19-county region in which its employees are located is the biggest economic beneficiary, the economic footprint of Duke Energy is far larger – extending to 42 of South Carolina's 46 counties.

Figure 5 - County-Level Distribution of Duke Energy's Direct Economic Activity



[5]FTE refers to the number of "full-time equivalent" employees.

Economic Impact: South Carolina

The structural input-output model estimates economic impacts in terms of three specific measures: economic output, employment, and labor income. Economic output is simply defined as the dollar value of the final goods and services purchased that can be attributed (directly or indirectly) to all ongoing operations associated with Duke Energy. It can also be thought of as an aggregate measure of total spending resulting from an initial direct expenditure. Because it includes all spending by consumers and businesses on both goods and services, it is an all-inclusive measure of the impact on total economic activity. Employment measures the impact on jobs in terms of the total number of FTE positions. Labor income represents total employee compensation, including wages, salaries, and benefits.

As described above, during 2016 Duke Energy employed 4,224 FTE workers in South Carolina with an accompanying $567.0 million non-labor expenditures.[6] These direct economic impacts also lead to indirect and induced impacts through increases in demand for goods and services in other related industries and through increases in household spending activity – all of which are estimated using economic multipliers. Each impact is reported in Table 1, along with the accompanying totals. These totals represent the overall impact of Duke Energy on South Carolina.

Table 1 – Economic Impact of Duke Energy on South Carolina

	Employment	Labor Income	Economic Output
Direct Impact	4,224	$517,081,233	$5,116,226,823
Indirect Impact	6,258	$269,823,601	$838,687,068
Induced Impact	4,707	$182,484,633	$607,911,374
Total Impact	15,189	$969,389,467	$6,562,825,265

The 4,224 FTE employees that work for Duke Energy (along with all associated non-labor expenditures) generate approximately $5.1 billion in annual economic output. This level of direct economic activity leads to indirect effects totaling approximately $838.7 million in economic output and 6,258 jobs. These estimates reflect the increased demand for goods and services of local suppliers resulting from in-state expenditures on the part of Duke Energy. The direct economic activity also leads to induced effects totaling $607.9 million in economic output and 4,707 jobs. This is a reflection of economic activity in South Carolina generated across all industries that is the result of increased household spending. The combination of the direct, indirect, and induced effects leads to a total economic impact of approximately $6.6 billion, which is associated with 15,189 jobs across South Carolina.

The employment multiplier associated with all of Duke Energy's economic activities in South Carolina is approximately 3.6. This implies that for every 10 jobs that are supported directly by Duke Energy, an additional 26 jobs are created elsewhere in South Carolina. This employment multiplier effect is one of the highest among all industries in South Carolina and provides Duke Energy with an ability to scale up employment in ways that most other South Carolina firms cannot. The average employment multiplier across all industries in South Carolina is approximately 1.8.[7]

This employment scaling effect is a key finding of this study and reflects one of the primary reasons why Duke Energy is such a powerful economic engine in South Carolina.

[6]Each non-labor expenditure provided by Duke Energy was first categorized into a specific North American Industry Classification System (NAICS) code and then incorporated into each region's input-output model where appropriate.
[7]This average employment multiplier was calculated using input-output models for the state of South Carolina and incorporating the most recently published industry-level data.

ACCEPTED FOR PROCESSING - 10/18/2017 3:27 PM - SCPSC - Docket # 2018-206-E - Page 13 of 1259

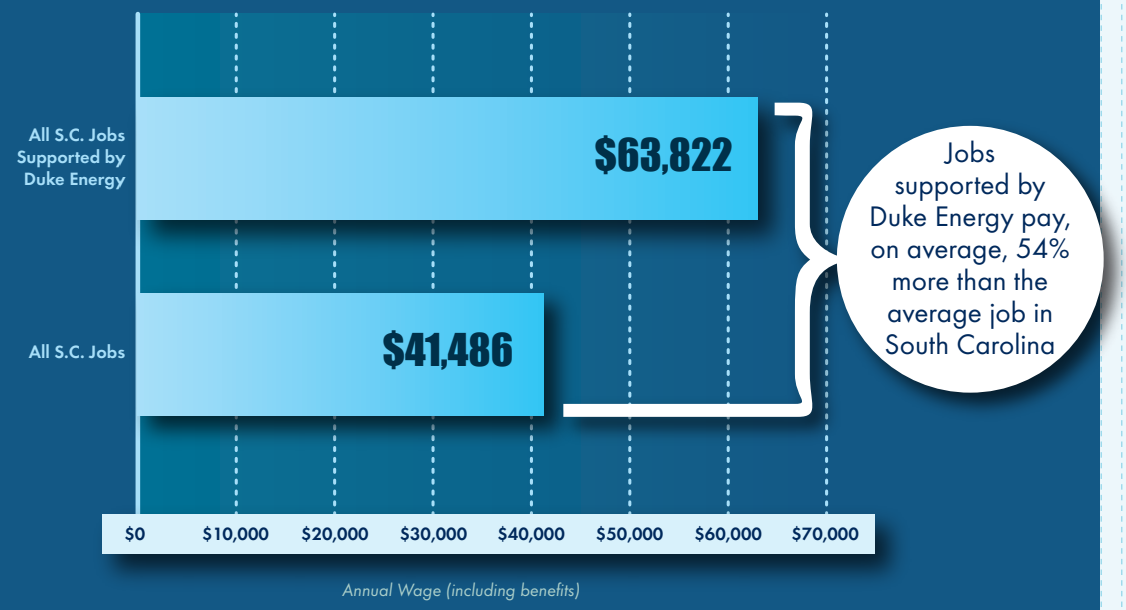
The utilities industrial sector often has a substantially higher multiplier effect within a local region than most others. The reason for this difference arises from two primary factors: (1) the necessity of minimizing lead times; (2) the necessity of local experience. In both cases, these necessities incentivize utility companies to purchase raw materials locally, thus creating a larger in-state supply chain. The larger in-state supply chain is what generates the higher multiplier effect.

First, because of the relatively high demand for electricity and grid maintenance, any firms in the utility sector's supply chain that can design, manufacture, deliver, or install infrastructure in a short time period will have a distinct competitive advantage over those that cannot (i.e., those firms that can minimize lead times). The availability of steel, in particular, is a critical component of this supply chain. The size and weight of raw infrastructure materials keep transportation costs high, which also makes local manufacturers that can minimize shipping times and distances beneficial. Further, any company that is hired by a utility to construct or install grid infrastructure will have to use construction crews. If these construction crews are hired from within the region and do not have to relocate, this provides a significant cost savings.

Local knowledge and experience is a second factor that drives utilities to purchase from local vendors. The requirements for the construction, installation, and maintenance of grid infrastructure can vary significantly by region, and experience with respect to local conditions matter. This can include – for example – local knowledge on geographic conditions (e.g., soil consistency) or regarding the permitting process.

Duke Energy also generates and supports high-wage, high-skilled employment opportunities for South Carolinians. These contributions can be directly observed by examining wage levels. Duke Energy supports a total of 15,189 employees across South Carolina with $969.4 million in associated labor income. These figures imply that the average job supported, directly or indirectly, by Duke Energy pays an annual total employee compensation (including wages and benefits) of $63,822. This is approximately 54 percent higher than the average total employee compensation in South Carolina ($41,486), as illustrated in Figure 6.

Figure 6 - Annual Total Employee Compensation Comparisons

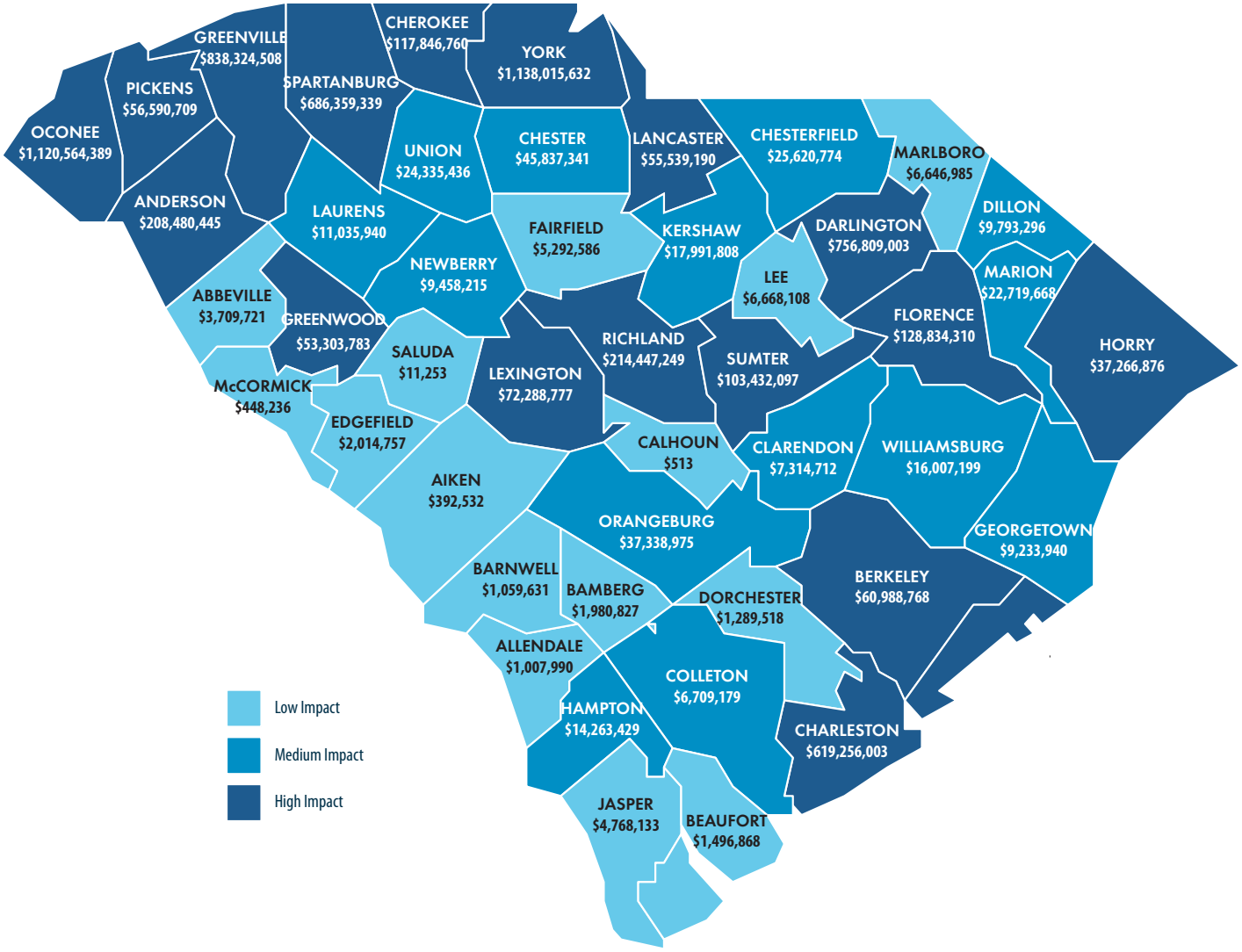


ACCEPTED FOR PROCESSING 03-20-2018 10:21 AM SCDOR DOCKET NO 2018-206-E - Page 14 of 259

Economic Impact: County-Level and Regional Break Downs

The $6.6 billion annual economic impact that Duke Energy supports in South Carolina is not uniformly distributed across the state. As has already been shown, Duke Energy employs a workforce in 19 counties and makes in-state purchases from suppliers in 42 South Carolina counties. These labor and non-labor expenditures, in turn, generate additional rounds of local spending that cascade across the entire state. The majority of the multiplier effects that are generated from spending within any given county, however, occur either within the county itself or in immediately adjacent counties. Figure 7 shows the complete county-level distribution of the $6.6 billion economic impact of Duke Energy, with Table 2 providing a more detailed breakdown of those counties with the highest impacts.

Figure 7 - County-Level Distribution of Duke Energy's Current Total Economic Impact



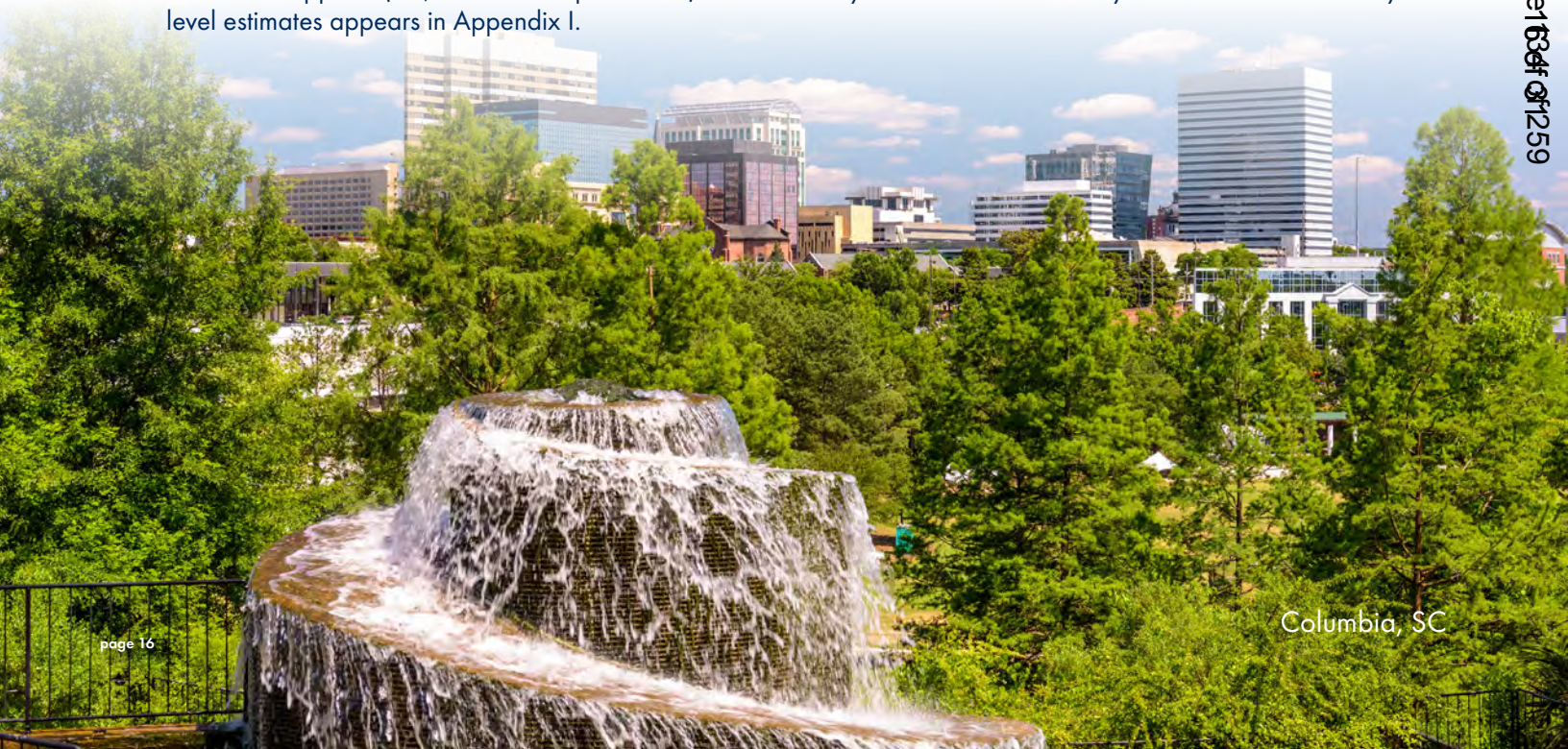
ACCEPTED FOR PROCESSING - 10/18/2018 3:27:09 PM - SCPSC - Docket # 2018-206-E - Page 15 of 259

Table 2 – Counties Containing Highest Dollar Volume of Duke Energy Economic Impacts

County	Total Employment	Total Labor Income	Total Economic Output
York	3,039	$223,312,948	$1,138,015,632
Oconee	3,267	$257,040,059	$1,120,564,389
Greenville	1,766	$97,331,311	$838,324,508
Darlington	2,076	$152,112,583	$756,809,003
Spartanburg	1,199	$53,569,623	$686,359,339
Charleston	1,027	$42,345,515	$619,256,003
Richland	360	$15,485,301	$214,447,249
Anderson	469	$28,270,241	$208,480,445
Florence	323	$20,358,054	$128,834,310
Cherokee	200	$8,588,012	$117,846,760
Sumter	191	$9,187,002	$103,432,097
Lexington	120	$4,943,199	$72,288,777
Berkeley	101	$4,170,490	$60,988,768
Pickens	114	$5,958,040	$56,590,709
Lancaster	131	$8,028,786	$55,539,190
Greenwood	116	$6,589,736	$53,303,783

Although it is dispersed throughout South Carolina, the majority (78.6%) of Duke Energy's economic impact is contained within York, Oconee, Greenville, Darlington, Spartanburg, and Charleston counties. Further, Figure 7 illustrates that the "high impact" counties largely represent the major metropolitan regions of South Carolina. This is to be expected given that firms within the utility supplier network are more likely to be located within a major metropolitan region.

It is also important to recognize that the size of the economic impacts listed depend greatly on the source of those impacts. For example, while Duke Energy's highest impact occurs in York County when measured by economic output, its highest impact is in Oconee County when measured by employment. This is a result of the fact that Duke Energy has more employees working in Oconee County than in York County, even though Duke Energy spends more with suppliers (i.e., non-labor expenditures) in York County than in Oconee County. A breakout of all county-level estimates appears in Appendix I.



ACCEPTED FOR PROCESSING - 2018 May 29 PM 1:05 SCPSC Docket # 2018-206-E - Page 16 of 59

ACCEPTED FOR PROCESSING 2018 May 27 PM 03:07 SC PSC Docket # 2018-206-E - Page 135 of 1259

Economic Impact: Contributions to State Tax Revenue

Another major impact of Duke Energy comes from the increase in state tax revenue that results from the economic activity it supports. As summarized in Table 3, the total economic impact of Duke Energy for the state of South Carolina approximates $6.6 billion.

Historically, every additional dollar that is generated in economic activity (i.e., nominal gross state product) within South Carolina also generates 5.1 cents in new state tax revenue.[8] By applying this figure to the economic activity generated by Duke Energy, the tax revenue from this total volume of activity can be estimated.[9] Table 3 displays these results, which show that the annual total estimated tax revenue that arises from Duke Energy is approximately $132.9 million.

Table 3 – Annual State Tax Revenue Derived from Duke Energy

Category	Dollar Value
Estimated Economic Output for South Carolina	$6,562,825,265
Estimated Tax Revenue Generated for South Carolina	$132,875,788

[8]The historical relationship between South Carolina nominal gross state product and the South Carolina general funds revenue (as measured and tracked by the South Carolina Board of Economic Advisors) was estimated using industry-standard time-series regression techniques.
[9]Economic output represents the value of industry production and is therefore not synonymous with gross state product. As such, the dollar value of all intermediate inputs was subtracted from economic output before the 5.1-cent estimate was applied to estimate total tax revenue.

Section V – The Economic Impact of Duke Energy's Power/Forward Carolinas Initiative

Duke Energy is currently in the early stages of executing a $25 billion, 10-year capital investment project across its six-state region to modernize its electric grid - $3 billion of which will be specifically invested in South Carolina. This project, known as the Power/Forward Carolinas Initiative, will consist of incorporating new technologies to improve the customer experience and to increase efficiency as well as to help better prepare for and address various weather-related and physical attacks on the grid. It is also designed to help to reduce the number of unplanned in-state power outages of residential, commercial, and industrial customers, thereby reducing the current economic losses that arise each year as a result of these outages. This section of the report will estimate the potential economic impacts of the Power/Forward Carolinas Initiative that arise from (1) capital investments in South Carolina's electricity infrastructure and (2) benefits to South Carolina businesses and households from increased electric grid reliability. The strategic programs associated with the grid improvement plan are as follows:

Strategic Program	Descriptions
Advanced Metering Infrastructure (AMI)	Providing customers payment options, usage data, and energy-savings tools, as well as automating functions like meter-reading, connects and disconnects, and outage detection.
Self-Optimizing Grid (SOG)	System capacity and technology to locate and isolate faults (short circuits), and automatically reconfigure the system, thus shortening or even eliminating outages for many customers.
Targeted Underground (TUG)	Converting heavily treed neighborhoods prone to power outages from overhead to underground construction to decrease outages, reduced momentary interruptions (blinks), improve major storm restoration time, and improve customer satisfaction.
Distribution Hardening & Resiliency	Upgrading equipment to address the leading causes of trouble, reducing outages and momentary interruptions, and making the system more resilient to major hurricanes, ice storms, as well as routine storms.
Advanced Systems	Upgrading systems that manage grid devices, monitor equipment health, analyze data from monitoring sensors to improve system operations and maintenance activities, make communication faster and enable self-healing techniques.
Communications Network Updates	Providing high-speed, high bandwidth, secure communications pathways (fiber optic and wireless) for the increasing number of smart components, sensors, and remotely activated devices on the transmission and distribution systems.
Transmission Investment	Equipment upgrades, flood mitigation, physical and cyber security and system intelligence to make a smarter and more reliable and secure transmission system.

ACCEPTED FOR PROCESSING 8-10-2018 ; 2:27 PM ; SCPSC ; Docket # 2018-206-E - Page 18 of 259

Economic Impact: Capital Investments in South Carolina Electricity Infrastructure

The Power/Forward Carolinas Initiative will take place from 2017 to 2026. Approximately $3 billion worth of capital and infrastructure purchases will be made with businesses located in South Carolina, and Duke Energy will expand their total employment by 2,388 to oversee and carry out all grid improvement related functions and strategic programs. Both capital investment and hiring will be scaled up over time, with peak operations associated with the initiative occurring in 2025. Table 4 summarizes the total annual economic impacts associated with the Power/Forward Carolinas Initiative on South Carolina, which include all associated economic multiplier effects. Note that the total annual impacts will range from approximately $184 million in 2017 to $962 million in 2025. This level of activity, in turn, will support between 1,037 and 5,409 total jobs in South Carolina.

Table 4 – Total Annual South Carolina Economic Impact of Duke Energy's Power/Forward Carolinas Initiative: 2017-2026

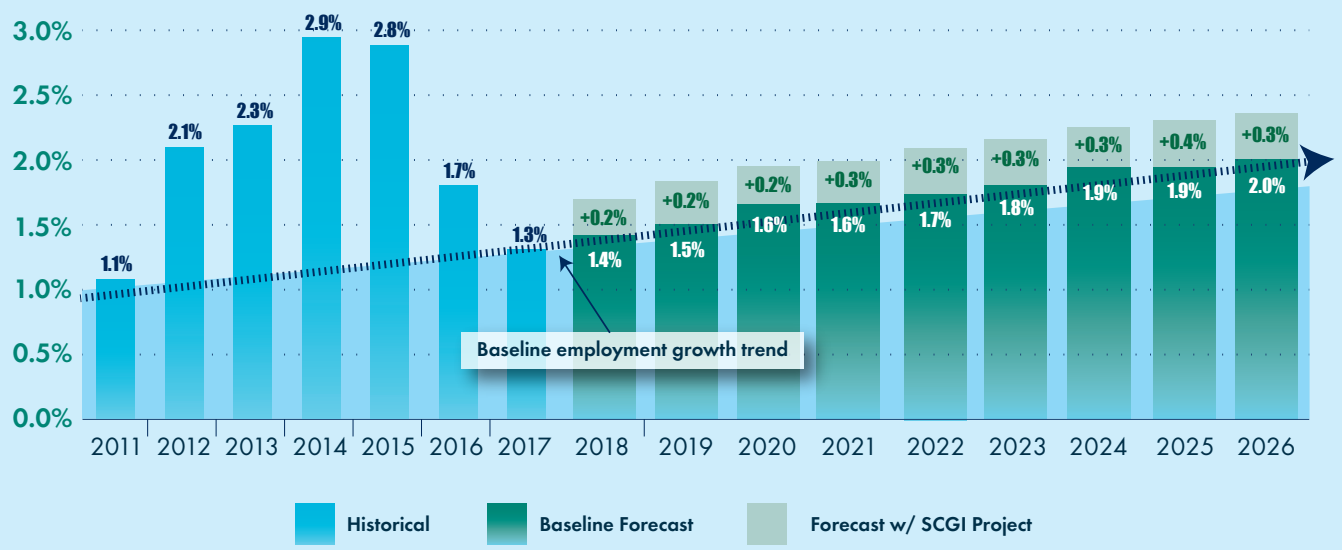
Year	Total S.C. Economic Output	Total S.C. Employment (FTE)	Total Number of Duke Energy Employees (FTE)[10]	Total S.C. Labor Income
2017	$184,392,527	1,037	458	$60,247,721
2018	$264,366,686	1,486	656	$86,378,177
2019	$480,031,511	2,699	1,192	$156,843,692
2020	$437,798,606	2,462	1,087	$143,044,671
2021	$541,696,128	3,046	1,345	$176,991,757
2022	$715,080,114	4,021	1,775	$233,642,589
2023	$710,255,158	3,993	1,763	$232,066,101
2024	$776,940,371	4,368	1,929	$253,854,577
2025	$961,991,072	5,409	2,388	$314,317,348
2026	$689,664,853	3,878	1,712	$225,338,502
Total Economic Impact between 2017 and 2026: $5,762,217,025				
An average of nearly 3,300 jobs supported per year between 2017 and 2026				

[10]Note that the total number of Duke Energy employees in this column was estimated by assuming that all 2,388 anticipated hires would be working on the grid improvement project by the year 2025. This employment number was then scaled during the remaining years to correspond to annual capital investment dollars provided by Duke Energy.

ACCEPTED FOR FILING: 8/10/2017 4:27:27 PM SCPSC Docket No. 2017-305-E - Page 19 of 59

In order to accurately capture the magnitude that the Power/Forward Carolinas Initiative will have on South Carolina's economy, the estimates displayed in Table 4 were integrated into a long-run state level forecast to provide perspective on the extent to which this grid improvement will affect overall employment growth rates. Employment growth is the single best indicator for the health of any local region, and as such it is an appropriate metric to use to gauge the extent to which the grid improvement plan will affect overall economic growth in South Carolina. Figure 8 provides annual employment growth rates from 2011 to 2026, including historical rates, a projected "baseline" growth rate, and a growth rate incorporating the anticipated employment gains from the grid improvement.

Figure 8 - South Carolina Employment Outlook: 2018-2026



South Carolina's baseline employment growth trend is represented by the black arrow in Figure 8. This is specifically calculated by using the average annual change in the rate of employment growth from 2000 to 2017. [11] This average annual change is then assumed to continue through 2026. While employment growth clearly deviated from this trend between 2012 and 2016, this was due in large part to significant gains in advanced manufacturing. These gains were specifically the result of major job announcements among both new and existing South Carolina firms within the aerospace, automotive, and tire industries. These industries helped to increase the state employment growth rate to nearly 3.0 percent in 2014 and 2015.

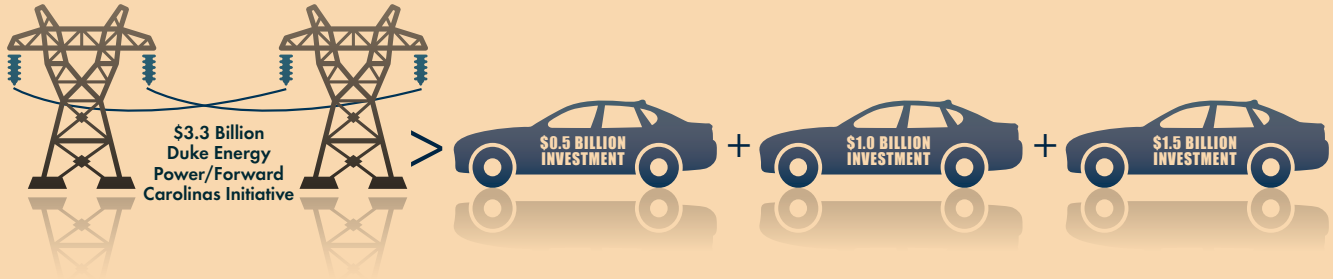
In the absence of further industry gains of comparable size, this study assumes that the long-run employment growth trend outlined in Figure 8 will continue over the next decade in order to highlight how the Power/Forward Carolinas Initiative has the potential to affect employment growth in South Carolina in a similar manner to advanced manufacturing's impact in recent years. As Figure 8 illustrates, the grid improvement plan will likely increase South Carolina employment growth by up to 0.4 percentage points above its baseline rate in the coming decade.

[11] Since the year 2000, South Carolina's employment growth rate has increased, on average, by approximately 0.06% each year.
The baseline employment growth trend projects this rate forward through 2026 using the most recently available employment growth figures available (August 2017) as a starting point.

ACCEPTED FOR PROCESSING: 10/18/2018 3:27:21 PM
DOCKET: 2018-206-E - Page 20 of 1259

To put this additional growth in context, recent announcements from automotive manufacturers either expanding or relocating to South Carolina have ranged from $0.5 billion to $1.5 billion, implying that the Power/Forward Carolinas Initiative is roughly equivalent to three major automotive manufacturing announcements in the state.

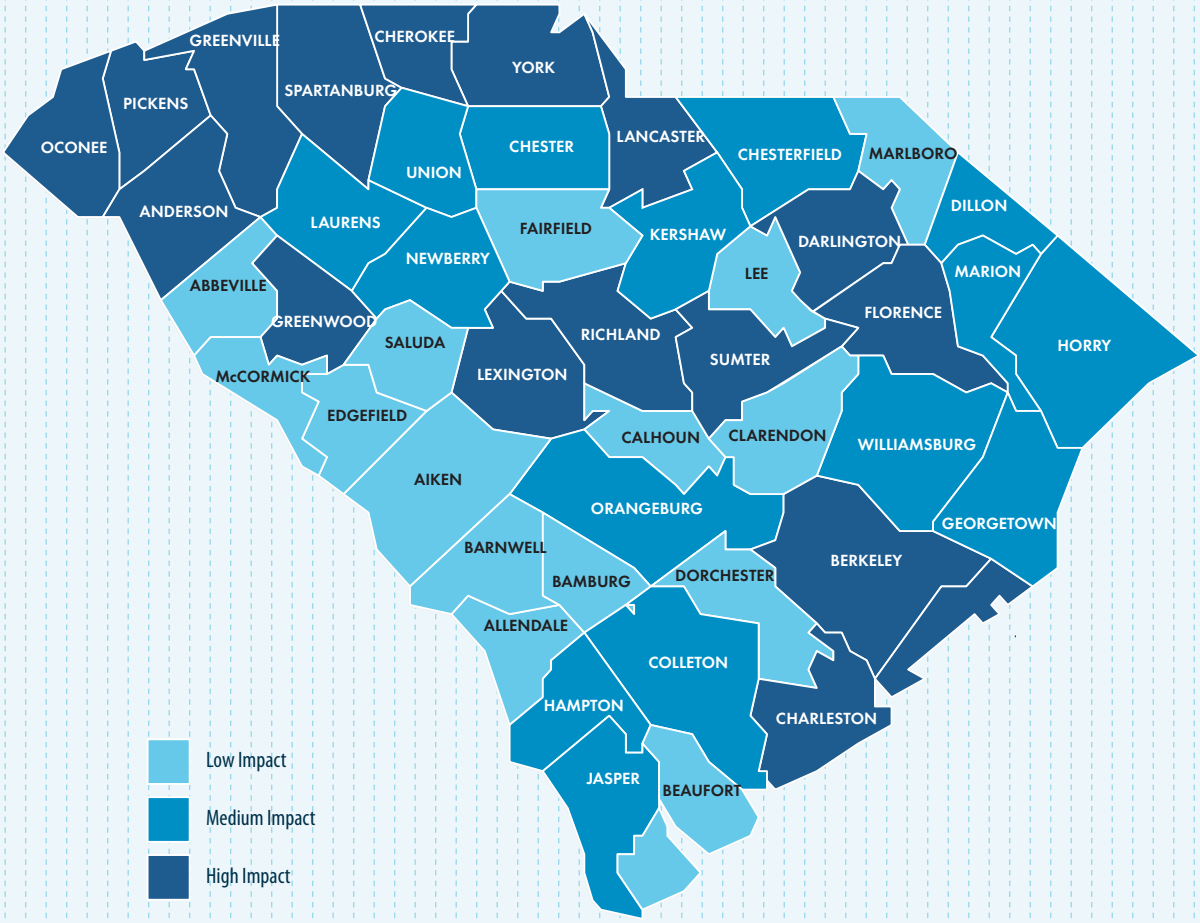
This implies that Duke Energy's contribution to statewide economic growth in the coming decade will likely be comparable to the contribution of one of advanced manufacturing's major sub-sectors (e.g., aerospace, automotive, or tires).



ACCEPTED FOR PROCESSING: 2018 May 27 PM 03:50 SCPSC Docket No. 2018-206-E - Page 21 of 259

As with the standard, ongoing operations of Duke Energy, the majority of the impact of the Power/Forward Carolinas Initiative will be concentrated within counties that either (1) contain a workforce hired by Duke Energy to complete the initiative or (2) contain the major vendors/suppliers that Duke Energy is purchasing raw materials from to build the planned infrastructure. As a result, the distribution of the county-level impacts will not necessarily be directly tied to the distribution of Duke Energy's customer base in South Carolina. A summary of the county level distribution of these impacts from 2017 to 2026 appears below in Figure 9. Table 5 displays the top county level impacts that will likely occur during the peak construction year of 2025. Although the impacts themselves are very different, the distribution is fairly similar to that of the current operations of Duke Energy.

Figure 9 - County-Level Distribution of Duke Energy's Power/Forward Carolina's Initiative Total Economic Impact: 2025



ACCEPTED FOR PROCESSING 08-20-2018 ; 01:21 PM
RECEIVED FOR FILING 08-20-2018 ; 01:21 PM
SCPSC - Docket # 2018-206-E - Page 24 of 259

Table 5 – Economic Impacts of Power/Forward Carolinas Initiative on Highest Impacted Counties in 2025

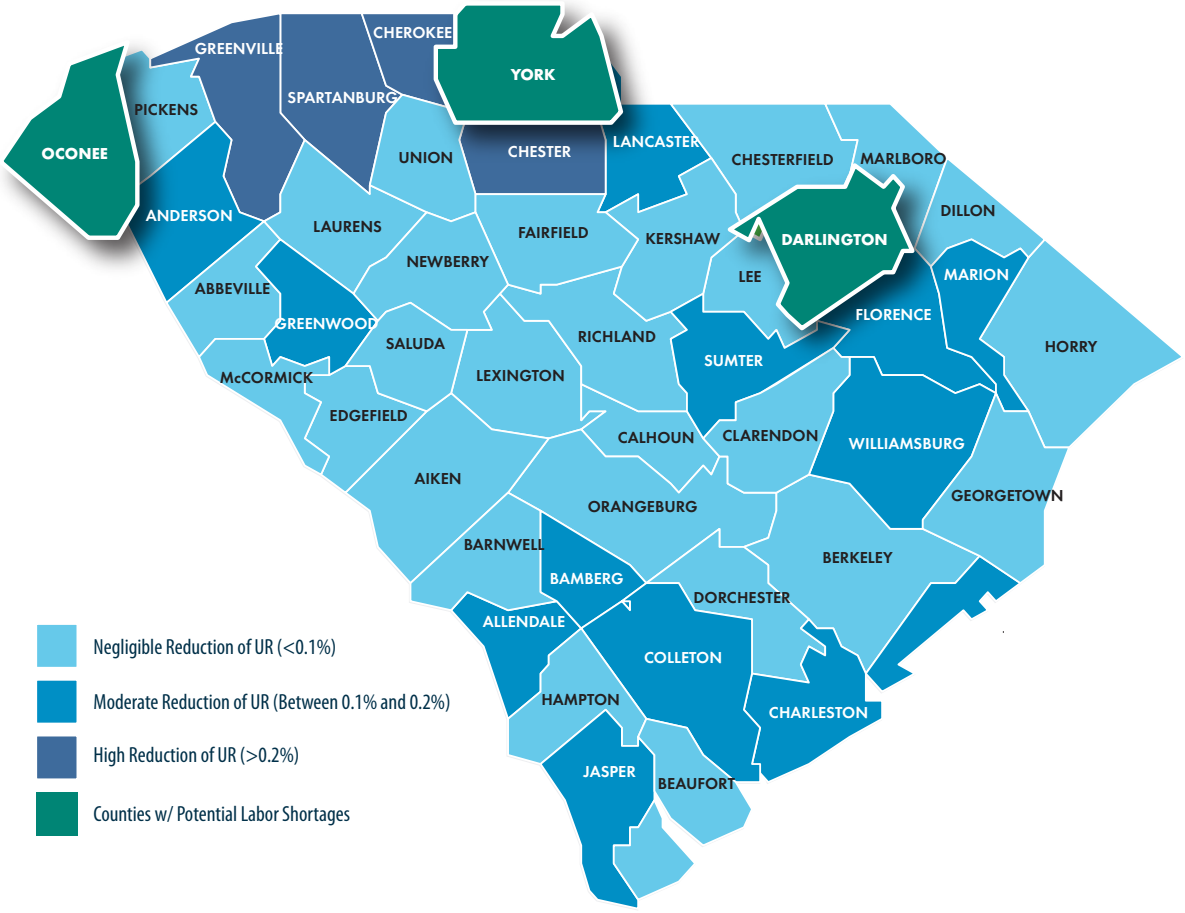
County	Total Employment	Total Labor Income	Total Economic Output
York	1,198	$69,595,414	$213,001,818
Oconee	1,352	$78,566,877	$240,459,634
Greenville	585	$33,976,700	$103,988,159
Darlington	831	$48,269,224	$147,731,465
Spartanburg	323	$18,784,339	$57,490,834
Charleston	257	$14,930,365	$45,695,467
Richland	91	$5,278,541	$16,155,358
Anderson	163	$9,483,081	$29,023,659
Florence	121	$7,043,446	$21,556,978
Cherokee	51	$2,976,065	$9,108,464
Sumter	55	$3,175,427	$9,718,624
Lexington	29	$1,690,533	$5,173,999
Berkeley	24	$1,417,006	$4,336,850
Pickens	35	$2,041,589	$6,248,432
Lancaster	47	$2,710,626	$8,296,067
Greenwood	39	$2,254,443	$6,899,886

Although the documented county-level increases in total employment due to the Power/Forward Carolinas Initiative will represent significant gains for South Carolina over the next decade, they also have the potential to introduce new workforce challenges for the state. For example, while more densely populated metropolitan counties such as Greenville, Richland, and Charleston are likely to have a sufficient workforce supply to accommodate the employment needs for this initiative, it is possible that some rural counties will not. In addition, the fact that the new workforce required by Duke Energy will consist primarily of high-skilled, technical positions means that only a subset of the available workforce in both metropolitan and rural counties will qualify.

ACCEPTED FOR FILING: 2/18/2021 3:27 PM 10:59 AM SCPSC Docket # 2018-206-E - Page 24 of 259

Figure 10 highlights the counties in South Carolina projected to experience the biggest declines in unemployment as a result of the grid improvement plan. Note that Oconee, York, and Darlington counties are projected to be the three counties most likely to experience a workforce shortage as a result. This is due to a combination of the following: (1) Duke Energy anticipates hiring a relatively large number of workers from in and around these counties and (2) these counties already have low unemployment rates and thus a relatively low supply of unemployed workers from which to hire.

Figure 10 - Power/Forward Carolinas Initiative: Impact on Unemployment Rates (UR) by County



To help address these workforce needs, Duke Energy has created strategies focused on energy career awareness, strategic partnerships, and education pathways for careers in energy. Specifically, Duke Energy partners with several colleges in the Carolinas that educate future lineworkers, engineers, and other roles critical to the success of the grid improvement plan. Duke Energy is also partnering with other utilities in the region to form the Carolinas Energy Workforce Consortium (CEWC) to collectively raise awareness of energy jobs, promote statewide workforce development efforts, and make stronger connections with education partners to build the future pipeline of talent for the industry. Additionally, the Duke Energy Foundation is investing in high performing, sustainable programs and initiatives that contribute to the goal of building a diverse workforce of the future. Duke Energy Foundation grants fund education programs and initiatives focused on K-12 science, technology, engineering and math (STEM) skills, early childhood literacy and workforce development. Programs like these help to foster an interest in the STEM fields, support job readiness, and to create the next generation of workforce business and industries need to be successful.

ACCEPTED FOR PROCESSING 2018-May-29 PM 05:00 SCPSC Docket # 2018-206-E - Page 24 of 259

ACCEPTED FOR PROCESSING 2018 Mar 27 PM 1:55 SCPSC Docket # 2018-206-E - Page 25 of 1259

Economic Impact: Improvements in South Carolina Electric Infrastructure Reliability

In addition to the temporary economic impacts that will arise over the next decade from Duke Energy's capital investments in the state's electricity infrastructure as documented above, grid improvements will also have long-run positive impacts on South Carolina's economy by reducing unplanned power outages and the associated costs these unplanned outages impose on customers across Duke Energy's 30-county service area. Unplanned power outages are typically divided into two categories: non-major events (or normal service interruptions) and major events.

Non-Major Event Disruptions

In 2016, Duke Energy serviced a total of approximately 740,000 retail customers in South Carolina, of which 16.4 percent were business (i.e., non-residential) customers. Retail customers currently experience approximately $334 million in annual outage costs related to normal-service interruptions (non-major events); businesses comprise over 98 percent of this total impact. Upon completion of the Power/Forward Carolinas Initiative, this study estimates that these costs could be reduced by up to 57 percent. Annual outage costs are projected to grow to nearly $565 million by 2028 without the grid investment due to anticipated declines in reliability using current infrastructure.

Duke Energy estimates grid reliability using two industry-standard measures, excluding Major Event Days (MEDs):

- *System Average Interruption Frequency Index (SAIFI): total number of sustained (>5 minutes) customer interruptions divided by the total number of customers served*
- *System Average Interruption Duration Index (SAIDI): total customer interruption duration (in minutes) divided by the total number of customers served*

Figures 11 and 12 highlight the specific changes to SAIFI and SAIDI values that Duke Energy anticipates will occur both with and without grid improvements through the year 2028. The projected improvements to SAIFI and SAIDI denoted in Figure 11 will then lead to grid reliability improvements of 51.8 percent and 58.4, respectively, as shown in Figure 12. These projected changes, in turn, provide the basis to evaluate the economic impact of grid improvements for non-major event disruptions.

Figure 11 - SAIFI and SAIDI Projections: 2018-2028

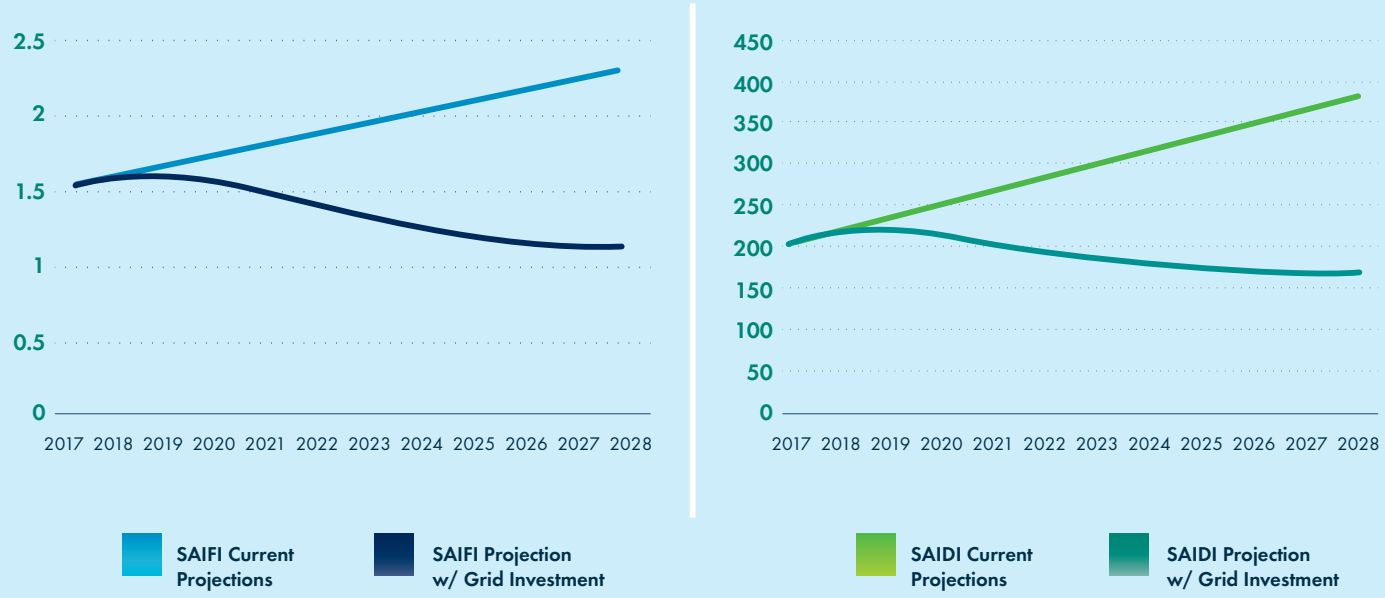
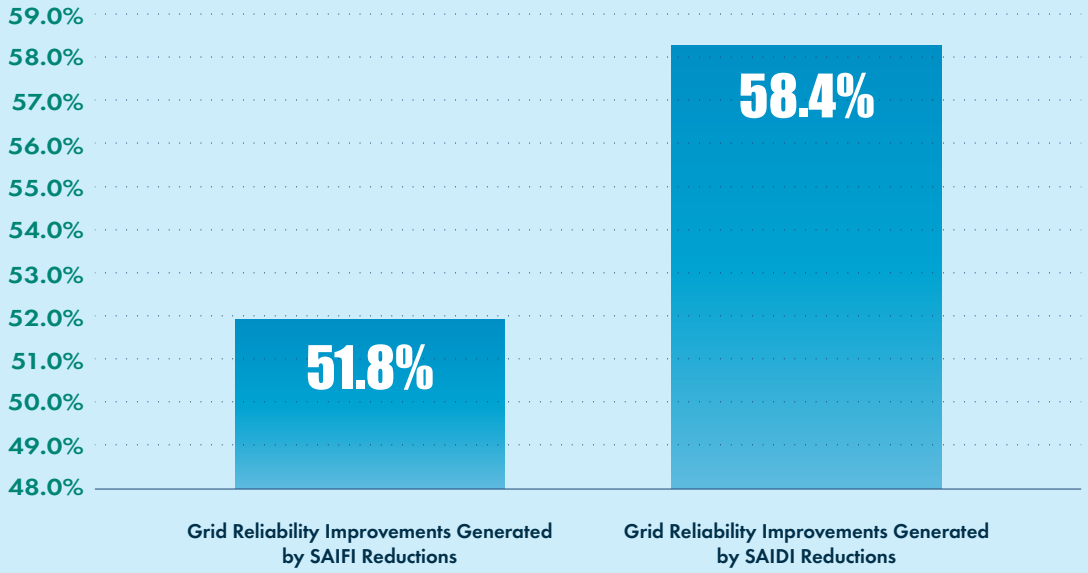


Figure 12 - Percentage Grid Reliability Improvement Resulting from Anticipated SAIFI and SAIDI Reductions



ACCEPTED FOR PROCESSING: 2/21/2018 3:27 PM; CCPOS Docket No. E-7, Sub 1214; Page 26 of 59

ACCEPTED ELECTRONICALLY - 2021 May 27 PM 05:27 SCPSC - Docket # 2018-206-E - Page 27 of 259

Major Event Disruptions

The SAIFI and SAIDI projections in Figures 11 and 12 do not consider the potential benefits related to avoided or shortened outages during major events. Clearly hurricanes, such as Matthew in 2016, are included in the impacts of major events, but there are many other smaller scale multi-day events such as ice, severe thunderstorms, and severe wind storms that also qualify as major events and result in outages experienced by Duke's customers and are included in the major event data. In 2016, Duke customers that experienced an MED outage event (or events) in South Carolina were out of power for an average of 15 hours. While MEDs are less common, the impacts to customers, businesses, and communities are more severe. Based on an analysis provided by Duke Energy, the grid investment plan is projected to reduce the minutes of interruption time associated with these major event outages by 30 percent on average, as Table 6 denotes.

Table 6 – Current Reliability Associated with MEDs in South Carolina

	Customer Interrupted	Customer Minutes Interrupted
10-Year Historical Average, S.C.	232,271	209,705,028
Estimated Reduction (%)	33%	30%
Hypothetical MED, after project completion	154,847	146,793,520

This method only partially captures the value from the most severe events like Hurricane Fran, Floyd, and Matthew as well as severe winter icing events like the December 2002 Ice Storm. Models do not effectively capture the community impacts from these most severe events where widespread infrastructure damage may mean limited access to basic needs such as fuel, food, and shelter. In many cases (particularly in South Carolina's most rural areas) these critical services being available are directly tied to electric infrastructure repairs making material progress. An effective example to illustrate these broader benefits comes from looking at a specific analysis applied to Hurricane Matthew events and projects the outcomes that would have occurred if the proposed grid investments had already been completed.

A projected outage event reduction of 33 percent and a 28 percent reduction in duration from Matthew for the combined DEC/DEP South Carolina would have the potential to move Hurricane Matthew restoration completion from 6 days to approximately 4 days (excluding areas where flood waters prevented access). In addition, customers impacted from the event would have dropped by 26 percent. DEC South Carolina impacted regions would have experienced 28 percent fewer events, which would help to speed restoration in the more lightly hit areas and freeing those resources for re-allocation into harder hit areas once restoration was completed.

ACCEPTED FOR PROCESSING 2018 May 27 PM 03:09 SCPSC Docket No. 2018-206-E - Page 28 of 259

Measuring the Economic Impact of All Unplanned Power Outages

In order to determine the economic impact resulting from reductions in unplanned power outages due to grid improvements over the next decade, this study began by taking SAIFI and SAIDI projections developed by Duke Energy (listed in Figures 11 and 12) for non-major events along with data on the number and type of Duke customers (i.e., residential, business, and commercial) and used these as inputs into the Interruption Cost Estimate Calculator (ICE) developed by the U.S. Department of Energy. The ICE model specifically calculates the average interruption cost for residential, business, and commercial customers for a given SAIFI/SAIDI data pair using a regression model that takes into account factors such as the duration of the outage, the industry affected, household demographics patterns, and various seasonal factors.[12] By estimating the interruption costs associated with current SAIFI/SAIDI projections vs. SAIFI/SAIDI projections that take into account grid improvements and then subtracting the latter from the former, the annual direct cost savings resulting from reliability improvements can be determined.

These direct cost savings, however, do not represent the full economic impact of reliability improvements. When businesses experience these cost reductions, over time they will begin to expand their economic activities through additional purchases of raw inputs and the hiring of additional employees. Both sets of activities represent new economic activity that is the result of the direct cost savings due to reliability improvements. To specifically estimate the additional economic activity that businesses undertake as a result of these cost savings, the IMPLAN model was used.[13]

To estimate cost savings for businesses and households associated with reductions in unplanned power outages during Major Event Days (MEDs), Duke Energy took the 10-year historical values described in Table 6 to define an annual average for MED events (including typical customers interrupted (CI) and customer minutes interrupted (CMI) from major events annually). Duke Energy applied this annual average to project estimates of the avoided CI (customers interrupted or impacted) and CMI (customers minutes of interruption or duration) reductions that would be realized as a result of proposed Power Forward grid investments. These data, in turn, were then used as inputs into the ICE tool to estimate the direct cost savings of reliability improvements as the improved infrastructure comes on line over the investment period. Once again, these direct cost savings estimates were then translated into total economic impacts through use of the IMPLAN model.

[12]Additional detailed methodology on the ICE model can be found at http://icecalculator.com

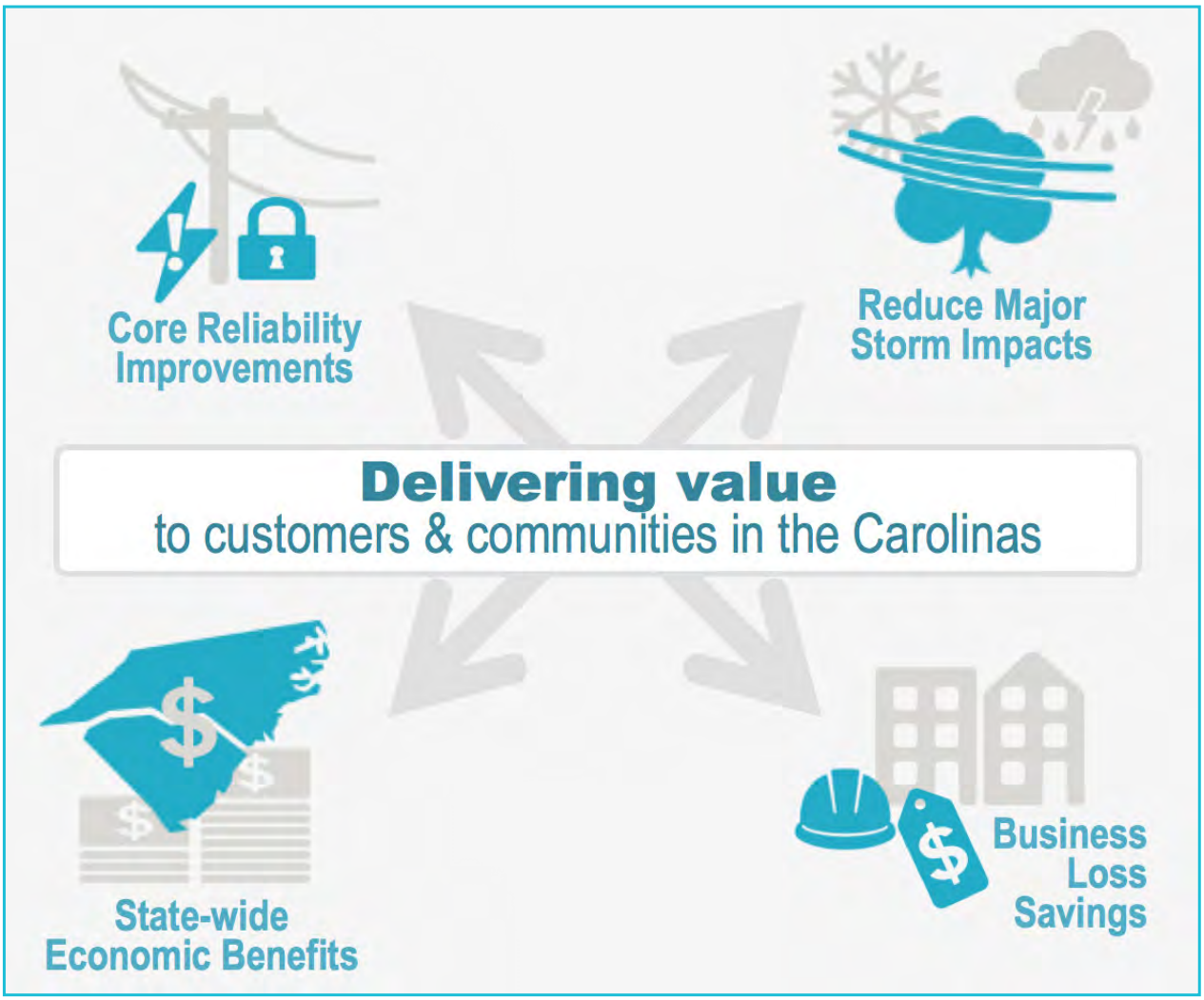
[13]Cost savings estimates derived from the ICE model serve as inputs into the South Carolina IMPLAN model. Because IMPLAN does not provide elasticity measurements that document how dynamic changes in production costs will affect industrial purchasing activity over time, this study used existing elasticity measurements for the major industrial sectors from external sources.

Primary Results

The positive economic impacts that result from the Power/Forward Carolinas Initiative can be represented by examining the "four corners" of the initiative – that is – by examining the multiple ways in which value is provided to customers and communities in South Carolina and the broader Carolinas region. Consider each of the following benefits of grid improvement as summarized in the figure below:

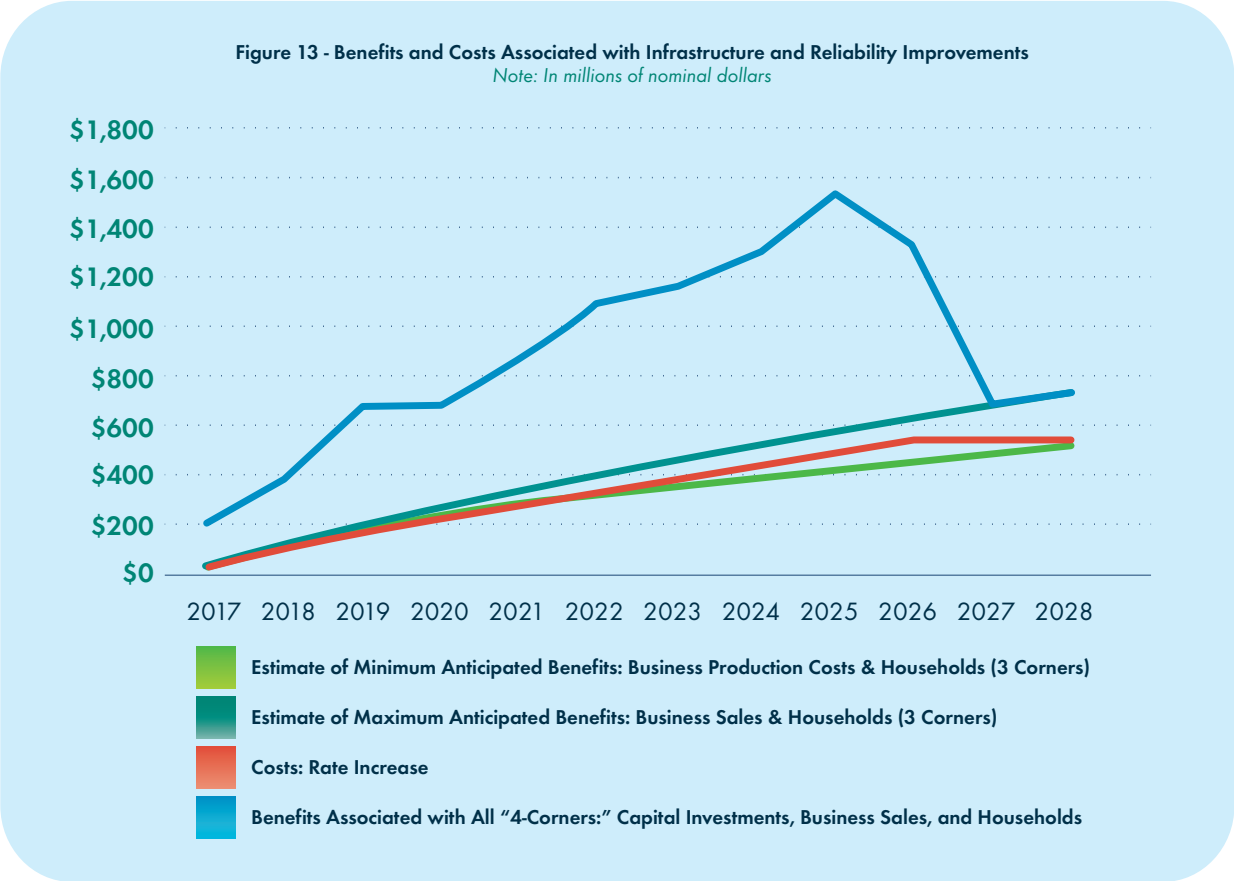
- Core Reliability Improvements
- Statewide economic benefits resulting from all capital investments associated with building new infrastructure
- Loss avoidance among businesses and households
- Reduction of impacts associated with major event days

Each of these benefits can be quantified for the state of South Carolina.



ACCEPTED FOR PROCESSING 2018 May 29 PM 1:09 SCPSC Docket # 2018-206-E - Page 29 of 259

Figure 13 summarizes the total benefits and costs associated with infrastructure construction and reliability improvements between 2017 and 2028. Note that the benefits increase over time as new infrastructure comes on line. Rate increases grow along with the grid investment and generally track closely with business and household reliability benefits.



Consider first the costs (annual rate increases) associated with grid improvements in Figure 13. Note that annual rate increases are expected to continue until all capital investments are completed in 2026, at which time rate increases will terminate and costs will remain relatively constant moving forward. Total annual costs (rate increases) will range from $84 million in 2018 to $530 million by 2028 in South Carolina.

The anticipated gross benefit of reliability improvements (business production costs and households) will range from approximately $79 million in 2018 to $503 million by the end of 2028. If these avoided costs were then translated into new sales activity by businesses, this sales volume would total $724 million by 2028. Thus, the long-run annual benefit for businesses and households in South Carolina (by 2028) associated with all reliability improvements will likely range between $503 million and $724 million depending upon the extent to which businesses are able to translate cost savings into new sales activity. This "benefits range" thus includes three of the four corners addressed above: core reliability improvements, loss avoidance among businesses and households, reduction of impacts associated with major event days.

Combining the maximum anticipated economic benefits associated with the three corners with the all capital investments associated with grid improvement ("corner 4") yields a total economic impact ranging from $184 million in 2017 to $1.5 billion in 2025 (the peak year of capital investment). This final set of estimates fully integrates the combined effects of the "four corners" of the grid improvement project.

ACCEPTED FOR PROCESSING - 2018 May 29 PM 03:09 SCPSC Docket # 2018-206-E - Page 30 of 259

Appendix I – Economic Impact of Duke Energy in South Carolina by County

Counties Ranked by Total Economic Output

County	Total Employment	Total Labor Income	Total Economic Output
York	3,039	$223,312,948	$1,138,015,632
Oconee	3,267	$257,040,059	$1,120,564,389
Greenville	1,766	$97,331,311	$838,324,508
Darlington	2,076	$152,112,583	$756,809,003
Spartanburg	1,199	$53,569,623	$686,359,339
Charleston	1,027	$42,345,515	$619,256,003
Richland	360	$15,485,301	$214,477,249
Anderson	469	$28,270,241	$208,480,445
Florence	323	$20,358,054	$128,834,310
Cherokee	200	$8,588,012	$117,846,760
Sumter	191	$9,187,002	$103,432,097
Lexington	120	$4,943,199	$72,288,777
Berkeley	101	$4,170,490	$60,988,768
Pickens	114	$5,958,040	$56,590,709
Lancaster	131	$8,028,786	$55,539,190
Greenwood	116	$6,589,736	$53,303,783
Chester	93	$4,956,042	$45,837,341
Orangeburg	62	$2,553,287	$37,338,975
Horry	62	$2,548,357	$37,266,876
Chesterfield	49	$2,402,273	$25,620,774
Union	40	$1,664,088	$24,335,436
Marion	54	$3,238,313	$22,719,668
Kershaw	30	$1,230,303	$17,991,808
Williamsburg	40	$2,393,339	$16,007,199
Hampton	24	$975,351	$14,263,429
Laurens	18	$754,652	$11,035,940
Dillon	16	$669,678	$9,793,296
Newberry	18	$861,367	$9,458,215
Georgetown	15	$631,429	$9,233,940
Clarendon	12	$500,189	$7,314,712
Colleton	51	$2,097,760	$6,709,179
Lee	11	$455,974	$6,668,108
Marlboro	11	$454,529	$6,646,985
Fairfield	11	$573,577	$5,292,586
Jasper	36	$1,490,853	$4,768,133
Abbeville	6	$253,675	$3,709,721
Edgefield	3	$137,772	$2,014,757
Bamberg	15	$619,346	$1,980,827
Beaufort	2	$102,358	$1,496,868
Dorchester	2	$88,179	$1,289,518
Barnwell	2	$72,459	$1,059,631
Allendale	8	$315,168	$1,007,990
McCormick	1	$30,651	$448,236
Aiken	1	$26,842	$392,532
Saluda	0	$770	$11,253
Calhoun	0	$35	$513

ACCEPTED FOR PROCESSING 03-20-2018 ; 2:01 PM ; SCPSC ; Docket # 2018-6-E - Page 31 of 1259

ACCEPTED FOR PROCESSING - 01/18/2018 3:27 PM - SCPSC - Docket # 2018-206-E - Page 1 of 259

Power/Forward Carolinas

A 10-Year Plan to Modernize South Carolina's Energy Grid

About this overview

The purpose of this report is to provide an overview of the Power/Forward Carolinas grid improvement plan and highlight the benefits and value to the Duke Energy customers of South Carolina.

We will periodically revise this document to reflect any material updates in the work plan or budgets through the duration of this long-term initiative.

Contents include:

The Need is Clear ……..2
Seven Strategic Programs….6
Four Corners of Value……..13
Conclusion……..17
Appendices……18

January 2018

ACCEPTED FOR PROCESSING - 2018 May 27 PM 12:09 SCPSC Docket # 2018-206-E - Page 2 of 259

1.0 THE NEED IS CLEAR

Technology is driving profound change across South Carolina, and changing the way customers use electricity and interact with their electric provider. Customers want a new experience, built upon information about how they personally use energy and tools to harness that energy and power their lives. Their desire is simple – perfect power, every day, every hour..

From routine, day-to-day activities -- like charging a cell phone – to powering high-tech manufacturing, the electric power grid has become the backbone of our state's digital economy and the electrons that flow through the grid are its virtual lifeblood.

To meet these high expectations, we cannot simply maintain the grid of Edison's imagination. The grid and its components are aging, outage events and duration are increasing, and technology is pushing the machine beyond its limits.

The time is now to reimagine the way we deliver electricity to customers. The time is now to build a more intelligent, resilient power grid, built to provide customers with a better energy experience and built to power South Carolina forward in the years ahead.

Customer expectations have changed

Customers – more than ever – expect more options, greater reliability and value. This change in expectations has been greatly influenced by the ongoing evolution and disruption of retail markets, both online and in physical outlets, resulting from increased e-commerce, or the "Amazon Effect." Self-selecting billing and payment dates, scheduling appointments, accessing real-time data, perfect power and immediate service repairs after outages are all examples of basic services consumers expect but require technology to deliver.

A 2017 J.D. Power and Associates satisfaction study of electric utility residential customers confirms this shift in expectations, finding, among other things that:

- Customers are increasingly going directly to their utility's website for information, with more than one-third of customers accessing website content by mobile phones or tablets.
- Customers who experience an extended outage are less satisfied when the outage is caused by equipment failure (Duke Energy's fault) vs. a hurricane or auto accident.

ACCEPTED FOR PROCESSING - 01/31/2018 3:27:01 PM - SCPSC - Docket # 2018-206-E - Page 15 of 259

- Customer satisfaction increases during outages with each additional piece of information that is provided (e.g. outage start time, outage cause, number of customers affected)
- Customers are more satisfied with the price they pay, and even increases in that price, when that money is used for infrastructure investment, reliability, cleaner generation and enhanced service.

To deliver on customer expectations, we must do more than maintain the power grid; we must make the appropriate investments to transform it, leveraging technology to modernize its operation, making it more reliable, smart and secure.

People rely on electricity more than ever to power their lives and businesses. Power is no longer a convenience nor is it a luxury.

Increasingly, all electric power customers, whether residential, industrial or commercial, rely upon electricity every minute of every day. Like the roads and bridges that connect communities across the state, electricity is part of the critical infrastructure of the South Carolina.

At Duke Energy, we currently invest $1 billion annually in preventative maintenance for our reliable grid. Year-after-year, we have replaced mechanical components with mechanical components. But the capability of the grid has remained essentially unchanged, even as customer expecations and the technology have changed exponentially. The needs of 21st-century customers cannot be effectively met without implementing a 21st-century grid to match.

Proven industry data including System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) metrics are reflecting our power grid's experience with increased weather events and greater demands. Recent benchmarking against utility peers reveals that Duke Energy Progress and Duke Energy Carolinas are in or nearing fourth quartile performance for reliability.

Projected System Average Interruption Duration Index Improvements (South Carolina)

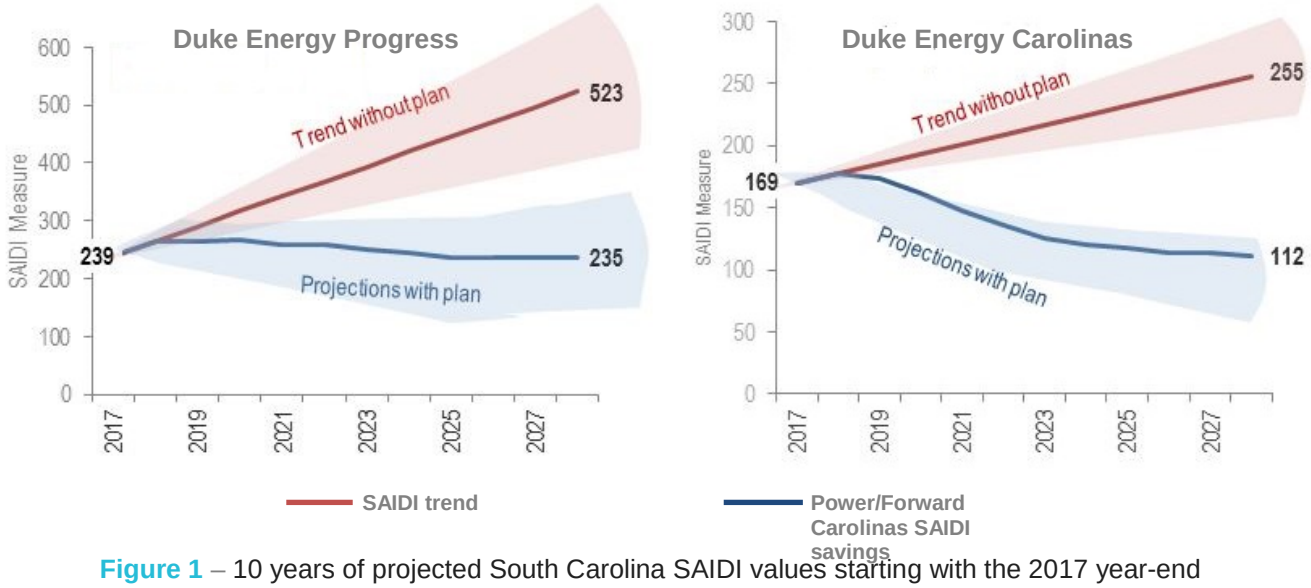


Figure 1 – 10 years of projected South Carolina SAIDI values starting with the 2017 year-end projection and ending at the 2028 year-end projection. The information charted denotes 10 years of SAIDI projections both with and without Power/Forward Carolinas for DEC and DEP (SC only).

ACCEPTED FOR PROCESSING 05/21/2018 3:27 PM SCPSC Docket # 2018-206-E - Page 15 of 259

Power/Forward Carolinas will reduce the number and duration of routine outage events for customers. To determine the reliability improvements expected from Power/Forward Carolinas programs, our engineers applied decades of historical data from tracking performance of power reliability programs and projected the impacts of the individual program measures found in Power/Forward Carolinas. Those improvements were factored into the SAIDI and SAIFI forward-looking trend projections to produce the performance with the Power/Forward Carolinas impacts (blue lines in Figure 1.) To acknowledge the increasing uncertainty of these projections further out in time, we have overlaid cones of uncertainty for each reliability measure forecast. These cones of uncertainty are merely illustrative. Additional work is underway to apply even more rigorous methods to determine actual levels of forecast uncertainty.

Figure 1 clearly denotes a projected SAIDI improvement of up to 60%. The additional projections found in Appendix B illustrate similar findings for SAIFI.

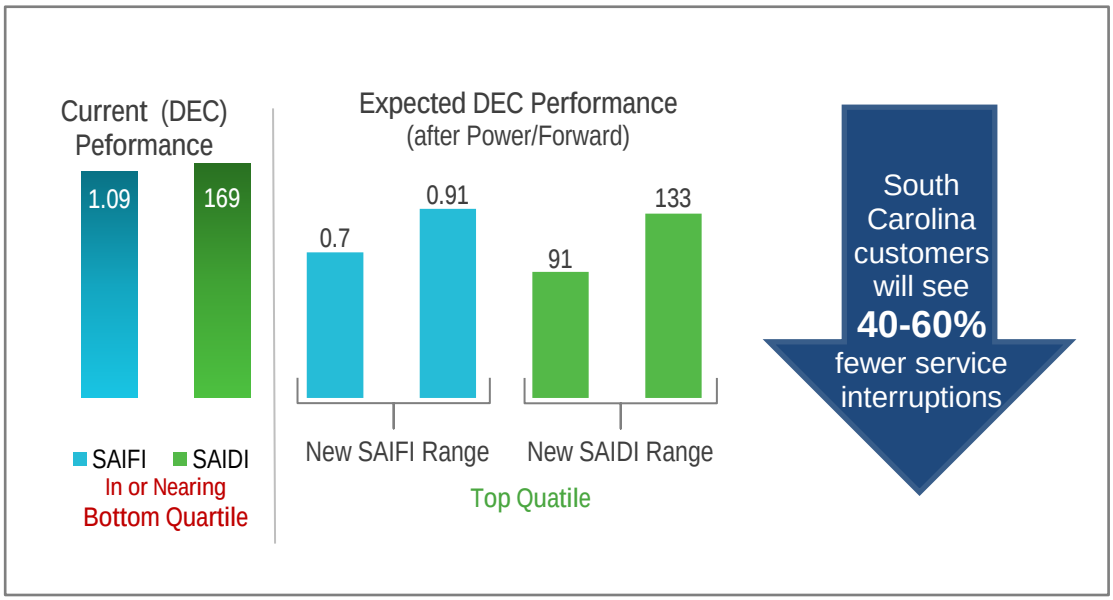


Figure 2 – This data reflects significant improvements that occur in Duke Energy Carolinas' SAIFI and SAIDI reliability performance measures in South Carolina after Power/Forward Carolinas is implemented. Ranges of improved performance are based on historic load and weather information and do not reflect any impacts from changes in weather severity or customer load profiles.)

Similarly, Figure 2 provides a sample of the impact of Power/Forward Carolinas on SAIDI and SAIFI for DEC in South Carolina. Beginning with 2017 year-end values of DEC SAIFI and SAIDI (1.09 and 169, respectively), upon full implementation of Power/Forward Carolinas, Duke Energy expects to see SAIFI and SAIDI improvement in the range of 40-60 percent.

Interestingly, according to J.D. Power research, customers who experience a series of momentary power outages are just as unhappy as those with a sustained power outage.

To achieve fewer outages and greater reliability, businesses and households will necessarily experience an increase in rates as a result of these investments.

ACCEPTED FOR PROCESSING - 2018 May 22 PM 02:09 SCPSC Docket # 2018-206-E - Page 5 of 259

Here are a number of actual examples of reliability impacts across our customer base:

1) According to a 2017 study by research economist Dr. Joseph Von Nessen, at current grid performance levels, retail electric customers in South Carolina experience approximately $334 million in annual outage costs related to normal service interruptions (non-major events), with businesses making up 98 percent of this impact. These business losses could have represented potential costs savings and reinvestments in growth and new hiring by local South Carolina businesses.

2) An industrial customer reported actual lost profit margins of nearly $70,000 from four hours of outage time following Hurricane Irma.

3) A Materials Producer reported $3.5M loss due to a single plant interruption

Clearly, improvements from the Power/Forward Carolinas investment will result in fewer outages and blinks and provide much more reliable power for customers in South Carolina.

Severe weather events are increasing, and the threat of cyber and physical attacks on the grid are real.

Our grid is responding to an increasing number of storms at a time when reliability is more essential to customers and the economy than ever before. The National Weather Service has cited an 80 percent increase in the number of severe weather events impacting the U.S. from 2000 to 2016, which has led to an increase in major event days (MEDs). Wind and ice storms are two of the leading causes of outage conditions for our power systems, and flooding has also become an increasing concern.

A **major event day (MED)** is a day in which a major reliability event, such as a hurricane or major ice storm, causes an electric utility to shift into “storm restoration mode” in order to adequately respond.

Combined with this, the threat of cyber and physical attacks on the grid are real, and of increasing concern. According to a USA Today analysis of federal energy records, about once every four days part of the nation’s power grid is struck by a cyber or physical attack, one which could leave millions in the dark. As one of the largest investor-owned utilities in the U.S., Duke Energy is a prime target for increasingly sophisticated cyber crimes. Power/Forward Carolinas investments are designed to mitigate the impact of major storm events, as well as to harden and defend the grid against critical cybersecurity risks.

Technology is now available to enable a transition from a mechanical grid that is aging to a more modern, digitized grid.

We’re making smart investments to better serve customers and to promote South Carolina’s drive for continued growth and development. With an increasingly global economy and greater need for consistent, reliable power, now is the time to transition to a modern, digitized grid. This transition includes replacing outdated, analog infrastructure with advanced digital technology that enables a

21st-century economy.

For example, self-optimizing grid technologies will identify and isolate faults in near-real time and rapidly re-route power, reducing the average number of customers impacted by an outage to a fraction of what occurs today.

Intelligent sensing will remotely monitor grid heath and improve overall system operations and maintenance activities – preventing unplanned outages before they occur. And the deployment of digital smart meters will empower customers with increased options and services to help customers take control of their energy usage.

Just as the past 10 years modernized the way Duke Energy generates electricity, investments over the next 10 years will leverage new technologies to create a smarter, more resilient and more secure electric power system that delivers the services our customers expect and deserve.

ACCEPTED FOR PROCESSING - 10/18/2018 3:27:12 PM - SCPSC - Docket # 2018-206-E - Page 6 of 259

ACCEPTED FOR PROCESSING 2018 May 29 PM 02:09 SCPSC Docket # 2018-206-E - Page 15 of 259

2.0 SEVEN STRATEGIC PROGRAMS

The Power/Forward Carolinas plan is comprised of seven strategic programs. Deploying these improvement programs will enable us to better meet our customers' needs and expectations, including better managing their energy usage and reducing outage frequency and duration. It will also enable us to accelerate storm restoration, protect against physical and cyber security threats and better manage distributed energy resources (DER) and energy storage technologies.

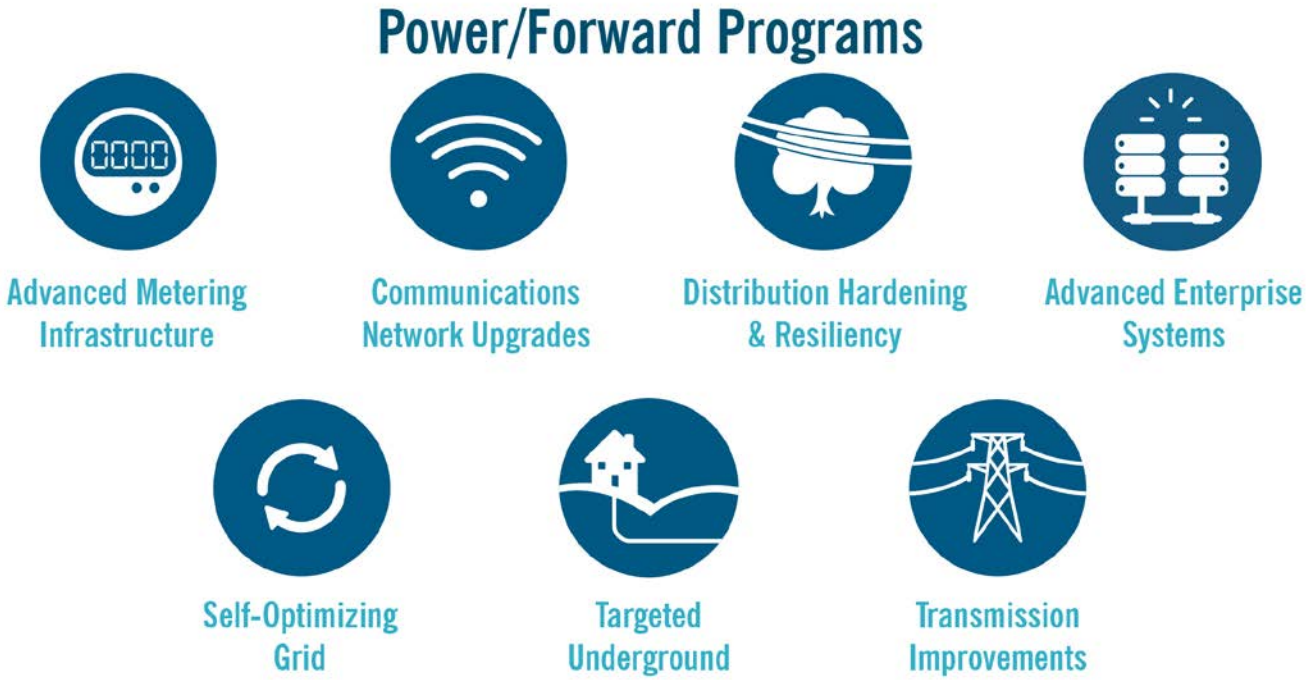


Figure 3 – Power/Forward Carolinas seven strategic programs

ACCEPTED FOR PROCESSING - 2018 May 2 9:12 AM - SCPSC - Docket # 2018-206-E - Page 8 of 259

2.1 Power/Forward Carolinas Strategic Programs

Targeted Underground (TUG)	Relocate strategically targeted lines with higher reliability risk from overhead to underground construction to decrease outages, reduce momentary interruptions (blinks), improve major storm restoration time, and improve customer satisfaction.
Distribution Hardening & Resiliency	Upgrading equipment to lower system outage risk due to asset failure (hardening) and to minimize the impacts of events and improve ability to recover rapidly when events occur (resiliency). This program also addresses asset end-of-life opportunities, system design, and physical and cyber security.
Self-Optimizing Grid (SOG)	Building a smarter, more resilient distribution system that isolates problems in near real-time and re-routes power to exponentially reduce impacts to customers and communities. To enable SOG functionality, circuits will have automated switches approximately every 400 customers, or 2 megawatts (MW) peak load, or 3 miles in circuit segment length.
Advanced Metering Infrastructure (AMI)	Deploying digital smart meters and associated communication devices to provide enhanced customer billing and payment options, detailed usage data, and energy-savings tools, as well as enhanced operational functions such as automated meter-reading, remote service connections and outage detection.
Communication Network Upgrades	Providing high-speed, high bandwidth, secure communication pathways (fiber optic and wireless) for the increasing number of smart components, sensors, and remotely activated devices on the transmission and distribution systems.
Advanced Enterprise Systems	Upgrading systems that manage grid devices, monitor equipment health, analyze data from monitoring sensors to improve system efficiency and operations, and enable grid self-optimizing technologies.
Transmission Improvements	Deploying equipment upgrades, flood mitigation, physical and cyber security and system intelligence to make a smarter, more reliable and secure transmission system.

ACCEPTED FOR PROCESSING - 10/18/2018 3:27:21 PM - SCPSC - Docket # 2018-206-E - Page 9 of 259

2.2 Estimated Program Costs and Operational Benefits

Duke Energy expects to invest $3 billion in South Carolina to implement the plan's seven strategic programs over a 10-year period. In general, our standard planning and prioritization processes will be used for Power/Forward Carolinas programs. For new transformational programs (e.g., Self-Optimizing Grid, Targeted Underground), we have developed new guidelines to provide additional guidance on the planning, prioritization and execution of these programs.

The annual Power/Forward Carolinas planning process will identify the most cost-effective solutions to accomplish program objectives and maximize value to customers.

Program-level cost drivers and methodologies for each of the seven strategic programs are described below with supplemental information provided in *Appendix A, Power/Forward Carolinas Cost Estimate Supplemental Information.*

Program details and cost estimates outlined below represent the initial 10-year cost estimates for Power/Forward Carolinas and are not necessarily the full population of detailed projects that will be a part of the plan. Some projects are further along in the planning cycle and have more detailed budgets, while others are higher-level estimates of future efforts. Each year, we will scope and budget the work for the following year, which may shift funding among programs and projects, shift projects earlier or later in the timeline, or add or remove projects as applicable based on resource availability and benefit achievement.

10 Year Power/Forward Initiative Capital Investments

Targeted Underground	$1.3 B
Distribution Hardening and Resiliency	$704 M
Transmission Improvements	$533 M
Self-Optimizing Grid	$385 M
Advanced Metering Infrastructure	$107 M
Communications Network Upgrades	$ 74 M
Advanced Enterprise Systems	$ 23 M
Total	**$3.1 B**

ACCEPTED FOR PROCESSING 2018 May 27 PM 02:20 SCPSC Docket # 2018-206-E - Page 10 of 26

Program Cost Estimate Details

Targeted Underground – ($1.3 billion) The bulk of this program focuses on fused tap lines that run through residential neighborhoods. For this work, total cost estimates are based on unit costs of $400K-$500K per mile to convert overhead lines to underground. Feeder level undergrounding is much more costly, typically running more than $1 million per mile. These costs are based on industry benchmarking for tap line undergrounding, and the scope of approximately 2,300 miles for South Carolina. These costs include engineering and construction, along with brownfield development costs to engage and negotiate with all affected customers. For example, the company will employ dedicated land agents and engagement specialists to secure easements, and estimates the need to secure ~7,500 easements across the enterprise in 2018 alone.

Distribution Hardening & Resiliency – ($704 million) This program comprises a variety of work streams, many based on historical unit cost averages per mile or foot. Examples in this category include cable replacement (767 miles at approximately $150K per mile) and deteriorated conductor replacement (855 miles at approximately $100K per mile). Others are based on historical unit cost averages per unit upgraded. Examples in this category include transformer retrofit (49,000 at approximately $1,200 per unit) and pole replacement (5,500 poles at approximately $3,300 per pole). Several programs do not fit into either category and their costs are based on subject matter expertise. An example of this is the area of vulnerability[1] program (five locations at approximately $5 million per area).

Transmission Improvements – ($533 million) This program is made up of a variety of transmission grid reliability programs. Equipment engineers and subject matter experts have identified specific assets that need to be replaced to ensure continued transmission resiliency and reliability. There are 35 reliability programs identified to replace various types of equipment on transmission lines and in substations. The majority of the programs are based on historical unit cost averages per unit replaced. Examples in this category include breaker replacements, substation transformer replacements, and line equipment replacements and hardening. These cost estimates are asset-based, however work will be implemented on a substation or site basis. Other programs such as Condition-Based Monitoring (CBM), Phasor Measurement Units, Health and Risk Management (HRM) and physical/cyber security programs, are project-based and have standalone cost estimates.

Self-Optimizing Grid – ($385 million) Approximately 50 percent of the distribution circuits (~460 circuits) in South Carolina, serving approximately 80 percent of customers in the state, will be upgraded to self-optimizing grid guidelines for switch automation, connectivity, and capacity. Average unit cost per circuit is estimated at $840K and is based on historical cost averages for similar types of work. The standard deviation from this average is large, with costs ranging from $200K to $2 million per circuit. Many circuits already have appropriate connectivity and capacity and will only require switch automation. Other circuits will require significant capacity upgrades and new circuit ties.

[1] Area of Vulnerability is defined as "a portion or portions of the electric distribution system where the risk and/or probability of a system disturbance results in an impactful service disruption to the customer(s) and correspondingly high economic, societal, or reputational impact."

ACCEPTED FOR PROCESSING 03/21/2018 ORIGINAL DOCUMENT SCPSC Docket # 2018-206-E - Page 11 of 26

Advanced Metering Infrastructure – ($107 million) These costs are based on the approximate South Carolina allocation of the standalone cost estimates for AMI in the North Carolina 2017 Smart Grid Technology Plan Updates in Docket No. E-100, Sub 147.

Communications Network Upgrades – ($145 million) This program is made up of a variety of work streams and the costs identified are the approximate allocations for Duke Energy Carolinas and Duke Energy Progress in South Carolina. Some programs are project-based and have standalone enterprise cost estimates. For example, the Land Mobile Radio End-of-Life project (in the Mission Critical Voice Communications workstream) is estimated at $130.3 million total (approximately $29.5 million allocated to South Carolina) and the Vehicle Area Network project estimated at $13.8 million total (approximately $3.1 million allocated to South Carolina). Other communications efforts have been estimated based on historical unit upgrade cost averages. For example, the tower and shelter upgrades are estimated at $500K per tower and $150K per shelter, based on historical average costs. These cost estimates are refined as specific vendor costs become available. In South Carolina, DEC and DEP plan to replace approximately 11 towers ($500K per tower) and 23 shelters ($150K per shelter) during the 10-year plan ($9.0 million) with the remainder of the budget allocated to power supply replacement where necessary ($1.8 million). This program's cost estimates have changed considerably since the initial 10-year forecast was developed. The figures above represent the most current planning and scoping estimates.

Advanced Enterprise Systems – ($23 million) These cost estimates are based on the stand-alone cost estimates for each enterprise system program (e.g., Distribution Management System, Outage Management System, SCADA). Costs identified are the approximate allocations for DEC South Carolina and DEP South Carolina.

Additional Operational Benefits

Beyond the positive benefits the Power/Forward Carolinas plan generates for the state (discussed in Section 3), additional value is expected in the form of cost savings for South Carolina distribution operations. Based on the reduction in outage events resulting from the 10-year grid improvement plan, we estimate approximately $10.6 million in additional annual benefits from reliability-related operation and maintenance (O&M) savings opportunities.

These outage event reduction O&M savings include:

- vegetation management ($3.7 million)
- outage restoration activities ($3.8 million)
- major storm event restoration ($3.1 million)

These values reflect O&M cost savings beginning in year 11 and do not include O&M cost savings resulting from our AMI program.

We anticipate additional Power/Forward Carolinas plan benefits resulting from:

- Improved management of private distributed energy resources as customer adoption grows (e.g., grid-connected rooftop solar);
- Increased protection from cyber and physical security attacks

- Improved environmental impacts from:
    - Reduced risk of oil spills and gas leaks due to applicable equipment replacements (estimated to avoid over 1,300 gallons of oil spilled and 100 oil-spill events annually); this will also result in lower environmental clean-up costs (estimated to result in more than $150,000 in annual savings across the Carolinas);
    - Reduced risk of avian collisions as a result of undergrounding overhead facilities (this will also result in cost reductions associated with levied fines relating to eagle and other bird impacts).

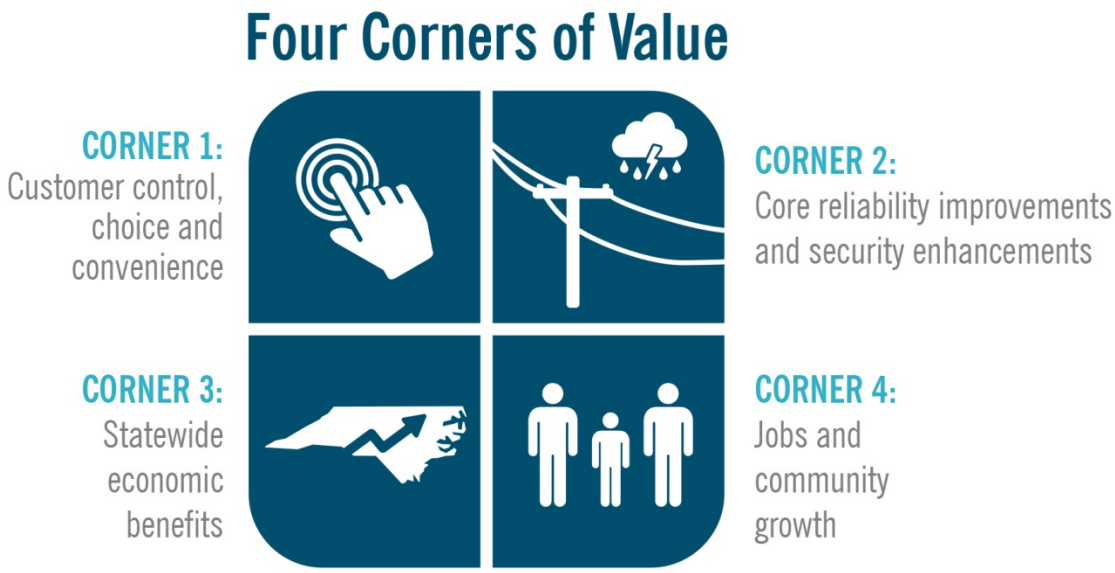
These are only ancillary benefits. A discussion about the direct customer and state-wide value of our plan is provided in the following section.

ACCEPTED FOR PROCESSING - 2018 May 29 PM 02:09 SCPSC Docket # 2018-206-E - Page 12 of 26

ACCEPTED FOR PROCESSING 01/31/2018 3:27 PM SCPSC Docket # 2018-206-E - Page 13 of 259

3.0 FOUR CORNERS OF VALUE

Duke Energy has proudly served customers in the Carolinas for more than 100 years. As we work to continually improve that level of service and innovate to meet evolving customer needs, we're launching new products and services, improving core electric power reliability, driving economic growth, and developing jobs and communities. We identify these areas of value, or "four corners," below:



Power/Forward Carolinas Value Proposition:

Below are several examples showing the value proposition Power/Forward Carolinas will bring in each of the four corners.

Corner 1: Customer control, choice and convenience

- Access to new service and billing options like Pick Your Due Date and Usage Alerts
- Availability of detailed daily usage data, making it easier to use energy more efficiently
- Option to stop/start service remotely
- Improved outage response times and quicker repairs

Corner 2: Core reliability improvements and security enhancements

- Reduction in regular-service outages by 40 to 60 percent
- Estimated 30 percent reduction in the frequency and duration of major event outages, including named storms and hurricanes
- Increased protection from cyber and physical security attacks

ACCEPTED FOR PROCESSING 01/31/2018 3:27 PM 10:29 AM SCPSC Docket # 2018-206-E - Page 16 of 26

Figure 4 shows the historic 10-year average numbers of customer interruption and minutes of interruption due to major events which are not reflected in SAIDI and SAIFI measures. Based on our analysis, the improvements implemented as part of Power/Forward Carolinas would have reduced these impacts by one third.

REDUCTION IN MAJOR STORM IMPACTS	Customers interrupted (CI)	Customer Mins Interrupted (CMI)
10-year historical average, SC	232,271	210 million
Estimated reduction (%)	33%	30%
Forecasted impacts after Power/Forward Carolinas	**154,847**	**147 million**

Figure 4 – Average annual MED events and duration anticipated in South Carolina (DEC and DEP) before and after Power/Forward Carolinas

Consider again the long and widespread outages stemming from Hurricane Matthew. This same analysis applied to Matthew shows a significant reduction in grid damage and associated restoration.

Figure 5 illustrates that improvements implemented as part of Power/Forward Carolinas would have eliminated more than 30% of the combined power outages experienced in Hurricane Matthew. This reduction allows customers to get back to work more quickly or better support their loved ones who were impacted.

Hurricane Matthew (2016)

South Carolina	% CI Eliminated	% CMI Eliminated	% Outages Eliminated
DEP SC	27%	28%	33%
DEC SC	11%	21%	28%

Figure 5 – Number and duration of Hurricane Matthew power outages in SC that would have been avoided with Power/Forward Carolinas implementation

Corner 3: Statewide economic benefits

- The grid investment plan will result in a total economic output of $5.8 billion over the 10 years of implementation.
- The project represents a nearly 10 percent increase in total capital investment for the state for each of the next ten years. Put another way, the average annual capital investment of the grid improvement project – $333 million – would rank 2nd among all capital investment announcements by the S.C. Department of Commerce in 2016.
- By 2028, the grid investment plan is projected to provide reliability improvements to South Carolina households and businesses that will total between $503 million and $724 million annually from reduced outage-related costs.
- The project will generate around $116 million in in new annual tax revenue for the state, and help attract new industry and business to make our communities and economies stronger.

ACCEPTED FOR PROCESSING - 2018 May 29 PM 12:09 SCPSC Docket # 2018-206-E - Page 15 of 259

Corner 4: Jobs and community growth

- An average of nearly 3,300 new jobs created for the state of South Carolina through the Duke Energy grid investment, which will expand to more than 5,400 jobs during the project's peak year.
- Almost $200 million in new salaries and wages will be generated, on average, during each year of the project, with nearly $315 million being generated during peak construction years (totaling approximately $2 billion over the ten years of the plan).

As highlighted in our discussion of Power/Forward Carolinas program costs (Section 2.2), the grid improvement plan will mean direct capital investments of more than $3 billion over the 10-year plan. This level of direct investment will generate $5.8 billion in total economic output for the state of South Carolina throughout the investment period. Duke Energy's capital investments and activity related to reliability improvements will generate more than $116 million in additional state tax revenues

Capital investments will also support more than 5,400 jobs across the state during the project's peak year, with Duke Energy expanding total employment to 2,400 direct employees and contractors to support Power/Forward Carolinas.

Duke Energy's contribution to statewide economic growth over the next 10 years is roughly equivalent to three major automotive manufacturing announcements in the state.

Combined Value for South Carolina Customers and Communities

The combined value that Power/Forward Carolinas generates for South Carolina customers can be illustrated in the following figure.

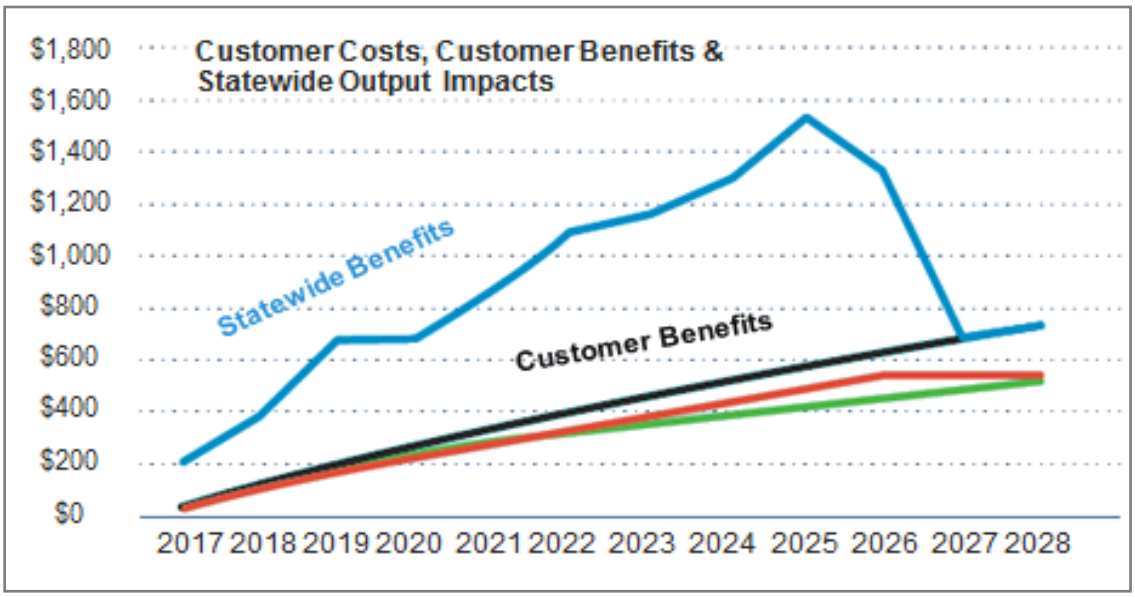


Figure 6 – Customer costs and benefits compared to statewide output impacts (in millions of nominal dollars)

- Customer cost: increased electricity rates
- Customer benefits: Reduction in outage-related costs
- Customer benefits: Reduction in outage-related costs plus potential increase in business sales
- Customer benefits: Total change in gross output

ACCEPTED FOR PROCESSING - 01/31/2018 3:27:09 PM - SCPSC - Docket # 2018-16-E - Page 16 of 259

Figure 6 charts four dimensions of economic impacts (in millions of dollars) over the 10-year plan period.

1) **Customer Cost** (red line) – charts the contributions of South Carolina customers for the Power/Forward Carolinas investments; this line is a function of electric rate increases over time.

2) **Baseline Customer Benefit** (green line) – charts the value of outage-related costs customers avoid as a result of improved grid reliability; this is Corner 3 value and is a function of the decreasing number of power interruptions and outage times.

3) **Additional Customer Benefit Opportunity** (black line) – charts the baseline customer benefits (illustrated by the green line) plus the additional potential value from converting those baseline savings into additional customer business profits; this is both a function of improving reliability and a function of how general market forces impact individual customer businesses over time.

4) **Statewide Benefits** (blue line) – charts the total change in gross economic output for the state, as a function of the reinvested business savings (illustrated by additional customer benefit opportunities, black line) as well as new jobs and increased state business activity created over time as a result of direct Power/Forward Carolinas capital investments.

Note that the overall statewide benefits continue to increase throughout the peak investment period year (2025). While the clearly measurable economic impacts from direct capital investments end with the cessation of our direct investing, the benefits resulting from the state's modernized and more reliable grid continue beyond 2028.

The increase in costs borne by customers associated with grid improvements (red line) are expected to continue until all capital investments are completed in 2026. After this point, costs will remain relatively constant going forward. Total annual customer costs in South Carolina will range from $84 million in 2018 to $530 million by 2028. We anticipate reliability improvements (Corner 3 discussion) to begin to generate avoided outage cost savings that could range from $79 million in 2018 to $503 million by the end of 2028 (green line). If these avoided costs were then translated into new sales activity by businesses, reliability benefits could grow as high as $724 million by 2028 (black line). Duke Energy's South Carolina customers could see an annual net benefit of up to $194 million in 2028 as those savings are converted into customer value.

Combining the maximum anticipated benefits from the three corners with all capital investments associated with grid improvement (Corner 4) yields a total potential impact of $10.5 billion for the state of South Carolina over the 10-year period.

4.0 CONCLUSION

South Carolina needs an energy grid that is smarter, more reliable and secure to grow the economy, create jobs and provide the services and energy experience that consumers expect and deserve. Creating this grid requires smart investments today to advance and modernize energy infrastructure to position South Carolina for future success.

The grid has served customers reliably for more than a century, but an aging, analog machine cannot sustain the growing expectations of our digitally-connected society. We must act now and move forward together to build a stronger, more prosperous future for the state.

This defining moment calls for a bold plan. That plan is Power /Forward Carolinas. It will transform the way Duke Energy serves customers, and will position the grid and the state for success now and for years to come.

ACCEPTED FOR PROCESSING - 2018 May 29 PM 02:09 SCPSC Docket # 2018-206-E - Page 17 of 26

Power/Forward Carolinas

SUPPLEMENTAL INFORMATION

(APPENDICES)

TABLE OF APPENDICES

Appendix A, Power/Forward Carolinas Cost Estimate Supplemental Information 19

Appendix B, Additional South Carolina Reliability Measures Information ……...24

Appendix C, Projected Impacts Avoided During Major Storms….....25

Appendix D, Measuring the Economic Impact of Reliability Improvements……26

ACCEPTED FOR PROCESSING 2018 May 27 PM 02:20 SCPSC Docket # 2018-206-E - Page 1 of 26

ACCEPTED FOR PROCESSING - 1/18/2018 3:27:07 PM - SCPSC - Docket # 2018-206-E - Page 16 of 25

APPENDIX A, POWER/FORWARD CAROLINAS COST ESTIMATE SUPPLEMENTAL INFORMATION

The information below is supplied as supplemental information for Power/Forward Carolinas program costs for some of the programs identified in **Table A1**. The program details and cost estimates outlined below represent the initial 10-year cost estimates for Power/Forward Carolinas and are not necessarily the full population of detailed projects that will be a part of plan. Some projects are further along in the planning cycle and have more detailed budgets, while others are higher-level estimates of future efforts. Each year, the company will scope and budget the work for future years, which may shift funding among programs and projects, shift projects earlier or later in the timeline, or add or remove projects as applicable based on resource availability and benefits achievement.

10-Year Power/Forward Carolinas Initiative

Targeted Underground	$1.3B
Distribution Hardening and Resiliency	$704M
Transmission Improvements	$533M
Self-Optimizing Grid	$385M
Advanced Metering Infrastructure	$107M
Communications Network Upgrades	$74M
Advanced Enterprise Systems	$23M
Total	**$3.1B**

Table A1 – 10-year investment for South Carolina programs

Program-level cost drivers and methodologies for each of the seven strategic programs are described in *Section 2.2 Power/Forward Carolinas Program Costs*. The information below provides more granular budgeting details where appropriate.

Self-Optimizing Grid – ($385 million) Using the budget methodology described for Self-Optimizing Grid in *Section 2.2 Power/Forward Carolinas Program Costs*, the following budget has been developed. On average, three to four automated switches will be used for each circuit upgraded to SOG guidelines.

Program	# Circuits	Cost/Unit	Total $M
Self-Optimizing Grid	460	$840,000	$385

			DEC		DEP	
Program Description	**Unit**	**Cost/Unit**	**# Units**	**Total $M**	**# Units**	**Total $M**
Automation	Automated Switches	$50,000	1,300	$65.0	300	$15.0
Capacity & Connectivity	Circuit	$650,000	360	$234.0	110	$71.5
	10-Year SC Total		**DEC**	**$299.0**	**DEP**	**$86.5**
			Grand Total $M		**$385.5**	

ACCEPTED FOR PROCESSING - 1/18/2018 3:27:09 PM - SCPSC - Docket # 2018-206-E - Page 20 of 26

Targeted Underground – ($1.3 billion) Using the budget methodology described for Targeted Underground in Section 2.2 Power/Forward Carolinas Program Costs, the following budget has been developed:

Program	Unit	# Units	Cost/Unit	Total $M
Targeted Underground	Miles	2,276	$400-$500K	$1,138

COUNTY	TUG MILES
Abbeville	4.09
Anderson	291.16
Cherokee	38.58
Chester	37.53
Chesterfield	32.03
Clarendon	26.80
Darlington	95.04
Dillon	32.10
Fairfield	2.35
Florence	152.53
Georgetown	8.04
Greenville	529.71
Greenwood	63.18
Horry	2.29
Kershaw	9.11
Lancaster	100.25
Laurens	29.26
Lee	21.35
Marion	45.34
Marlboro	17.31
Newberry	5.43
Oconee	22.63
Pickens	72.11
Spartanburg	410.73
Sumter	106.31
Union	1.10
Williamsburg	38.87
York	80.67

Totals 2,276 miles in SC

Distribution Hardening & Resiliency – ($704 million) Using the budget methodology described for Distribution Hardening & Resiliency in Section 2.2 Power/Forward Carolinas Program Costs, the following budget has been developed:

			DEC		DEP	
Program Description	**Unit**	**Cost/Unit**	**# Units**	**Total $M**	**# Units**	**Total $M**
Transformer Retrofit	Location	$1,152	2,000	$2.3	47,000	$54.1
Cable Replacement	Miles	$148,685	767	$114.0	229	$34.0
Sectionalization	Circuits	$20,000	252	$5.0	101	$2.0
Deteriorated Conductor Replacement / line rebuild	Miles	$100,000	855	$85.5	480	$48.0
Areas of Vulnerability	Locations	$5,000,000	3	$15.0	2	$10.0
Pole Hardening	Poles	$3,333	4,184	$13.9	1,251	$4.2
Capacity	Substations	$10,000,000	3	$30.0	2	$20.0
Live front switchgear and transformer replacement	# devices replaced	$25,000	312	$7.8	125	$3.1
Hazard Tree Removal		$1,000	3,600	$3.6	1,440	$1.4
Feeder Ties (for long duration outages)	Miles	$250,000	350	$87.5	208	$52.0
Open wire secondary replacement	Linear feet	$12	-	-	100,000	$1.2
Oil-filled reclosers replacement	Reclosers	$50,000	132	$6.6	53	$2.7
Underground Riser Retrofit		$1,000	8,640	$8.6	3,456	$3.5
Electronic Recloser	Reclosers	$6,500	132	$0.9	53	$0.3
Hardening and resiliency programs requiring further engineering and scoping (e.g., structural guying, BIL uplift, physical and cyber security improvements, ampacity upgrades, etc.)				$54.8		$32.2
	10-Year SC Total		**DEC**	**$435.6**	**DEP**	**$268.8**
				Grand Total $ M	**$704.4**	

ACCEPTED FOR PROCESSING - 10/18/2018 3:27 PM - SCPSC - Docket # 2018-206-E - Page 21 of 259

Transmission Improvements – ($2.75 billion NC/SC; $533 million SC) Using the budget methodology described for transmission improvements in Section 2.2 Power/Forward Carolinas Program Costs, the following budget has been developed:

	DEC			DEP		
Program Description	**# Units**	**Cost/ Unit**	**Total $M**	**# Units**	**Cost/Unit**	**Total $M**
Replace T-Oil Breakers w/Gas	400	$300,000	$120.0	200	$300,000	$60.0
Replace 230kV SF6 Breakers	50	$600,000	$30.0			
Replace 500kV Breakers	17	$895,000	$15.2	6	$895,000	$5.4
Replace D-Oil Breakers	500	$125,000	$62.5	400	$125,000	$50.0
Replace CCVTs 25+ or older	300	$22,000	$6.6	700	$22,000	$15.4
Replace RTU Replacement	50	$150,000	$7.5	84	$150,000	$12.6
Replace SBC Breaker Failure Relays	145	$150,000	$21.8			
Replace Electro-mechanical Relays per Terminal	500	$300,000	$150.0	400	$300,000	$120.0
Hybrid Relay Group scheme				116	$100,000	$11.6
Replace First Gen Relays	550	$180,000	$99.0	35	$180,000	$6.3
Install new Digital Fault Recorder (DFR)	3	$250,000	$0.8	10	$250,000	$2.5
Replace Digital Fault Recorder (DFR)	15	$250,000	$3.8	23	$250,000	$5.8
Replace Line Relay Carriers/Transfer Trip	15	$400,000	$6.0	27	$400,000	$10.8
Battery Bank Replacement				300	$15,000	$4.5
Replace Type U Bushings (count per transformer)	250	$100,000	$25.0	79	$102,000	$8.1
Bushings (count per transformer)				100	$102,000	$10.2
Replace Transformers - 1 PH & 3 PH	100	$2,000,000	$200.0	100	$2,000,000	$200.0
Replace Trench Reactors				46	$119,000	$5.5
Upgrade Load Tap Changer (LTC)	15	$300,000	$4.5			
Replace Silica Carbide Arresters	2500	$24,000	$60.0	250	$22,000	$5.5
Replace Voltage Regulators - 1PH	15	$70,606	$1.1			
Replace Voltage Regulators - 3PH	10	$240,000	$2.4	71	$350,000	$24.9
Replace Cap & Pin Insulators Bus Supports & Standoffs	4000	$25,000	$100.0			
Upgrade Transformer Coolers	21	$300,000	$6.3			
Emergent Equipment Replacements	10	$20,000,000	$200.0	8	$20,000,000	$160.0
Replace Substation Circuit Switchers				70	$150,000	$10.5
Replace OB Arresters				44	$22,000	$1.0
Wood Substations, Rebuild (incremental cost of wood)				48	$1,500,000	$72.0

ACCEPTED FOR PROCESSING - 01/18/2018 3:27:21 PM SCPSC Docket # 2018-206-E - Page 27 of 62

	DEC			DEP		
Program Description	**# Units**	**Cost/ Unit**	**Total $M**	**# Units**	**Cost/Unit**	**Total $M**
Wood Pole Replacement	5000	$25,000	$125.0	7000	$25,000	$175.0
T-Line Rebuilds (Per Mile)	150	$1,500,000	$225.0			
Substation Animal Mitigation	80	$250,000	$20,000,000	60	$250,000	$15,000,000
Remote Sectionalizing Switches	75	$500,000	$37,500,000	100	$500,000	$50,000,000
T-Line Static Replacements (Per Mile)	250	$150,000	$37.5	300	$150,000	$45.0
T-Line Str/Tower Replacements	100	$189,000	$18.9	420	$189,000	$79.4
Replace T-Line Switches	100	$250,000	$25.0	132	$250,000	$33.0
Replace Cap & Pin Insulators Switches	400	$25,000	$10.0	130	$250,000	$32.5
Replace Polymer Insulators with Porcelain (Per Mile)	56	$200,000	$11.2	200	$300,000	$60.0
Physical & Cyber Security Improvements			$185,000,000			$102,000,000
System Intelligence HRM & CBM			$30,550,000			$16,450,000
		DEC Total:	**$1,575**		**DEP Total:**	**$1,167.3**
Grand Total $ M: $2,742.2						

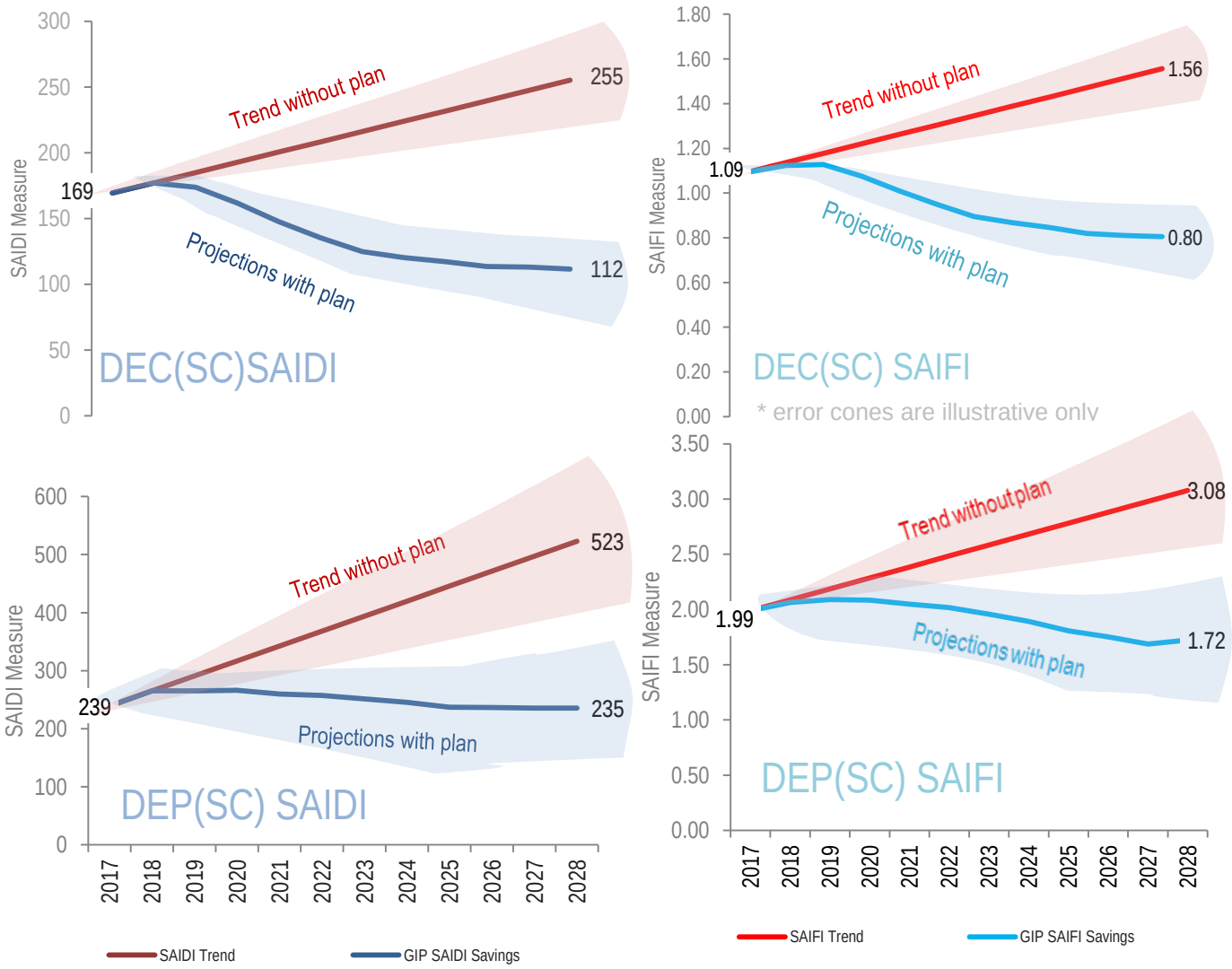
Communications Networks Upgrade – ($145 million) Using the budget methodology described for Communication Networks Upgrade in Section 2.2 Power/Forward Carolinas Program Costs, the following budget has been developed**:**

Project Name	Totals $M
DEC Mission Critical Transport Network	75.6
DEC Next Gen Cellular	9.0
DEE Vehicle Area Network	3.1
DEE Asset/Network & GIS Management	5.0
DEC Mission Critical Voice Communications	29.5
DEC Towers, Shelters & Power Supplies	10.6
DEC BizWAN	1.1
DEC GridWAN	11.2
Totals	145.3

ACCEPTED FOR PROCESSING: 1/8/2018 3:27:21 PM SCPSC Docket # 2018-206-E - Page 23 of 259

APPENDIX B, ADDITIONAL SOUTH CAROLINA RELIABILITY MEASURES INFORMATION

Figures below represent the 10-year reliability measure projections for SAIDI and SAIFI for Duke Energy Carolinas (DEC) and Duke Energy Progress (DEP) in South Carolina with and without Power/Forward Carolinas implementation.



About the Reliability Measures Projections

The 10-year "trends without plan" projections were developed from five years of historical non-MED outage data to ensure a sample size capable of producing an 80 percent confidence level. The mean value (μ) of each of the data set (DEC and DEP) was calculated and projected using linear regression techniques.

To acknowledge the increasing uncertainty of these projections the further out in time they are projected, cones of uncertainty are overlaid for each reliability measure forecast. These cones of uncertainty are merely illustrative as we are working to apply rigorous methods to determine actual levels of forecasts uncertainty.

The 2017 starting value is a projection from the 2016 year end SAIDI and SAIFI measures for DEC and DEP.

ACCEPTED FOR PROCESSING: 1/18/2018 3:27:07 PM
DOCKET NO. 2018-206-E - Page 24 of 25

APPENDIX C, PROJECTED IMPACTS AVOIDED DURING MAJOR STORMS

The tables below denote the forecasted customer impacts from named storms and major weather events (events that caused multi-day outages) that could have been avoided during the past three years with Power/Forward Carolinas implementation. Customer Interruptions (CI) Eliminated, Customer Minutes of Interruption (CMI) Eliminated and Outages Eliminated are shown in percentage reduction of actual event totals.

February 2014 Ice Storm

South Carolina	% CI Eliminated	% CMI Eliminated	% Outages Eliminated
DEP SC	20%	26%	34%
DEC SC	17%	19%	24%

March 2014 Ice Storm

South Carolina	% CI Eliminated	% CMI Eliminated	% Outages Eliminated
DEP SC	53%	65%	47%
DEC SC	37%	31%	28%

Winter Storm Remus (2015)

South Carolina	% CI Eliminated	% CMI Eliminated	% Outages Eliminated
DEP SC	40%	40%	43%
DEC SC	46%	29%	24%

Winter Storm Octavia (2015)

South Carolina	% CI Eliminated	% CMI Eliminated	% Outages Eliminated
DEP SC	30%	23%	26%
DEC SC	28%	27%	27%

Hurricane Hermine (2016)

South Carolina	% CI Eliminated	% CMI Eliminated	% Outages Eliminated
DEP SC	23%	19%	23%
DEC SC	NA	NA	NA

Hurricane Irma (2016)

South Carolina	% CI Eliminated	% CMI Eliminated	% Outages Eliminated
DEP SC	36%	27%	34%
DEC SC	28%	27%	22%

ACCEPTED FOR PROCESSING: 1/8/2018 2:21:02 PM
DOCKET NO. 2018-206-E - Page 25 of 259

ACCEPTED FOR PROCESSING - 10/18/2018 3:27:01 PM SCPSC Docket # 2018-206-E - Page 26 of 259

APPENDIX D, MEASURING THE ECONOMIC IMPACT OF RELIABILITY IMPROVEMENTS

Measuring Costs Savings Associated with Core Reliability Improvements

To estimate businesses and households cost savings associated with core reliability improvements (Corner 1), the Von Nessen study used SAIFI and SAIDI projections for non-major events along with South Carolina customer segment data (i.e., numbers of residential, business, and commercial customers as inputs) in the Interruption Cost Estimate Calculator (ICE) developed by the U.S. Department of Energy and Lawrence Berkeley National Laboratory.

The ICE model specifically calculates the average interruption cost for residential, business, and commercial customers for a given SAIFI/SAIDI data pair using a regression model that takes into account factors such as the duration of the outage, the industry affected, household demographics patterns, and various seasonal factors. By estimating the difference in interruption costs associated with current SAIFI/SAIDI projections with and without implementation of the Power/Forward Carolinas improvements, the annual direct cost savings resulting from our proposed grid improvements can be determined.

Measuring Costs Savings Associated with Reduced Major Storm Impacts

To estimate businesses and households cost savings associated with *reduced major storm impacts* (Corner 2), the Von Nessen study used the annual averages for customer interruptions (CI) and customer minutes interrupted (CMI) associated with Major Event Days (MEDs). From this, Dr. Von Nessen projected estimates of the avoided CI and CMI anticipated from our Power/Forward Carolinas improvements. Again, the data was used in the DOE/LBNL ICE tool to estimate the direct cost savings as improved infrastructure comes on line over the 10 year investment period.

Measuring Additional Statewide Economic Impacts

Note that these direct cost savings (Corner 3) do not capture the full economic impact of our reliability improvements. When South Carolina businesses experience these cost reductions, over time they will begin to expand their economic activities through additional purchases of raw inputs and the hiring of additional employees (Corner 4 – *statewide benefits*). To estimate this additional economic activity, the IMPLAN model was used.

Both the reinvested business loss savings and the indirect and induced economic stimulus represent new economic activity that is the result of grid reliability improvements.

Allowable *Ex Parte* Communication Briefing

ND-2018-15-E – Duke Energy Carolinas, LLC and Duke Energy Progress, LLC – Request for an Allowable Ex Parte Briefing

Briefing: POWER/FORWARD INITIATIVE

Public Service Commission of South Carolina
Synergy Business Park
101 Executive Center Drive
Columbia, South Carolina 29210

Wednesday, May 23, 2018 @ 10:30 a.m.

(PLEASE PRINT)

NAME	ADDRESS	ORGANIZATION	EMAIL ADDRESS	PHONE NO.
Karen Hall	40 W Broad St. Ste 690 Greenville SC 29601	Duke Energy	karen.hall2@duke-energy.com	864-370-5030
Ryan Music	40 W Broad St. Ste 690 Greenville, SC 29601	Duke Energy	ryan.music@duke-energy.com	864 370 5036
GARY WALSH	P.O. Box 23158 Col 29223	DEC		
Bobby Simpson	PO Box 1551 Raleigh, NC 27602	Duke Energy	robert.simpson2@duke-energy.com	919-546-2992
ALAN HANCOCK	328 E BAY ST CHAS SC 29401	COASTAL CONSERVATION LEAGUE	ALANH@SCCCL.ORG	843-723-8035
Len Anthony	1701 N Ocean Blvd North Myrtle Beach, SC	Duke Energy	len.anthony1@gmail.com	919-691-7871
John Powers	PSC	PSC		

ACCEPTED ELECTRONICALLY
May 23, 2018 3:26 PM
PSC SC
Docket # 2018-15-E - Page 1 of 259

Allowable *Ex Parte* Communication Briefing

ND-2018-15-E – Duke Energy Carolinas, LLC and Duke Energy Progress, LLC – Request for an Allowable Ex Parte Briefing

Briefing: POWER/FORWARD INITIATIVE

Public Service Commission of South Carolina
Synergy Business Park
101 Executive Center Drive
Columbia, South Carolina 29210

Wednesday, May 23, 2018 @ 10:30 a.m.

(PLEASE PRINT)

NAME	ADDRESS	ORGANIZATION	EMAIL ADDRESS	PHONE NO.
Heather Shirley Smith	40W Broad Greenville	Duke Energy	heather-smith@duke-energy.com	864 506 5576
Justin Brown	400 S Tryon St Charlotte NC	Duke Energy	Justin.Brown@duke-energy.com	704-382-7847
KODWO GHARTEY-TAGOE	40 W BROAD ST GREENVILLE, SC	Duke Energy	kghartey-tagoe@duke-Energy.com	864 3705200
Frank Ellerbe	Gadsden St. Col SC	SCR for Duke	fellerbe@sowellgray.com	227-1112
Afton Ellison	PSC	PSC		
Thomas L. Ellison	PSC	PSC		
Sarah Johnson	1401 Main St Ste 900 Columbia SC	ORS	sjohnson@regstaff.sc.gov	803 737 0886

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-15-E - 05/23/2018 3:26 PM - SC PSC - Docket # 2018-15-E - Page 2 of 7 of 259

Allowable *Ex Parte* Communication Briefing

ND-2018-15-E – Duke Energy Carolinas, LLC and Duke Energy Progress, LLC – Request for an Allowable Ex Parte Briefing

Briefing: POWER/FORWARD INITIATIVE

Public Service Commission of South Carolina
Synergy Business Park
101 Executive Center Drive
Columbia, South Carolina 29210

Wednesday, May 23, 2018 @ 10:30 a.m.

(PLEASE PRINT)

NAME	ADDRESS	ORGANIZATION	EMAIL ADDRESS	PHONE NO.
Stefanie Dohn	1519 Icing St Chas, SC 29405	Southern Current	sdohn@southerncurrent.com	843-259-9573
Hannah Majewski	1401 Main St. Ste 900 Cola 29201	ORS	hmajewski@regstaff.sc.gov	803 737-0898
Marcus Preston	1201 Main St. Columbia, SC 29201	Duke Energy	Marcus.Preston@duke-energy.com	803 988-7135
David Butler	PSC			
Josh Minges		P&C		
David Sfak	PSC			
Tom J. Ervin	PSC.	elect	tervin@bellsouth.net	864-235-6254

ACCEPTED ELECTRONICALLY PROCEEDINGS SCPSC Docket # 2018-15-E - Page 31 of 259

Allowable *Ex Parte* Communication Briefing

ND-2018-15-E – Duke Energy Carolinas, LLC and Duke Energy Progress, LLC – Request for an Allowable Ex Parte Briefing

Briefing: POWER/FORWARD INITIATIVE

Public Service Commission of South Carolina
Synergy Business Park
101 Executive Center Drive
Columbia, South Carolina 29210

Wednesday, May 23, 2018 @ 10:30 a.m.

(PLEASE PRINT)

NAME	ADDRESS	ORGANIZATION	EMAIL ADDRESS	PHONE NO.
Robert Lawyer	1401 Main St. Cola, SC 29201	ORS	Rlawyer@regstaff.sc.gov	737-0584
Michael Seamon-Haynh	1401 Main St Cola, SC 29201	ORS	mshaynh@regstaff.sc.gov	737-0850
Willie Morgan	1401 Main St. Cola., SC 29201	ORS	wmorgan@regstaff.sc.gov	737-0827
James Spearman		PSC		
Doug Brett		PSC		
Hope Adams		PSC		
B. Randall Dong		PSC		

ACCEPTED
ELECTRONICALLY FILED - 2018 May 23 2:26 PM - SCPSC - Docket # 2018-15-E - Page 4 of 259

Allowable *Ex Parte* Communication Briefing

ND-2018-15-E – Duke Energy Carolinas, LLC and Duke Energy Progress, LLC – Request for an Allowable Ex Parte Briefing

Briefing: POWER/FORWARD INITIATIVE

Public Service Commission of South Carolina
Synergy Business Park
101 Executive Center Drive
Columbia, South Carolina 29210

Wednesday, May 23, 2018 @ 10:30 a.m.

(PLEASE PRINT)

NAME	ADDRESS	ORGANIZATION	EMAIL ADDRESS	PHONE NO.
Calvin Woods	PSC	PSC	Calvin.Woods@psc.sc.gov	
Jocelyn Boyd	PSC	PSC		
John E. Howard		PSC		
G. O'Neal Hamilton		PSC		
Comer Randall		PSC		
Swain Whitfield		PSC		
Elizabeth B. Fleming		PSC		

ELECTRONICALLY FILED - 2018 May 23 2:29 PM - SCPSC - Docket # 2018-15-E - Page 5 of 259

Allowable *Ex Parte* Communication Briefing

ND-2018-15-E – Duke Energy Carolinas, LLC and Duke Energy Progress, LLC – Request for an Allowable Ex Parte Briefing

Briefing: POWER/FORWARD INITIATIVE

Public Service Commission of South Carolina
Synergy Business Park
101 Executive Center Drive
Columbia, South Carolina 29210

Wednesday, May 23, 2018 @ 10:30 a.m.

(PLEASE PRINT)

NAME	ADDRESS	ORGANIZATION	EMAIL ADDRESS	PHONE NO.
Robert Bockman		PSC		
Elliott F. Elam, Jr.		PSC		
Jo Wheat		PSC		
Joseph Melchers		PSC		

ACCEPTED
ELECTRONICALLY FILED - 2018 May 23 3:26 PM - SCPSC - Docket # 2018-205-E - Page 16 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Karen Hall	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Grid Solutions Planning & Regulatory Support Specialist	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201-E - May 21, 2018 - 2:26 PM - OCRS SC PSC Docket # 2018-201-E - Page 1 of 1 - Page 1 of 259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 183 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Ryan Mosier	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation:	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY
ND 2018-15-E - Page 318 of 259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 185 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: GARY WALSH	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: CONSULTANT	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: DEC	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10 May 23 2018 2:26 PM PSC DOCKET # 2018-15-E - Page 1 of 1

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 187 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Bobby Simpson	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Director Grid Improvement & Plan Integration	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 2018 May 23 2:26 PM - SCPSC - Docket # 2018-205-E - Page 7 of 8 of 259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 189 of 259

ACCEPTED FOR FILING PROCEEDINGS 2018-201-E - 10/1/2018 3:26:29 PM - OCRS SC PSC Docket # 2018-201-E - Page 9 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: ALAN HANCOCK	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: ENERGY ADVOCACY DIRECTOR	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: COASTAL CONSERVATION LEAGUE	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 191 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Len Anthony	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Attorney	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 2018 May 23 2:26 PM - SCPSC - Docket # 2018-15-E - Page 1 of 1 8259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 193 of 259

ACCEPTED FOR FILING PROCEEDINGS 2018-10 21 3:26 PM PSC DOCKET # 2018-15-E - Page 1 of 1 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : John Powers	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Audit Manager	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 195 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Heather Shirley Smith	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: attorney	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter
Power Forward initiative of Duke Energy in SC

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 2018 May 23 3:26 PM - SCPSC - Docket # 2018-15-E - Page 1 of 1 - 82259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Heather Shirley Smith

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 197 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Justin Brown	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Regulatory Support	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10 May 23 2018 2:26 PM PSC DOCKET # 2018-15-E - Page 1 of 1 8259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 199 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: KODWO GHARTEY-TAGOE	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: STATE PRESIDENT, Duke Energy South Carolina	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED FOR FILING PROCEEDINGS 2018-15-E - 05/23/2018 2:26 PM - OPS SC PSC Docket # 2018-15-E - Page 1 of 1 - 82259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 201 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Frank Ellerbe	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Lawyer	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201-E - Page 2 of 2 - 10/01/2018 3:26:09 PM - OCPR - SCPSC - Docket # 2018-201-E - Page 2 of 2 - 78259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 203 of 259

ACCEPTED FOR PROCESSING 2018-May-23 2:29 PM PSC Docket # 2018-15-E - Page 2 of 2

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Afton Ellison	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Public Info Director	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 205 of 259

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10 21 3:26 PM PSC DOCKET # 2018-15-E - Page 2 of 8 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : Tom Ellison	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Senior Audit Advisor	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Thomas L. Ellison

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 207 of 259

ACCEPTED ELECTRONICALLY PROCEEDING 2018-201-E - Page 2 of 8
May 23, 2018 - 2:26 PM - SCPSC - Docket # 2018-201-E - Page 2 of 8

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Sarah Johnson	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Deputy Director Utility Services	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: ORS	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 209 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Stephanie Dohn	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Government Affairs	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Southern Current LLC	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 2018 May 29 2:26 PM - SCPSC - Docket # 2018-15-E - Page 2 of 2 - 78259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 211 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Hannah Majewski	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Regulatory Analyst	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: OCS	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED FOR FILING PROCEEDINGS 2018-10 May 21 2018 2:29 PM PSC DOCKET ND 2018-15-E - Page 2 of 2 259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Hannah Magewski

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 213 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Marcus Preston	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Director Regulatory Affairs	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: Duke Energy	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 2018 May 29 PM 1:09 SC PUBLIC SERVICE COMMISSION DOCKET # 2018-205-E - Page 3 of 8 259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 215 of 259

ACCEPTED FOR FILING PROCEEDINGS 2018-201 21/2018 2:29 PM PSC Docket # 2018-15-E - Page 3 of 8 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : David Butler	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title:	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

David Butler

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 217 of 259

ACCEPTED ELECTRONICALLY
PROCEEDING: 2018-15-E
DATE: 05/23/2018 2:26 PM
OFFICE: PSC
DOCKET: 2018-15-E - Page 1 of 1

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : Josh Minges	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Atty	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 219 of 259

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-10 21 3:26 PM PSC DOCKET # 2018-206-E - Page 3 of 8 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : David Stark	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Attorney	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 221 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Tom J. Ervin	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation:	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for:	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED FOR FILING PROCEEDINGS 2018-201 May 23 2018 2:26 PM SC PSC Docket # 2018-15-E - Page 1 of 1 8259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 223 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: ROBERT LAWYER	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: SR. REGULATORY MANAGER	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: ORS	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 2018 May 29 PM 1:09 PSC SC Docket # 2018-205-E - Page 12 of 18259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 225 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Michael Seaman-Huynh	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Senior Regulatory Manager	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: ORS	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY PROCEEDINGS 2018-201 - 2018 May 29 PM 1:09 PSC DOCKET # 2018-15-E - Page 12 of 18259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 227 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Attendee)

THIS CERTIFICATION IS TO:

- BE SIGNED BY **EACH** BRIEFING ATTENDEE **EXCEPT** COMMISSIONERS AND PUBLIC SERVICE COMMISSION EMPLOYEES, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Willie Morgan	Date of Meeting: Wednesday May 23, 2018 @ 10:30 AM
Occupation: Deputy Director	Matter :ND: 2018-15-E: Duke Energy Carolinas ,LLC and Duke Energy Progress, LLC- Request for an Allowable Ex Parte Briefing Regarding Power/Forward Initiative
Attending on behalf of/for: ORS	

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [§58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [§58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED FOR FILING PROCEEDINGS 2018-10-01 21:13:26 PM 1 OF 1 PSC DOCKET NO. 2018-15-E - PAGE 1 OF 1 82259

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [§58-3-260(C)(6)(a)(ii)]

This concludes my Certified Statement.

Signature of Briefing Attendee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 229 of 259

ACCEPTED ELECTRONICALLY PROCEEDING: 2018-15-E DATE: 05/23/2018 2:26 PM PSC DOCKET: 2018-15-E - PAGE: 12 OF 18

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Dr. James Spearman	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Executive Assistant & Sr. Technical Advisor	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

James E Spearman

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 231 of 259

ACCEPTED ELECTRONICALLY
PROCEEDING: 2018-15-E
DATE: 05/23/2018 2:26 PM
OFFICE OF REGULATORY STAFF
DOCKET: 2018-15-E - Page 1 of 1

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : Doug Pratt	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title:	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 233 of 259

ACCEPTED
ELECTRONICALLY FILED - 2018 May 21 3:26 PM - SCPSC - Docket # 2018-15-E - Page 5 of 8

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : Hope Adams	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Adm. Coordinator	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Hope H. Adams

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 235 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : Randall Dong	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Staff Counsel	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

ACCEPTED FOR FILING PROCEEDINGS 2018-10 21/3/2019 2:29 PM PSC DOCKET #2018 0206-E - Page 5 of 8 259

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 237 of 259

ACCEPTED ELECTRONICALLY PROCEEDING: 2018-15-E DATE: 06/21/2018 3:26:29 PM PSC DOCKET: 2018-15-E - Page 5 of 8 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Calvin Woods	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title:	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Calvin Woods

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 239 of 259

ACCEPTED ELECTRONICALLY
Docket # 2018-15-E - Page 5 of 8
PSC Docket # 2018-15-E - Page 5 of 8
May 23, 2018 - 10:29 AM
PSC Docket # 2018-15-E - Page 5 of 8

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Jocelyn Boyd	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: Chief Clerk and Administrator	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Joey Boyd

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 241 of 259

ACCEPTED FOR FILING PROCEEDINGS 2018-201 21 May 2018 2:26 PM PSC Docket # 2018-15-E - Page 2 of 2 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Butch Howard (District 1)	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: COMMISSIONER	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 243 of 259

ACCEPTED FOR PROCESSING 2018-May-23 2:29 PM PSC Docket # 2018-15-E - Page 2 of 2

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: O'Neal Hamilton (District 7)	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: COMMISSIONER	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 245 of 259

ACCEPTED FOR PROCESSING 2018-May-23 2:29 PM PSC Docket # 2018-15-E - Page 2 of 2

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Randy Randall (Vice Chair) District 3	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: COMMISSIONER	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 247 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Swain Whitfield (Chair) (District 5)	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: COMMISSIONER	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

ACCEPTED ELECTRONICALLY
PROCEEDINGS 2018-201-E - Page 2 of 2
2018 May 23 2:26 PM - SCPSC - Docket # 2018-201-E - Page 2 of 2

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Swain Whitfield

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 249 of 259

ACCEPTED FOR PROCESSING 2018-May-23 2:26 PM PSC Docket # 2018-15-E - Page 2 of 2 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Elizabeth Fleming (District 4)	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: COMMISSIONER	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Elizabeth B. Fleming

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 251 of 259

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Robert Bockman (District 6)	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: COMMISSIONER	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

ACCEPTED FOR FILING PROCEEDINGS 2018-201 21/3/2018 2:29 PM 1-OCPM S C PSC Docket # 2018 82 05-E - Page 7 of 8 259

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Robert T. Boc

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 253 of 259

ACCEPTED FOR PROCESSING 2018-May-23 2:29 PM PSC Docket # 2018-15-E - Page 1 of 1

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Elliott Elam (District 2)	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: COMMISSIONER	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 255 of 259

ACCEPTED ELECTRONICALLY
Docket # 2018-15-E - Page 7 of 8
PSC - 10/1/2018 3:26 PM

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name: Jo Wheat	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: COURT REPORTER	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 257 of 259

ACCEPTED ELECTRONICALLY PROCEEDING: 2018-15-E DATE: 06/01/2018 3:26:29 PM PSC DOCKET: 2018-15-E - Page 7 of 8

ALLOWABLE EX PARTE COMMUNICATION BRIEFING
CERTIFIED STATEMENT
(Commissioner/Commission Employee)

THIS CERTIFICATION IS TO:

- BE SIGNED AND COMPLETED BY **EACH** COMMISSIONER AND PUBLIC SERVICE COMMISSION EMPLOYEES ATTENDING THE BRIEFING, AND
- BE FILED WITH THE OFFICE OF REGULATORY STAFF [1401 MAIN STREET, COLUMBIA, SOUTH CAROLINA 29201] **WITHIN FORTY-EIGHT HOURS** OF THIS BRIEFING.

Name : Joseph Melchers	Date of Meeting: Wednesday May 23, 2018 @10:30 AM
PSC Position Title: General Counsel	Matter: ND: 2018-15-E: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC-Request for Allowable Ex Parte Briefing Regarding Power/Forward Initiative

By signing this Certification, I certify that:

1. No commitment, predetermination, or prediction of any Commissioner's action as to any ultimate or penultimate issue or any Commission employee's opinion or recommendation as to any ultimate or penultimate issue in any proceeding was requested by any person or party nor any commitment, predetermination, or prediction was given by any Commissioner or Commission employee as to any Commission action or Commission employee opinion or recommendation on any ultimate or penultimate issue. [S.C. Code Ann. §58-3-260(C)(6)(a)(iii)]

2. I have accurately summarized the discussions occurring during the briefing in full either in the space below or on an attached sheet. If a sheet is attached, it is noted as being attached on the lines below. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

Please reference transcript and/or audio room recording, together with presentation materials, as compiled by court reporter

3. I have attached copies of any written materials utilized, referenced, or distributed during the briefing. [S.C. Code Ann. §58-3-260(C)(6)(a)(ii)]

4. I will comply with State law requiring me to grant to every other party or person requesting an allowable ex parte communication briefing on the same or similar matter that is or can reasonably be expected to become an issue in a proceeding, similar access and a reasonable opportunity to communicate, directly or indirectly, regarding any fact, law, or other matter that is or can reasonably be expected to become an issue in a proceeding under the provisions of subsection S.C. Code Ann. §58-3-260(C)(6). [S.C. Code Ann. §58-3-260(C)(6)(a)(iv)]

This concludes my Certified Statement.

Signature of South Carolina Public Service Commissioner or Commission Employee

Date: 5-23-2018

ELECTRONICALLY FILED - 2018 July 23 3:26 PM - SCPSC - Docket # 2018-206-E - Page 259 of 259