INFORMATION SHEET

PRESIDING: Commissioner Clodfelter, Commissioners Brown-Bland, Gray, Duffley, Hughes, McKissick
PLACE: Via Videoconference
DATE: March 3, 2021
TIME: 1:30 p.m. to 4:38 p.m.
DOCKET NOS.: E-2, Sub 1177 and E-7, Sub 1172
COMPANIES: Cube Yadkin Generation, LLC, Duke Energy Progress, LLC, Duke Energy Carolinas, LLC
DESCRIPTION: In the Matter of Cube Yadkin Generation, LLC, Complainant, v. Duke Energy Progress, LLC, and Duke Energy Carolinas, LLC
VOLUME: 2

APPEARANCES
(See attached.)

WITNESSES and EXHIBITS
(See attached.)

REPORTED BY: Linda Garrett	TRANSCRIPT PAGES: 146
TRANSCRIBED BY: Linda Garrett	PREFILED PAGES: 28
DATE FILED March 17, 2021	TOTAL PAGES: 174

PLACE: Via Videoconference

DATE: Wednesday, March 3, 2021

DOCKET NO.: E-2, Sub 1177

E-2, Sub 1172

TIME: 1:30 P.M. TO 4:38 P.M.

BEFORE: Commissioner Daniel G. Clodfelter, Presiding

Commissioner ToNola D. Brown-Bland

Commissioner Lyons Gray

Commissioner Kimberly W. Duffley

Commissioner Jeffrey A. Hughes

Commissioner Floyd B. McKissick, Jr.

IN THE MATTER OF:

Cube Yadkin Generation, LLC, Complainant

v.

Duke Energy Progress, LLC,

and

Duke Energy Carolinas, LLC, Respondents

Volume 2

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

FOR CUBE YADKIN GENERATION, LLC:
Joseph S. Dowdy, Esq., Partner
Phillip A. Harris, Jr., Esq., Counsel
Benjamin L. Snowden, Esq., Counsel
Kilpatrick Townsend & Stockton LLP
4208 Six Forks Road, Suite 1400
Raleigh, North Carolina 27609

FOR DUKE ENERGY PROGRESS, LLC, and
DUKE ENERGY CAROLINAS, LLC:
Kendrick C. Fentress, Esq.
Associate General Counsel
Duke Energy Corporation
410 South Wilmington Street/NCRH 20
Raleigh, North Carolina 27602

Robert W. Kaylor, Esq.
Law Office of Robert W. Kaylor, P.A.
353 E. Six Forks Road, Suite 260
Raleigh, North Carolina 27609

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

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

E X H I B I T S

PLACE: Via Videoconference

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353 E. Six Forks Road, Suite 260
Raleigh, North Carolina 27609

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

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

E X H I B I T S

IDENTIFIED/ADMITTED

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE: March 3, 2021 **DOCKET NO.:** E-7 Sub 1172 & E-2 Sub 1177

ATTORNEY NAME and TITLE: Kendrick Fentress, Associate General Counsel

FIRM NAME: Duke Energy

ADDRESS: 410 S. Wilmington St., NC20

CITY: Raleigh **STATE:** NC **ZIP CODE:** 27602

APPEARANCE ON BEHALF OF: Duke Energy Progress, LLC and Duke Energy Carolinas, LLC

APPLICANT: ___ **COMPLAINANT:** ___ **INTERVENOR:** ___

PROTESTANT: ___ **RESPONDENT:** X **DEFENDANT:** ___

Non-confidential transcripts are located on the Commission's website. To view and/or print transcripts, go to https://ncuc.net, hover over the Dockets tab and select Docket Search, enter the docket number and click search, select the highlighted docket number and select Documents for a list of all documents filed.

To receive an electronic **CONFIDENTIAL** transcript, please complete the following:

☒ **Yes, I have signed the Confidentiality Agreement.**

Email: kendrick.fentress@duke-energy.com

SIGNATURE: Kendrick C. Fentress

(Required for distribution of CONFIDENTIAL transcript)

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE: March 3, 2021_________ **DOCKET NO.:** E-2, Sub 1177; E-7, Sub 1172____

ATTORNEY NAME and TITLE: Robert W. Kaylor, attorney___________________

____

FIRM NAME: Law Office of Robert W. Kaylor, P.A.___________________________

ADDRESS: 353 E. Six Forks Rd., Ste. 260___________________________________

CITY: Raleigh___________ **STATE:** NC________ **ZIP CODE:** 27609________

APPEARANCE ON BEHALF OF: Duke Energy Carolinas, LLC, Duke Energy Progress, LLC

____

APPLICANT: ___ **COMPLAINANT:** ___ **INTERVENOR:** ___

PROTESTANT: ___ **RESPONDENT:** X__ **DEFENDANT:** ___

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☒ **Yes, I have signed the Confidentiality Agreement.**

Email: ____

SIGNATURE: ____

(Required for distribution of CONFIDENTIAL transcript)

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE: March 3, 2020 DOCKET NO.: E-2, Sub 1177 and E-7, Sub 1172

ATTORNEY NAME and TITLE: Joseph S. Dowdy, Partner

FIRM NAME: Kilpatrick Townsend & Stockton LLP

ADDRESS: 4208 Six Forks Road, Suite 1400

CITY: Raleigh STATE: NC ZIP CODE: 27609

APPEARANCE ON BEHALF OF: Cube Yadkin Generation, LLC

APPLICANT: ___ COMPLAINANT: X INTERVENOR: ___

PROTESTANT: ___ RESPONDENT: ___ DEFENDANT: ___

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To receive an electronic **CONFIDENTIAL** transcript, please complete the following:

☒ **Yes, I have signed the Confidentiality Agreement.**

Email: jdowdy@kilpatricktownsend.com

SIGNATURE: Joseph S. Dowdy

(Required for distribution of CONFIDENTIAL transcript)

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE: March 3, 2020 DOCKET NO.: E-2, Sub 1177 and E-7, Sub 1172

ATTORNEY NAME and TITLE: Phillip A. Harris, Jr., Counsel

FIRM NAME: Kilpatrick Townsend & Stockton LLP

ADDRESS: 4208 Six Forks Road, Suite 1400

CITY: Raleigh STATE: NC ZIP CODE: 27609

APPEARANCE ON BEHALF OF: Cube Yadkin Generation, LLC

APPLICANT: ___ COMPLAINANT: X INTERVENOR: ___

PROTESTANT: ___ RESPONDENT: ___ DEFENDANT: ___

Non-confidential transcripts are located on the Commission's website. To view and/or print transcripts, go to https://ncuc.net, hover over the Dockets tab and select Docket Search, enter the docket number and click search, select the highlighted docket number and select Documents for a list of all documents filed.

To receive an electronic **CONFIDENTIAL** transcript, please complete the following:

☒ **Yes, I have signed the Confidentiality Agreement.**

Email: pharris@kilpatricktownsend.com

SIGNATURE: Phillip A. Harris, Jr. w/ permission JSD

(Required for distribution of CONFIDENTIAL transcript)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE: March 3, 2020 **DOCKET NO.:** E-2, Sub 1177 and E-7, Sub 1172

ATTORNEY NAME and TITLE: Benjamin L. Snowden, Counsel

FIRM NAME: Kilpatrick Townsend & Stockton LLP

ADDRESS: 4208 Six Forks Road, Suite 1400

CITY: Raleigh **STATE:** NC **ZIP CODE:** 27609

APPEARANCE ON BEHALF OF: Cube Yadkin Generation, LLC

APPLICANT: ___ **COMPLAINANT:** X **INTERVENOR:** ___

PROTESTANT: ___ **RESPONDENT:** ___ **DEFENDANT:** ___

Non-confidential transcripts are located on the Commission's website. To view and/or print transcripts, go to https://ncuc.net, hover over the Dockets tab and select Docket Search, enter the docket number and click search, select the highlighted docket number and select Documents for a list of all documents filed.

To receive an electronic **CONFIDENTIAL** transcript, please complete the following:

☒ **Yes, I have signed the Confidentiality Agreement.**

Email: bsnowden@kilpatricktownsend.com

SIGNATURE: Benjamin L Snowden w/ permission JSD

(Required for distribution of CONFIDENTIAL transcript)

I/A

From: John Collins
Sent: Tuesday, August 23, 2016 9:50 AM
To: regis.repko@duke-energy.com
Cc: Kristina Johnson <kjohnson@cubehydro.com>
Subject: Follow-up to Our Meeting

Regis,

I hope this email finds you well and enjoying the end of summer. I am emailing to follow-up on our discussions regarding the Yadkin hydroelectric assets that Cube Hydro is purchasing from Alcoa. As we discussed in our meeting, we plan of registering 3 of the assets, High Rock, Tuckertown and Falls, as Qualifying Facilities and would like to have further discussions with Duke regarding longer-term QF contracts for these facilities. In addition, we discussed the possibility of a long-term PPA arrangement for all four facilities including the Narrows plant with Duke that could provide additional flexibility for Duke to manage its grid due to the continuing impact of solar generation on the Duke network.

As a follow-up to the meeting you were going to put us in contact with the appropriate team members at Duke to begin discussions. I wanted to let you know that Kristian and I plan to be in North Carolina next Thursday, September 1st, and have some availability to meet with your team if their schedules permit.

Let me know if that will work or who we should contact to begin further discussion related to long-term PPAs for the Yadkin hydroelectric plants.

Look forward to hearing from you.

Regards,

John

John R. Collins
Executive Vice President and Managing Director – Business Development
Cube Hydro Partners
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814
(240) 482-2703 (Work)
jcollins@cubehydro.com

I/A

KEEN EXHIBIT NO. 2
DOCKET NO. E-2, SUB 1177
DOCKET NO. E-7, SUB 1172

DUKE ENERGY®

Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

September 21, 2016

Cube Hydro Partners
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814

Attn: John R. Collins
Executive Vice President and Managing Director – Business Development

Re: Inquiry concerning sale of output of Yadkin system to Duke Energy

Dear John:

This letter is a follow up to our conversation of September 16, 2016 during which I communicated to you Duke Energy Progress, LLC and Duke Energy Carolinas, LLC's (collectively/individually, "Duke") positions in response to your inquiry soliciting Duke's interest in purchasing the output of the Yadkin system. The "Yadkin System" consists of four hydro-electric units as follows: High Rock Station, approximately 33 MW; Tuckertown Station, approximately 39 MW; Falls Station, approximately 30 MW; and Narrows Station, approximately 119 MW.

The Yadkin system is currently owned and operated by Alcoa Inc., and is the subject of a potential purchase by Cube Yadkin Generation, LLC ("Cube Yadkin"). You informed me that Cube Yadkin does not currently own or operate the Yadkin system, but anticipates that it will close on the transaction to own and operate the facilities around November 1, 2016. As I communicated to you previously, Duke does not have any current needs for energy or capacity; however, if a need arises in the future, Duke would likely issue a request for proposals and Cube Yadkin can elect to submit a responsive bid. You further informed me that Cube Yadkin is considering certifying the three smaller units as qualifying facilities under the Public Utility Regulatory Policies Act of 1978 ("PURPA"). In that regard, I informed you that to the extent Cube Yadkin approached Duke under PURPA, that under PURPA's requirements, Duke would likely have no obligation to purchase any output of energy or capacity from the Yadkin system units that may be certified as qualified facilities.

Please feel free to contact me with any questions.

Sincerely,

Michael Keen
Business Development Manager
Duke Energy

KEEN EXHIBIT NO. 3
DOCKET NO. E-2, SUB 1177
DOCKET NO. E-7, SUB 1172

I/A

CUBE HYDRO

Michael Keen
Business Development Manager
Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

Dear Michael,

I am writing in response to your letter dated September 21, 2016 (the "September 21 Letter") regarding the discussions between Duke Energy Progress, LLC and Duke Energy Carolinas, LLC (individually and together, "Duke"), and Cube Hydro Partners, LLC ("Cube Hydro") with respect to the four hydroelectric projects on the Yadkin River (collectively, the "Yadkin Projects") that are currently owned by Alcoa Power Generating Inc. ("Alcoa").

As we discussed, Cube Hydro Carolinas LLC, an affiliate of Cube Hydro, has agreed to acquire the Yadkin Projects from Alcoa. The acquisition is anticipated to occur before the end of 2016. Alcoa has certified three of the four Yadkin Projects – the approximately 30 MW Falls project, the approximately 40 MW Tuckertown project, and the approximately 34 MW High Rock project – as qualifying small power production facilities ("QFs") under the Public Utility Regulatory Policies Act of 1978 ("PURPA") and the implementing regulations of the Federal Energy Regulatory Commission ("FERC").

As you may know, Section 210(m) of PURPA and FERC's regulations require electric utilities, including Duke, to purchase energy and capacity made available from QFs. *See* 16 U.S.C. § 824a-3(a)(2) (2012); 18 C.F.R. § 292.303(a) (2016). FERC's regulations further specify that a QF shall have the option of making sales to an electric utility pursuant to a legally enforceable obligation, or on an "as available" basis. *See* 18 C.F.R. § 292.304(d) (2016).

Given that three of the Yadkin Projects are now QFs, we recommend that we meet to discuss your concerns at your earliest convenience. We are happy to come to your offices in late October or early November to discuss the process for making sales from these projects to Duke pursuant to PURPA. We would anticipate that such discussions would, among other things, address the statement in the September 21 Letter that, "under PURPA's requirements, Duke would likely have no obligation to purchase any output of energy or capacity from the Yadkin system units that may be certified as [QFs]." While electric utilities may petition FERC to be relieved of their mandatory purchase obligations under PURPA, it does not appear that FERC has issued an order relieving Duke of such obligations, or that there are any other applicable exceptions or exemptions.

Phone: 240.482.2700 | Fax: 240.482.2727 | 2 Bethesda Metro Center, Suite 1330, Bethesda, MD 20814

KEEN EXHIBIT NO. 4
DOCKET NO. E-2, SUB 1177
DOCKET NO. E-7, SUB 1172

DUKE ENERGY.

I/A

Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

October 14, 2016

Via Email and Priority Mail

Mr. John R. Collins
Executive Vice President and Managing Director – Business Development
Cube Hydro Partners, LLC
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814

Re: Response to Undated Cube Hydro Letter Received October 11, 2016

Dear John:

This letter is a follow up to your undated letter to Duke Energy Carolinas, LLC and Duke Energy Progress, LLC ("Duke") which was received on October 11, 2016 (the "Cube letter").

In the Cube letter you inform Duke, as Cube Hydro Partners LLC, on behalf of Cube Hydro Carolinas, LLC (collectively, "Cube Hydro"), that Alcoa Power Generation, Inc. ("Alcoa") has certified three out of four units of the Yadkin system as qualifying facilities under PURPA. The "Yadkin system" consists of four hydro-electric units, as follows: High Rock Station, approximately 33 MW; Tuckertown Station, approximately 39 MW; Falls Station, approximately 30 MWs; and, Narrows Station, approximately 119 MW. You further inform us that Cube Hydro seeks to purchase the Yadkin system from Alcoa, and may be the actual owner and operator of the Yadkin system by the end of 2016. At this time, Cube Hydro neither owns nor is a qualifying facility with respect to the Yadkin system. Therefore, Cube Hydro has no potential rights to exert under PURPA. Although your letter fails to reference our discussions, we have previously and prior to your letter informed you of the PURPA provisions under which Duke would be exempted from PURPA with regard to the Yadkin system. Accordingly, this letter serves as Duke's formal notice under 292.309/310 that if in the future Cube Hydro is a qualifying facility with respect to the Yadkin system and it seeks to sell power to Duke, it is Duke's view that it is exempted from any purchase obligation under PURPA with respect to the Yadkin system.

Representations and warranties in applications made at FERC demonstrate that Cube Hydro has sought, and Alcoa currently has market-based rate authority on the basis of the ability and history of selling the output of the Yadkin system into competitive wholesale and organized markets. However, after you have closed on the transaction with Alcoa, if you seek to approach Duke under PURPA we will be glad to discuss this matter further.

Sincerely,

Michael Keen
Business Developer Manager, Duke Energy

I/A

From: John Collins
Sent: Tuesday, August 23, 2016 9:50 AM
To: regis.repko@duke-energy.com
Cc: Kristina Johnson <kjohnson@cubehydro.com>
Subject: Follow-up to Our Meeting

Regis,

I hope this email finds you well and enjoying the end of summer. I am emailing to follow-up on our discussions regarding the Yadkin hydroelectric assets that Cube Hydro is purchasing from Alcoa. As we discussed in our meeting, we plan of registering 3 of the assets, High Rock, Tuckertown and Falls, as Qualifying Facilities and would like to have further discussions with Duke regarding longer-term QF contracts for these facilities. In addition, we discussed the possibility of a long-term PPA arrangement for all four facilities including the Narrows plant with Duke that could provide additional flexibility for Duke to manage its grid due to the continuing impact of solar generation on the Duke network.

As a follow-up to the meeting you were going to put us in contact with the appropriate team members at Duke to begin discussions. I wanted to let you know that Kristian and I plan to be in North Carolina next Thursday, September 1st, and have some availability to meet with your team if their schedules permit.

Let me know if that will work or who we should contact to begin further discussion related to long-term PPAs for the Yadkin hydroelectric plants.

Look forward to hearing from you.

Regards,

John

John R. Collins
Executive Vice President and Managing Director – Business Development
Cube Hydro Partners
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814
(240) 482-2703 (Work)
jcollins@cubehydro.com

DUKE ENERGY.

Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

September 21, 2016

Cube Hydro Partners
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814

Attn: John R. Collins
Executive Vice President and Managing Director – Business Development

Re: Inquiry concerning sale of output of Yadkin system to Duke Energy

Dear John:

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The Yadkin system is currently owned and operated by Alcoa Inc., and is the subject of a potential purchase by Cube Yadkin Generation, LLC ("Cube Yadkin"). You informed me that Cube Yadkin does not currently own or operate the Yadkin system, but anticipates that it will close on the transaction to own and operate the facilities around November 1, 2016. As I communicated to you previously, Duke does not have any current needs for energy or capacity; however, if a need arises in the future, Duke would likely issue a request for proposals and Cube Yadkin can elect to submit a responsive bid. You further informed me that Cube Yadkin is considering certifying the three smaller units as qualifying facilities under the Public Utility Regulatory Policies Act of 1978 ("PURPA"). In that regard, I informed you that to the extent Cube Yadkin approached Duke under PURPA, that under PURPA's requirements, Duke would likely have no obligation to purchase any output of energy or capacity from the Yadkin system units that may be certified as qualified facilities.

Please feel free to contact me with any questions.

Sincerely,

Michael Keen
Business Development Manager
Duke Energy

I/A

CUBE HYDRO™

Michael Keen
Business Development Manager
Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

Dear Michael,

I am writing in response to your letter dated September 21, 2016 (the "September 21 Letter") regarding the discussions between Duke Energy Progress, LLC and Duke Energy Carolinas, LLC (individually and together, "Duke"), and Cube Hydro Partners, LLC ("Cube Hydro") with respect to the four hydroelectric projects on the Yadkin River (collectively, the "Yadkin Projects") that are currently owned by Alcoa Power Generating Inc. ("Alcoa").

As we discussed, Cube Hydro Carolinas LLC, an affiliate of Cube Hydro, has agreed to acquire the Yadkin Projects from Alcoa. The acquisition is anticipated to occur before the end of 2016. Alcoa has certified three of the four Yadkin Projects – the approximately 30 MW Falls project, the approximately 40 MW Tuckertown project, and the approximately 34 MW High Rock project – as qualifying small power production facilities ("QFs") under the Public Utility Regulatory Policies Act of 1978 ("PURPA") and the implementing regulations of the Federal Energy Regulatory Commission ("FERC").

As you may know, Section 210(m) of PURPA and FERC's regulations require electric utilities, including Duke, to purchase energy and capacity made available from QFs. *See* 16 U.S.C. § 824a-3(a)(2) (2012); 18 C.F.R. § 292.303(a) (2016). FERC's regulations further specify that a QF shall have the option of making sales to an electric utility pursuant to a legally enforceable obligation, or on an "as available" basis. *See* 18 C.F.R. § 292.304(d) (2016).

Given that three of the Yadkin Projects are now QFs, we recommend that we meet to discuss your concerns at your earliest convenience. We are happy to come to your offices in late October or early November to discuss the process for making sales from these projects to Duke pursuant to PURPA. We would anticipate that such discussions would, among other things, address the statement in the September 21 Letter that, "under PURPA's requirements, Duke would likely have no obligation to purchase any output of energy or capacity from the Yadkin system units that may be certified as [QFs]." While electric utilities may petition FERC to be relieved of their mandatory purchase obligations under PURPA, it does not appear that FERC has issued an order relieving Duke of such obligations, or that there are any other applicable exceptions or exemptions.

KEEN EXHIBIT NO. 4
DOCKET NO. E-2, SUB 1177
DOCKET NO. E-7, SUB 1172

DUKE ENERGY.

I/A

Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

October 14, 2016

Via Email and Priority Mail

Mr. John R. Collins
Executive Vice President and Managing Director – Business Development
Cube Hydro Partners, LLC
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814

Re: Response to Undated Cube Hydro Letter Received October 11, 2016

Dear John:

This letter is a follow up to your undated letter to Duke Energy Carolinas, LLC and Duke Energy Progress, LLC ("Duke") which was received on October 11, 2016 (the "Cube letter").

In the Cube letter you inform Duke, as Cube Hydro Partners LLC, on behalf of Cube Hydro Carolinas, LLC (collectively, "Cube Hydro"), that Alcoa Power Generation, Inc. ("Alcoa") has certified three out of four units of the Yadkin system as qualifying facilities under PURPA. The "Yadkin system" consists of four hydro-electric units, as follows: High Rock Station, approximately 33 MW; Tuckertown Station, approximately 39 MW; Falls Station, approximately 30 MWs; and, Narrows Station, approximately 119 MW. You further inform us that Cube Hydro seeks to purchase the Yadkin system from Alcoa, and may be the actual owner and operator of the Yadkin system by the end of 2016. At this time, Cube Hydro neither owns nor is a qualifying facility with respect to the Yadkin system. Therefore, Cube Hydro has no potential rights to exert under PURPA. Although your letter fails to reference our discussions, we have previously and prior to your letter informed you of the PURPA provisions under which Duke would be exempted from PURPA with regard to the Yadkin system. Accordingly, this letter serves as Duke's formal notice under 292.309/310 that if in the future Cube Hydro is a qualifying facility with respect to the Yadkin system and it seeks to sell power to Duke, it is Duke's view that it is exempted from any purchase obligation under PURPA with respect to the Yadkin system.

Representations and warranties in applications made at FERC demonstrate that Cube Hydro has sought, and Alcoa currently has market-based rate authority on the basis of the ability and history of selling the output of the Yadkin system into competitive wholesale and organized markets. However, after you have closed on the transaction with Alcoa, if you seek to approach Duke under PURPA we will be glad to discuss this matter further.

Sincerely,

Michael Keen
Business Developer Manager, Duke Energy

NOTICE OF COMMITMENT TO SELL THE OUTPUT OF A QUALIFYING FACILITY TO Duke Energy Carolinas, LLC or Duke Energy Progress, LLC

Instructions to QF: The QF shall deliver, via certified mail, courier, hand delivery or email, its executed Notice of Commitment to:

Director – Power Contracts
400 South Tryon Street
Mail Code: ST 13A
Charlotte, North Carolina 28202
Attn.: Wholesale Renewable Manager
DERContracts@duke-energy.com

Any subsequent notice that a QF is required to provide to Company pursuant to this Notice of Commitment shall be delivered to the same address by one of the foregoing delivery methods.

1. [__________________] ("Seller") hereby commits to sell to Duke Energy Carolinas, LLC or Duke Energy Progress, LLC (the "Company") all of the electrical output of the Seller's qualifying facility ("QF") described in Seller's self-certification of QF status filed with the Federal Energy Regulatory Commission in Docket No. QF___________ (the "Facility").

2. The name, address, and contact information for Seller is:

__________________	Telephone: ________________________
__________________	Email: ____________________________

3. By execution and submittal of this commitment to sell the output of the Facility (the "Notice of Commitment"), Seller certifies as follows:

   (Select the applicable certification below)

   i. ____ Seller has received a certificate of public convenience and necessity ("CPCN") for the construction of its ____ kW (net capacity ac) Facility from the North Carolina Utilities Commission ("NCUC") pursuant to North Carolina General Statute § 62-110.1 and NCUC Rule R8-64, which CPCN was granted by NCUC on [insert date] in Docket No. ____________.

   ii. ____ Seller is exempt from the CPCN requirements pursuant to North Carolina General Statute § 62-110.1(g) and has filed a report of proposed construction for its ____ kW (net capacity ac) Facility with the NCUC pursuant to NCUC Rule R8-65 ("Report of Proposed Construction") on [insert date] in Docket No. ________.

iii. ____Seller has applied or will apply for a CPCN for the construction of its____ kW (net capacity ac) Facility on [insert date] in Docket No. _____. If the Seller does not know the docket number on the date of submission of this Notice of Commitment, Seller shall notify the Company of the docket number when it is assigned by the NCUC. Seller shall notify the Company upon issuance of an order by the Commission granting the CPCN.

iv. ____ Seller is exempt from the CPCN requirements pursuant to North Carolina General Statute § 62-110.1(g) and will file a Report of Proposed Construction for its ____ kW (net capacity ac) Facility with the NCUC pursuant to NCUC Rule R8-65 and shall notify the Company at the address specified in paragraph 1 of the docket number of such filing when it is assigned by the NCUC.

4. This Notice of Commitment shall take effect on its "Submittal Date" as hereinafter defined. "Submittal Date" means (a) the receipted date of deposit of this Notice of Commitment with the U.S. Postal Service for certified mail delivery to the Company, (b) the receipted date of deposit of this Notice of Commitment with a third-party courier (e.g., Federal Express, United Parcel Service) for trackable delivery to the Company, (c) the receipted date of hand delivery of this Notice of Commitment to the Company at the address set forth in paragraph 1, above, or (d) the date on which an electronic copy of this Notice of Commitment is sent via email to the Company if such email is sent during regular business hours (9:00 a.m. to 5:00 p.m.) on a business day (Monday through Friday excluding federal and state holidays). Emails sent after regular business hours or on days that are not business days shall be deemed submitted on the next business day.

5. By execution and submittal of this Notice of Commitment Seller acknowledges that:

a. The legally enforceable obligation date ("LEO Date") for the Facility will be determined in accordance with subsections (c) or (d) below. For QFs of 5 MW or less, the LEO Date will be used to determine Seller's eligibility for the rates, terms and conditions of the Company's currently effective Schedule PP. If the Seller's Facility does not qualify for Schedule PP, rates for purchases from the Facility will be based on the Company's avoided costs as of the LEO Date, calculated using data current as of the LEO Date.

b. If on the Submittal Date, Seller has a CPCN from or has filed a Report of Proposed Construction with NCUC for the Facility, the LEO Date will be the Submittal Date.

c. If on the Submittal Date, Seller does not have a CPCN for the Facility or has not filed a Report of Proposed Construction with the NCUC for the Facility, the LEO Date will be the date on which the NCUC issues a CPCN for the Facility or the filing date of the Report of Proposed Construction for the Facility, as applicable.

6. This Notice of Commitment shall automatically terminate and be of no further force and effect in the following circumstances:

   a. Upon execution of a PPA between Seller and Company.

   b. For a seller eligible for Schedule PP, if such Seller does not execute a PPA within thirty (30) days of the Company's delivery of an "executable" PPA. An executable PPA shall mean a PPA delivered to the QF by the Company that contains all information necessary for execution and that the Company has requested that the QF execute and return.

   c. For a Seller that is not eligible for Schedule PP, if such Seller does not execute a PPA within six months (as such period may be extended by mutual agreement of Seller and Company) after the Company's submittal of the PPA to the QF, provided, however, that if no interconnection agreement for the Facility has been tendered to Seller prior to the expiration of such deadline, the deadline for execution of the PPA shall be automatically extended until the date that is five days after the date that the interconnection agreement is tendered to the Seller. Notwithstanding the foregoing, if the PPA proposed by the Company becomes the subject of an arbitration or complain proceeding, the six month deadline for execution of the PPA shall be tolled upon the filing of the pleading commencing such proceeding and thereafter the deadline for execution of the PPA will be as directed by the NCUC.

The undersigned is duly authorized to execute this Notice of Commitment for the Seller:

____

[Name]

____

[Title]

____

[Company]

____

[Date]

I/A

Duke Panel Cross-Examination Exhibit 2
Collins Cross-Examination Exhibit No. __

DUKE ENERGY®

Kendrick C. Fentress
Associate General Counsel

Mailing Address:
NCRH 20 / P.O. Box 1551
Raleigh, NC 27602

o: 919.546.6733
f: 919.546.2694

Kendrick.Fentress@duke-energy.com

February 9, 2016

VIA ELECTRONIC FILING

Ms. Gail L. Mount
Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

Re: Duke Energy Progress, LLC and Duke Energy Carolinas, LLC's Compliance Filing Related to Website Updates
Docket No. E-100, Sub 140

Dear Ms. Mount:

Enclosed for filing with respect to the above referenced matter is Duke Energy Progress, LLC's and Duke Energy Carolinas, LLC's information on the location of the Notice of Commitment to Sell Form and other required information on their websites. This filing is made in compliance with the Commission's *Order Establishing Standard Rates and Contract Terms for Qualifying Facilities*, issued by the North Carolina Utilities Commission ("Commission") in Docket No. E-100, Sub 140 on December 17, 2015 ("Phase 2 Order"), and the *Order Granting Extension*, issued January 15, 2016. Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP") (collectively, the "Companies") filed their revised avoided cost rates, standard terms and conditions, and standard offers in this docket on February 2, 2016. The Companies are completing their required compliance filing at this time by reporting on information added to their websites relating to a qualifying facility's ("QF") establishment of a legally enforceable obligation ("LEO").

In the Phase 2 Order, the Commission clarified that a facility seeking to establish a LEO must have self-certified as a QF at the Federal Energy Regulatory Commission, in addition to having: (i) obtained a certificate of public convenience and necessity or, as appropriate, filed a report of proposed construction and (ii) provided notice of a commitment to sell the output of the facility to the utility. The Commission concluded that the "LEO form" that Dominion North Carolina Power ("DNCP") submitted as Exhibit E to DNCP's August 7, 2015 reply comments would be the form required of all QFs seeking to make a commitment to sell in order to establish a LEO. The Commission directed DNCP, DEC, and DEP ("the Utilities") to place the forms on their websites along with information that shows how to establish a LEO and which departments must be contacted to negotiate interconnection agreements and power purchase agreements. The Commission also required that the following language be included on the Utilities' websites:

> The submission of an interconnection request does not constitute an indication of a customer's commitment to sell the output of a facility. For information on submitting a legally enforceable obligation form or requesting a power purchase agreement ("PPA") please see the following website: (provide relevant website link).

In compliance with the Phase 2 Order, DEC and DEP have posted the links to the Notice of Commitment to Sell Form in the following locations:

- For DEP: https://wwwuat.progress-energy.com/carolinas/home/renewable-energy/interconnect-nc.page (please scroll to the bottom of the webpage)

- For DEC: http://wwwqa.duke-energy.com/generate-your-own-power/nc-connect-to-the-grid.asp

The DEP webpage displays information on where to submit interconnection requests, how to establish a LEO, how to request a PPA, the link to the Notice of Commitment to Sell Form, as well as the information explaining that an interconnection request does not indicate a QF's commitment to sell.

For DEC, information on requesting interconnection is found at the bottom of the webpage. The link to the Notice of Commitment form is located under the Qualifying Facilities Commitment to Sell tab. This tab also contains information on establishing a LEO and requesting a PPA, as well as information explaining that an interconnection request does not indicate a QF's commitment to sell.

The Companies have also attached to this letter as Exhibit A, screenshots of the applicable webpages.

The Companies intend to update their webpages further when the avoided cost rates, filed February 2, 2016, in this docket, become effective.

Please do not hesitate to contact me if you have any questions. Thank you for your assistance with this matter.

Sincerely,

Kendrick C. Fentress

Kendrick C. Fentress

Enclosure

cc: Parties of Record

Exhibit A

Commitment to Sell

https://wwwuat.progress-energy.com/carolinas/home/renewable-energy/interconnect-nc.page

https://wwwuat.progress-energy.com/caroli NC Interconnection Proced...

- To establish a Legal Enforceable Obligation (LEO) a QF must

1 Self-certify at FERC as a Qualifying Facility

2 Make a commitment to sell the output of the facility to the utility pursuant to PURPA and via the use of the approved Notice of Commitment to Sell Form

3 Be in receipt of a Certificate of Public Convenience and Necessity ("CPCN") or have filed a Report of Proposed Construction ("ROPC")

- Please note The submission of an interconnection request does not constitute an indication of a QF's commitment to sell the output of a facility to the utility

- **For information on submitting Notice of Commitment to Sell Form, please see: Notice of Commitment to Sell Form**

- **To request a Purchase Power Agreements (PPAs) please contact the utility at the following address or at the following email address:**

  Director – Power Contracts
  400 South Tryon Street
  Mail Code ST 13A
  Charlotte, North Carolina 28202
  Attn. Wholesale Renewable Manager
  DERContracts@duke-energy.com

- For drawings that show exactly how a customer-owned self-all generating facility should interconnect to the Duke Energy Progress system, please refer to the Requirements for Electric Service and Meter Installations

- For Transmission Interconnection or if wheeling power, please see the OATT interconnection information

Note: Customers intending to interconnect generation to Duke Energy Progress electric grid must adhere to all utility requirements, state and local ordinances, electrical permitting and regulations adopted by the North Carolina Utilities Commission (the governing body of regulated utilities). This website is intended to provide access to Duke Energy Progress relevant interconnection documents, but does not constitute a comprehensive guideline for generator installation We recommend that customers consult with energy professionals or qualified renewable energy installers for complete project assistance

Send all interconnection applications and correspondence to:

Mailing Address:

Duke Energy Progress
Attention Customer Owned Generation - Mail Code ST13A
P O Box 1010
Charlotte, NC 28201
Email CustomerOwnedGeneration@duke-energy.com
Phone 866 233 2290

Overnight Mailing Address:

Duke Energy Progress
Attention Customer Owned Generation - Mail Code ST13A
400 South Tryon Street Charlotte, NC 28202

Some other things you need to know:

North Carolina customers wishing to connect renewable and nonutility-owned generation resources to the Duke Energy Progress Distribution System must follow standards as adopted by the North Carolina Utilities Commission (NCUC) under Docket E-100, Sub 101

We recommend that you become familiar with the NCUC approved Interconnection Procedures which govern state jurisdictional generator interconnection. Once you have determined the installation site and gathered technical information for the generator, you'll need to complete an Interconnection Request. When completing the Interconnection Request, please note that Duke Energy Progress requires, among other information, the following

1) The contact information of the installer/electrician,

2) Inverter Manufacturer's Spec Sheet (Inverter-based generation only)

3) An electrical one-line diagram showing the configuration of all generating equipment, current and potential circuits, and protection and control schemes. This one-line diagram must be signed and stamped by a licensed Professional Engineer if the generating facility is larger than 50 kW; and

4) Copy of Insurance Declaration of Coverage – The required coverage shall be an applicable building owner's or a facility-based insurance policy with liability coverage in the amount of $100,000 per occurrence for residential installations, and $300,000 per occurrence for non-residential installations

If you intend to have a distribution interconnected generation system online by Dec 31, Duke Energy Progress requires that http://wwwqa.duke-energy.com/generate-your-own-power/nc-connect-to-the-grid.asp

http://wwwqa.duke-energy.com/generate-your-own | NC Interconnection Procedures | How to Connect to Duke En...

Residential One-Line Diagram Examples

Non-Residential One-Line Diagram Examples

Qualifying Facilities Commitment to Sell

A generating facility proposing to sell electricity to Duke Energy must first meet the requirements of a "Qualifying Facility" (QF) as defined by the Public Utility Regulatory Policies Act of 1978 (PURPA) and the Federal Energy Regulatory Commission (FERC) regulations implementing PURPA.

Cogeneration facilities and small power production facilities that achieve the necessary federal standards can become a "Qualifying Facility" and be eligible for the rates and exemptions established in accordance with Section 210 of PURPA. NCUC Docket E-100, Sub 140 identifies the standard rates and contract terms for a Qualifying Facility

To establish a Legal Enforceable Obligation (LEO), a QF must

1 Self-certify at FERC as a Qualifying Facility
2 Make a commitment to sell the output of the facility to the utility pursuant to PURPA and via the use of the approved Notice of Commitment to Sell Form
3 Be in receipt of a Certificate of Public Convenience and Necessity ("CPCN") or have filed a Report of Proposed Construction ("ROPC")

Please note The submission of an interconnection request does not constitute an indication of a QF's commitment to sell the output of a facility to the utility

For information on submitting Notice of Commitment to Sell Form, please see. Notice of Commitment to Sell Form

To request a Purchase Power Agreements (PPAs) please contact the utility at the following address or at the following email address:
Director – Power Contracts
400 South Tryon Street
Mail Code ST 13A

CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Progress, LLC and Duke Energy Carolinas, LLC's Compliance Filing Related to Website Updates in Docket No. E-100, Sub 140 has been served on all parties of record either by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid.

This the 9th day of February, 2016.

Kendrick C. Fentress
Associate General Counsel
Duke Energy Corporation
P.O. Box 1551/ NCRH 20
Raleigh, North Carolina 27602
Tel: 919.546.6733
kendrick.fentress@duke-energy.com

From: John Collins
Sent: Tuesday, August 23, 2016 9:50 AM
To: regis.repko@duke-energy.com
Cc: Kristina Johnson <kjohnson@cubehydro.com>
Subject: Follow-up to Our Meeting

Regis,

I hope this email finds you well and enjoying the end of summer. I am emailing to follow-up on our discussions regarding the Yadkin hydroelectric assets that Cube Hydro is purchasing from Alcoa. As we discussed in our meeting, we plan of registering 3 of the assets, High Rock, Tuckertown and Falls, as Qualifying Facilities and would like to have further discussions with Duke regarding longer-term QF contracts for these facilities. In addition, we discussed the possibility of a long-term PPA arrangement for all four facilities including the Narrows plant with Duke that could provide additional flexibility for Duke to manage its grid due to the continuing impact of solar generation on the Duke network.

As a follow-up to the meeting you were going to put us in contact with the appropriate team members at Duke to begin discussions. I wanted to let you know that Kristian and I plan to be in North Carolina next Thursday, September 1st, and have some availability to meet with your team if their schedules permit.

Let me know if that will work or who we should contact to begin further discussion related to long-term PPAs for the Yadkin hydroelectric plants.

Look forward to hearing from you.

Regards,

John

John R. Collins
Executive Vice President and Managing Director – Business Development
Cube Hydro Partners
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814
(240) 482-2703 (Work)
jcollins@cubehydro.com

From:	Palasek, Matthew E </O=DUKEENERGY/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=MEPALAS>
To:	Keen, Michael T <Michael.Keen@duke-energy.com>
Subject:	RE: Duke Energy wholesale power contact
Sent:	2016/08/30 17:36:02 (UTC +00:00)

Thanks, Mike

From: Keen, Michael T
Sent: Tuesday, August 30, 2016 1:36 PM
To: Palasek, Matthew E
Subject: RE: Duke Energy wholesale power contact

Left him a vm, have internal mtg with our analysts tomorrow and working team on Thursday. We may not have an obligation to take their units under PURPA if they have access to an organized market. Just getting started on the initial review.

Michael Keen
Business Development Manager
Duke Energy
Office 727.820.4500
Mobile 727.424.2665
DUKE ENERGY.

From: Palasek, Matthew E
Sent: Tuesday, August 30, 2016 1:05 PM
To: Keen, Michael T
Subject: RE: Duke Energy wholesale power contact

Have you gotten back to John and just pulled me out of the string? I'm potentially meeting with his boss on Thursday and just want to make sure I know…

From: John Collins [mailto:jcollins@cubehydro.com]
Sent: Friday, August 26, 2016 8:29 AM
To: Palasek, Matthew E
Cc: Keen, Michael T; Kristina Johnson
Subject: RE: Duke Energy wholesale power contact

*** Exercise caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***

Matt,

Thank you for the introduction.

Mike, nice to meet you. As background which you may be aware of, Cube Hydro recently announced that we are acquiring the four Yadkin hydroelectric plants from Alcoa. Given that the assets are located in Duke's service territory and are interconnected into both Duke Progress and Duke Carolina systems, we had a preliminary meeting with Dhia Jamal and Regis Repko to discuss Duke's potential interest in long-term PPAs from the plants. Of the 4 plants, we will be registering 3 of the plants as Qualifying Facilities given their size and locations. The fourth plant, Narrows does not meet the criteria to qualify as a qualifying facility. Given that the 4 plants are operated as a system, there may be interest by Duke in PPAs covering all 4 plants.

We are in North Carolina on a regular basis and can make ourselves available for a meeting. I know Kristina Johnson, our CEO, will be in North Carolina next week and could meet on September 1. We will also be back in North Carolina the following week and could meet with you and your team then as well.

Let me know some dates when you would be available to meet and discuss the potential PPAs for the Yadkin assets.

We look forward to meeting you in person to begin discussions.

Regards,

John

John R. Collins
Executive Vice President and Managing Director – Business Development

Cube Hydro Partners
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814
(240) 482-2703 (Work)
jcollins@cubehydro.com

From: Palasek, Matthew E [mailto:Matthew.Palasek@duke-energy.com]
Sent: Thursday, August 25, 2016 4:14 PM
To: John Collins <jcollins@cubehydro.com>
Cc: Keen, Michael T <Michael.Keen@duke-energy.com>
Subject: Duke Energy wholesale power contact

Hi John-

Per our discussion yesterday, please consider Mike Keen (cc'd here) as your point of contact for initiating discussions on a potential PPA:

Michael Keen
Business Development Manager
Renewable Compliance & Origination
Ph: 727-820-4500
e-mail: Michael.Keen@duke-energy.com

Please let me know if you have any questions, and I am happy to stay involved in the discussions insofar as my presence would be helpful.

Thanks,
Matt

Matt Palasek
Corporate Development
work - (704) 382-0955
cell - (704) 654-0354
Matthew.Palasek@duke-energy.com

DUKE ENERGY.

Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

September 21, 2016

Cube Hydro Partners
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814

Attn: John R. Collins
Executive Vice President and Managing Director – Business Development

Re: Inquiry concerning sale of output of Yadkin system to Duke Energy

Dear John:

This letter is a follow up to our conversation of September 16, 2016 during which I communicated to you Duke Energy Progress, LLC and Duke Energy Carolinas, LLC's (collectively/individually, "Duke") positions in response to your inquiry soliciting Duke's interest in purchasing the output of the Yadkin system. The "Yadkin System" consists of four hydro-electric units as follows: High Rock Station, approximately 33 MW; Tuckertown Station, approximately 39 MW; Falls Station, approximately 30 MW; and Narrows Station, approximately 119 MW.

The Yadkin system is currently owned and operated by Alcoa Inc., and is the subject of a potential purchase by Cube Yadkin Generation, LLC ("Cube Yadkin"). You informed me that Cube Yadkin does not currently own or operate the Yadkin system, but anticipates that it will close on the transaction to own and operate the facilities around November 1, 2016. As I communicated to you previously, Duke does not have any current needs for energy or capacity; however, if a need arises in the future, Duke would likely issue a request for proposals and Cube Yadkin can elect to submit a responsive bid. You further informed me that Cube Yadkin is considering certifying the three smaller units as qualifying facilities under the Public Utility Regulatory Policies Act of 1978 ("PURPA"). In that regard, I informed you that to the extent Cube Yadkin approached Duke under PURPA, that under PURPA's requirements, Duke would likely have no obligation to purchase any output of energy or capacity from the Yadkin system units that may be certified as qualified facilities.

Please feel free to contact me with any questions.

Sincerely,

Michael Keen
Business Development Manager
Duke Energy

CUBE HYDRO™

I/A

Michael Keen
Business Development Manager
Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

Dear Michael,

I am writing in response to your letter dated September 21, 2016 (the "September 21 Letter") regarding the discussions between Duke Energy Progress, LLC and Duke Energy Carolinas, LLC (individually and together, "Duke"), and Cube Hydro Partners, LLC ("Cube Hydro") with respect to the four hydroelectric projects on the Yadkin River (collectively, the "Yadkin Projects") that are currently owned by Alcoa Power Generating Inc. ("Alcoa").

As we discussed, Cube Hydro Carolinas LLC, an affiliate of Cube Hydro, has agreed to acquire the Yadkin Projects from Alcoa. The acquisition is anticipated to occur before the end of 2016. Alcoa has certified three of the four Yadkin Projects – the approximately 30 MW Falls project, the approximately 40 MW Tuckertown project, and the approximately 34 MW High Rock project – as qualifying small power production facilities ("QFs") under the Public Utility Regulatory Policies Act of 1978 ("PURPA") and the implementing regulations of the Federal Energy Regulatory Commission ("FERC").

As you may know, Section 210(m) of PURPA and FERC's regulations require electric utilities, including Duke, to purchase energy and capacity made available from QFs. *See* 16 U.S.C. § 824a-3(a)(2) (2012); 18 C.F.R. § 292.303(a) (2016). FERC's regulations further specify that a QF shall have the option of making sales to an electric utility pursuant to a legally enforceable obligation, or on an "as available" basis. *See* 18 C.F.R. § 292.304(d) (2016).

Given that three of the Yadkin Projects are now QFs, we recommend that we meet to discuss your concerns at your earliest convenience. We are happy to come to your offices in late October or early November to discuss the process for making sales from these projects to Duke pursuant to PURPA. We would anticipate that such discussions would, among other things, address the statement in the September 21 Letter that, "under PURPA's requirements, Duke would likely have no obligation to purchase any output of energy or capacity from the Yadkin system units that may be certified as [QFs]." While electric utilities may petition FERC to be relieved of their mandatory purchase obligations under PURPA, it does not appear that FERC has issued an order relieving Duke of such obligations, or that there are any other applicable exceptions or exemptions.

Thank you for your attention to this matter. We'll be contacting your office to find a mutually agreeable date to meet at your offices.

Sincerely,

John R. Collins
Executive Vice President and
Managing Director – Business
Development

Cc: Kristina Johnson
Dhiaa M. Jamil

I/A

DUKE ENERGY.

Duke Energy
299 First Avenue North
St. Petersburg, FL 33701

October 14, 2016

Via Email and Priority Mail

Mr. John R. Collins
Executive Vice President and Managing Director – Business Development
Cube Hydro Partners, LLC
Two Bethesda Metro Center, Suite 1330
Bethesda, MD 20814

Re: Response to Undated Cube Hydro Letter Received October 11, 2016

Dear John:

This letter is a follow up to your undated letter to Duke Energy Carolinas, LLC and Duke Energy Progress, LLC ("Duke") which was received on October 11, 2016 (the "Cube letter").

In the Cube letter you inform Duke, as Cube Hydro Partners LLC, on behalf of Cube Hydro Carolinas, LLC (collectively, "Cube Hydro"), that Alcoa Power Generation, Inc. ("Alcoa") has certified three out of four units of the Yadkin system as qualifying facilities under PURPA. The "Yadkin system" consists of four hydro-electric units, as follows: High Rock Station, approximately 33 MW; Tuckertown Station, approximately 39 MW; Falls Station, approximately 30 MWs; and, Narrows Station, approximately 119 MW. You further inform us that Cube Hydro seeks to purchase the Yadkin system from Alcoa, and may be the actual owner and operator of the Yadkin system by the end of 2016. At this time, Cube Hydro neither owns nor is a qualifying facility with respect to the Yadkin system. Therefore, Cube Hydro has no potential rights to exert under PURPA. Although your letter fails to reference our discussions, we have previously and prior to your letter informed you of the PURPA provisions under which Duke would be exempted from PURPA with regard to the Yadkin system. Accordingly, this letter serves as Duke's formal notice under 292.309/310 that if in the future Cube Hydro is a qualifying facility with respect to the Yadkin system and it seeks to sell power to Duke, it is Duke's view that it is exempted from any purchase obligation under PURPA with respect to the Yadkin system.

Representations and warranties in applications made at FERC demonstrate that Cube Hydro has sought, and Alcoa currently has market-based rate authority on the basis of the ability and history of selling the output of the Yadkin system into competitive wholesale and organized markets. However, after you have closed on the transaction with Alcoa, if you seek to approach Duke under PURPA we will be glad to discuss this matter further.

Sincerely,

Michael Keen
Business Developer Manager, Duke Energy

From:	Bowman, Kendal C </O=DUKEENERGY/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=KENDAL.BOWMAN>
To:	Hughes, Mike <Mike.Hughes@duke-energy.com>; Fountain, David <David.Fountain@duke-energy.com>; Hawkins, Kathy G <Kathy.Hawkins@duke-energy.com>; Jester, Steve <Steve.Jester@duke-energy.com>
Subject:	RE: NEWS: Maryland company seals deal for Yadkin hydroelectric plants
Sent:	2017/02/03 20:29:54 (UTC +00:00)

Thanks for sending Mike – they have already called me asking for a meeting!!

From: Hughes, Mike
Sent: Friday, February 03, 2017 3:29 PM
To: Fountain, David; Hawkins, Kathy G; Bowman, Kendal C; Jester, Steve
Subject: FW: NEWS: Maryland company seals deal for Yadkin hydroelectric plants

From: Shiel, Tom
Sent: Friday, February 03, 2017 3:26 PM
To: Duty-Corp Comm
Subject: NEWS: Maryland company seals deal for Yadkin hydroelectric plants

Maryland company seals deal for Yadkin hydroelectric plants

Charlotte Business Journal, 2-3-17

By Ken Elkins

A Maryland company says it has closed the deal to buy the four hydroelectric plants on the Yadkin River from **Alcoa**.

Cube Hydro Partners, which now operates 19 plants in five states, says the Bethesda, Md., company will start work on local partnerships to bring increased economic, environmental and other benefits to the area on the eastern side of the Charlotte region.

"At Cube Hydro, we understand that what is good for the local and regional community is good for our business," says John Collins, executive vice president of Cube Hydro. "Our success is the community's success."

The company gave no other details of those planned partnerships. Neither Alcoa Inc. (NYSE: AA) nor Cube Hydro has disclosed the price of the deal.

Cube Hydro unveiled its plans to buy the plants last summer even before Alcoa received its new Federal Energy Regulatory Commission license for the Yadkin waterway. That process ended in September with Alcoa getting what amounts to a 38-year license.

Now Cube Hydro gets a system that produces 215 megawatts of electricity at four Yadkin River dams: High Rock, Tuckertown, Narrows and Falls.

CEO Kristina Johnson, a former U.S. undersecretary of energy in the Obama administration and a former dean of Duke University's engineering school, leads Cube Hydro.

I/A
I/A
"We are excited to officially take ownership of the Yadkin Project," Johnson says. "Investing in clean power in North Carolina has long been a goal of ours."

The purchase essentially closes the story that started in 2007 when Alcoa closed its aluminum-smelting plant in Stanly County, which at one time employed 1,000.

Fights among county and city governments, the state and Alcoa followed as local residents questioned why Alcoa should be in charge of the hydroelectric system when it no longer needed the electricity to run the Badin plant. Opponents to the Alcoa relicensing also questioned the company's plans to clean up environmental problems at nearby Badin Lake.

With the Yadkin deal, Cube Hydro operates systems on 10 rivers in New York, Pennsylvania, Virginia, West Virginia and now North Carolina. The Yadkin deal would boost the company's capacity to 373 megawatts of electricity, or enough to power about 140,000 homes.

BRAND MESSAGES

Before submitting your release, please reviewit to ensure it includes one or more of the company's brand messages:

- * *Customer focused*
- * *Environmentally responsible*
- * *Committed to innovation*

From: Kristina Johnson
Sent: Monday, July 11, 2016 3:41 PM
To: dhiaa.jamil@duke-energy.com
Subject: Good afternoon
Attachments: Project Rainbow Press Release 7-11-16 - Cube Final Version.pdf

Dear Dhiaa – I called your office to let you know about this transaction and look forward to following up with you. It would be a pleasure to work together again- with warm regards, Kristina

Chief Executive Officer
Cube Hydro, LLC
Two Bethesda Metro Center Suite 1330
Bethesda, MD 20814
Tel: 240-482-2700 Fax: 240-482-2727|
www.cubehydro.com

CUBE HYDRO™

Press Release
July 11, 2016

Cube Hydro Carolinas, an affiliate of Cube Hydro Partners, reaches agreement to acquire hydroelectric plants on the Yadkin River in North Carolina from Alcoa Power Generating Inc.

Bethesda, MD, July 11, 2016 – Cube Hydro Carolinas LLC, an affiliate of Cube Hydro Partners, LLC, has reached an agreement to purchase and upgrade four hydroelectric power plants located on the Yadkin River in North Carolina from Alcoa Power Generating Inc. (APGI), a subsidiary of Alcoa Inc. (NYSE:AA). The four facilities, known as High Rock, Tuckertown, Narrows and Falls, total 215 megawatts (MW) and are expected to produce nearly 800,000 megawatt-hours (MWh) of clean electricity per year.

Dr. Kristina M. Johnson, CEO of Cube Hydro Partners and former Dean of the Pratt School of Engineering at Duke University, said, “We are excited to expand our presence into North Carolina to operate and upgrade the plants on the Yadkin River. We are committed to being good stewards of these well-run hydropower plants that have a long history of generating reliable, carbon-free electricity.”

Ray Barham, APGI Yadkin Relicensing Manager said, “Alcoa has a long history in North Carolina and we are grateful for the strong relationships we’ve formed over the years. We will continue to promote economic development opportunities at the Badin Business Park and are confident that Cube Hydro will build on our century-long legacy of generating clean, renewable energy and protecting the natural resources of the region.”

“We look forward to partnering with local communities as well as state and federal regulators to preserve the natural beauty of North Carolina and increase the clean electricity generated from these plants,” said John Collins, Managing Director for Business Development of Cube Hydro Partners.

Cube Hydro acquires and modernizes hydroelectric facilities to demonstrate the value of renewable hydropower and reduce our nation’s reliance on carbon-based energy. Cube Hydro Partners currently owns and operates 14 plants in New York, Pennsylvania, Virginia and West Virginia with a total capacity of 126 MW and 470,000 MWh annually. When the Yadkin project and other pending acquisitions close, Cube Hydro Partners will operate 19 plants on ten rivers in five states with a combined capacity of more than 373 MW, generating 1.4 million MWh annually, or enough electricity to power approximately 140,000 homes with renewable energy.

About Cube Hydro: Cube Hydro, led by Dr. Kristina M. Johnson, former U.S. Undersecretary of Energy, is a hydropower development and operating platform targeting investments in mid-sized hydro projects in the U.S. and Canada. John Collins spent over 22 years with Constellation Energy Group, Inc. and Baltimore Gas and Electric Company, serving as Chief Financial Officer and Senior Vice President of Integration.

Contact: Hannah Harrill
Office: 919-573-6329
Mobile: 336-457-7310
Email: hharrill@capstrat.com

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-2, SUB 1177
DOCKET NO. E-2, SUB 1177

BEFORE THE NORTH CAROLINA UTILITIES COMISSION

Docket No. E-2, Sub 1177

In the Matter of
Cube Yadkin Generation, LLC,
Complainant

v.

Duke Energy Progress, LLC
Respondent

Docket No. E-7, Sub 1172

In the Matter of
Cube Yadkin Generation, LLC,
Complainant

v.

Duke Energy Carolinas, LLC
Respondent
I/A
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VIDEOTAPED VIRTUAL DEPOSITION OF MICHAEL KEEN

DATE: Tuesday, December 8, 2020

TIME: 10:01 a.m. to 2:16 p.m.

LOCATION: Videotaped Virtual Deposition
Florida

TAKEN BY: Complainant

REPORTER: Shannon McCann, CSR (NJ)

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ALSO PRESENT:
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Roosevelt Harrison, Videographer

I N D E X

E X H I B I T S

THE VIDEOGRAPHER: Good morning. This begins media number one in the deposition of Michael Keen, 30(b)(6) witness for Duke Energy Carolinas and Duke Energy Progress, LLC.

This is in the matter of Cube Yadkin Generation, LLC versus Duke Energy Progress, LLC, et al.

Today's date is December 8, 2020. The time on the monitor is 10:01 a.m. My name is Roosevelt Harrison. I am the videographer.

The court reporter is Shannon McCann. We are here with Huseby Global Litigation.

Counsel, please introduce yourselves after which the court reporter will swear in the witness.

MR. DOWDY: Good morning. My name is Joe Dowdy and I'm joined by my colleagues, Phillip Harris and Ben Snowden.

We're here on behalf of the Petitioner and Complainant, Cube Yadkin Generation, LLC. We're also joined by our client representative, Ginger Lew.

MS. FENTRESS: Good morning. I'm Kendrick Fentress. With me are co-counsel Dwight Allen, Brady Allen, and Britton Allen. We are here on behalf of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC, the Respondents.

(Whereupon Exhibits 1 and 2 were premarked for identification.)

THEREUPON,

MICHAEL KEEN,

having first been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. DOWDY:

Q. Good morning, Mr. Keen.

A. Good morning.

Q. I don't think we met before today, but my name is Joe Dowdy. And it's a pleasure to meet you, albeit, under in a number of respects odd circumstances, but I appreciate your time today.

Now, it's my understanding that you probably have had your deposition taken before; have you?

A. Yes.

Q. So you know the ground rules. Just to go over a couple of them quickly, though, if I ask a question that's confusing, which I do from time-to-time, just let me know and I'll try to do better, if I can.

I think it's going to be most important that we try very hard, and I'll try hard on my part, as well, not to speak over each other. I pride myself on not being especially combative; but, you know, I think it makes it difficult on the court reporter and especially with the technology.

And try to remember the question-and-answer format. And let me know if I'm interrupting you. It's not on purpose. I'll stop.

A. Okay.

Q. Obviously, if there's an objection, you know, you're still free to answer the question, unless there's an instruction not to answer.

But same thing with counsel. If I have already -- if the answer has already begun, go ahead and make your objection. I know the technology is a little unusual.

And I think most importantly, if there is -- if at any point, anyone notices a technological issue, I would appreciate if they chime in. I want the witness to be able to hear, and I want to be able to hear everyone and vice versa.

Most importantly, if at any point you need to take a break, just let me know. And as soon as we finish the question we're on, we'll take that break. I know you're a busy guy. And, you know, the circumstances are unusual; but it's not an endurance contest. It's a deposition.

A. Thank you.

Q. Absolutely. And same goes for anybody. Anybody

needs a break at all, let me know.

Now, let me ask: What did you do to prepare for this deposition?

A. I met with -- I met with the attorneys last week to try to talk about what would be happening today.

I also reviewed the documents that I received on Friday from you guys. I think I received maybe 200 documents to my home. I reviewed those over the weekend.

Q. And that raises -- that answer raises an interesting point.

When I'm asking questions, I'm generally not asking what you said to your counsel. And you did just fine there; but, if there's a question about that, I'm not trying to pry into privileged matters. But they would have a valid objection based on that, but that's generally not what I'm asking for. But if you think I am, let me know, because I've done something wrong.

A. Okay.

Q. Okay. And so you reviewed at least briefly the documents that were in the binder that we sent?

A. Yes, sir.

Q. And you're aware that today is a rule 30(b)(6) deposition?

A. I don't know what that means.

Q. I'm sorry.

At some point, have you seen a deposition notice in the case?

A. I think so. I think it was attached to the binders maybe.

Q. Yeah. And there's -- well, let's just look real quick. Although, I'll have to -- just hold on a moment.

We designated certain topics, and ask the company testify to those. And the company has designated you. I'll just go through them, if I may.

If you'll go to the second binder, Tab 201, and turn to page four?

A. Okay.

Q. These are -- and you see where it says, Topics For Examination?

A. Yes.

Q. So these are the topics on which we've requested testimony from Duke. And what I'll ask you to do is just take a minute and look through them, and let me know if you're prepared to testify on these topics today.

A. Okay.

MS. FENTRESS: Joe, I would object to some of these topics involved on legal opinion. And we sent you all the objections to those in advance.

So I would make that objection at this time with respect to those topics.

THE WITNESS: I would answer your question to say that I am prepared to speak to some of these, but not all of them.

BY MR. DOWDY:

Q. Just so I don't -- which -- which, if you don't mind going through and let me know which ones would you say you're not prepared to speak to?

A. Let's see. Number one, I think I'm prepared to speak to Duke's responses to allegations, maybe not all of the responses. Some of them are probably legal. I'm a commercial guy.

Number two, I'm not sure what, "propounded," means.

Let's see. What are -- I think I can answer questions as it relates to number three. I can answer questions as relates to number four.

Number five, I don't really know much about Cube's investments. And I don't know what they do with that.

Let's see. Number six, I don't think I'm prepared to answer number six. I don't know of any binding agreement there.

Let's see. Number seven, I can respond to number seven. I can respond to number eight. I can respond to number nine.

I can't answer number ten at the high level. That seems you're looking for some analytical stuff there. We have analysts that work on those things, but I can't answer high level questions as relates to number ten.

Number 11, yes. Twelve, yes.

MS. FENTRESS: I would just interrupt. I think we've objected to 10, 11 and 12 as irrelevant to the -- he's entitled to a waiver of the requirement to file a Notice of Commitment form.

THE WITNESS: I think I can answer number 14.

BY MR. DOWDY:

Q. I'm sorry. Did you give an answer on 13?

A. I think I can answer some of your questions that relate to number 13, yes.

Fifteen, yes. Sixteen, yes.

MS. FENTRESS: We think question 17 calls for a legal conclusion and object to that.

THE WITNESS: Number 18 --

MR. DOWDY: Hold on.

I still want to know if he's prepared to testify for it.

Go ahead.

MR. ALLEN: Then he would have to be prepared to give a legal opinion.

MR. DOWDY: The topic says, The factual basis for the representation. I don't understand how that involves a legal conclusion. But I mean, I guess I'll just ask the topic as stated, and see if he's prepared to testify what the factual basis is for the representation in the letter the date was accepted.

MR. ALLEN: Well, the system deals with legal issues and not the factual issues. We can do it when we get there.

THE WITNESS: I have to tell you when it comes to number 17, I can't recall what paragraph 30 of the complaint is.

Let me just read number 17 real quick.

Let's see. So, I'm going to say I don't think I can answer number 17 for you, Mr. Dowdy.

Number 18, I think we already talked about that; right?

Let's see. Number 19, the same works for the privileged communications. I'm familiar with quite a few communications, maybe not all of them. Definitely not all of them.

Number 20, same answer to that. I can answer number 20. I'm not probably familiar with every single communication, but I'm familiar with a lot of them.

MS. FENTRESS: I'm sorry. I just enter an objection to 19. Again, we want to make sure that we're not getting into any sort of legal discussion.

I'm sorry. I'm looking at 18. I apologize. Eighteen, 18. We contend that calls for a legal conclusion.

Sorry about that.

THE WITNESS: I think 21, I really cannot answer that one.

MS. FENTRESS: Again, we think that calls for a legal conclusion.

MR. DOWDY: Which one? This is 21?

THE WITNESS: Yes.

MR. DOWDY: So I just want to stop there for a second and stop there politely on the record. My position would be that, if I ask a question, and somebody thinks it calls for a legal objection, they can object. And, you know, I guess the commission will do what it does with the question.

But I don't think that whole topics are objectionable on the basis of requesting a legal conclusion. And that just means that we don't have to testify about the facts underlying them. I don't think that's a valid way to object to a 30(b)(6) notice. I'm intending to ask about the facts.

But be that as it may, I want to put that on the record in light of the objections. But I'm not going to ask Mr. Keen to be the company's lawyer.

BY MR. DOWDY:

Q. Anyway, go ahead, Mr. Keen.

A. Twenty-two, I cannot answer that. I do not have any facts. I have no understanding at all of the waiver process for that, so I cannot answer to them.

Twenty-two, again, I am not the person at Duke that talks about CPCNs, I cannot answer 22.

I can provide some information on 23, I think.

Twenty-four, I can probably answer some questions on 24, sure. I can probably answer questions on number 25.

Let me see. Twenty-six, let me read that one. I think it sounds like 26 is a legal PURPA question. I don't think I can add any value on 26.

Twenty-seven is the same thing, the CPCN certificates. That whole process I'm not familiar with. I'm essentially a commercial guy. I do GPAs, and stuff like that.

Let's see. Twenty-eight, I can discuss 28.

I can't answer 29. I don't understand that question at all.

Q. Thank you for that, Mr. Keen.

So I'll ask you some questions about your role at Duke. You said you're a commercial guy. What positions do you hold?

A. I'm a business development manager.

Q. Can you help me understand what are your core job responsibilities in that role?

A. I buy and sell long-term capacity and energy and a lot of different energy projects for the Duke regulated utilities.

So, essentially, I work with other utilities, and cities, and co-ops to buy and sell long term power for Duke Energy Carolinas, Duke Energy Progress, and Duke Energy Florida.

I also manage an existing portfolio of around 4,000 megawatts of purchase power agreements.

Q. What do mean when you say you manage the agreement?

A. So these purchase power agreements, all these PPAs, the type of management requires communicating with potentially the owners, the asset manager, the plant manager, depends on who the owners are.

A lot of times I'm on operating committees to come up with operating committee procedures. I review invoices to make sure they're accurate. Make sure that forced outages and scheduled outages are done correctly.

I arrange performance testing at these power plants, that kind of stuff. Basically, day-to-day, you know, management interaction. I tend to be the single point of contact for commercial ventures with the PPAs. The PPAs, the power plants, do work with the energy control centers and stuff on daily dispatch, but just about anything else I would be involved.

Q. When you use the term PPA, does that stand for power purchase agreement?

A. Yes, or purchase power agreement. We also use it synonymously sometimes with a towing agreement.

Q. I understand.

Just real quickly, if you would, what is the relationship between Duke Energy Progress, LLC, and Duke Energy Carolina? Those are two companies that --

A. They're separate investor owned utilities. They're both owned by Duke Energy.

Q. And in your role, do you work for both companies?

A. I do work for both companies, yes.

Q. And is your title the same as it relates to both companies?

A. Yes. And also Duke Energy fuel.

Q. And are you on a -- do you work with a team of individuals for what you do or --

A. Well, yeah. I mean probably not so much the management of the existing contract piece. There's not really a team; but, if we're out buying, selling, there will be a team.

There's a lot of procedures we have to follow, but the team consists of people, you know, analysts, fuel folks, commercial attorneys, folks like that. So there is a team of folks when we're working on new agreements.

Q. I understand.

How long have you been with Duke?

A. Well, I started with Power Corp. in 1984. And I believe in 2000 they were bought by Carolina Power and Light. And then in 2000 Duke bought Carolina Power and Light, so I think this is my 36th year.

Q. And how long have you been in the position of business development?

A. Well, I started in the wholesale business right around 1997.

Q. And so, when you say you're entering in the PPAs and buying and selling energy and capacity, from what kind of companies would you generally -- with what kind of companies would you generally enter into PPA?

A. Well, investor owned utilities, municipalities, co-ops, independent power producers. Those are the folks we used to do business with.

Q. And how would you -- which of those would you say Cube Yadkin Generation is?

A. I would probably refer to them as private equity.

Q. And why would you say that?

A. Well, at least originally they were owned by I Squared Capital, so that's why I would say that.

Q. Okay.

A. I think when this process started at least that's who it was owned by.

Q. Do you have experience buying hydroelectric power?

A. I do.

Q. I'm not going to ask about names. But approximately how many hydroelectric deals have you done?

A. I'm not sure how many I've done, but I manage about 50 hydro PPAs. We're pretty much doing them all the time.

Q. When you say, "all the time," does that come out to a certain number a year you're doing or --

A. You could say we have ten renewals or extensions a year. That's just an estimate. It depends on all the contract terms and things like that, but we're doing them pretty frequently.

Q. And do you have an understanding of what a

qualified facility is, just a personal understanding? I'm not asking for a legal --
A. I don't think I can give you a legal definition from PURPA. I do have a general understanding of what a qualifying facility is.
Q. And what's your general understanding of what that is?
A. Well, they are typically facilities covered under PURPA. I think there's different definitions depending on which state you work in, as far as, the deals associated with that. But could be a co-gen. Could be a solar. Could be a hydro.
Basically, there are machines what I call PURPA machines and power plants that are eligible for PURPA.
Q. And do you have experience with what's referred to under PURPA as legally enforceable obligations, L-E-Os?
A. I have some familiarity with that, yes.
Q. I'm not asking again for legal conclusions, but what's your familiarity with LEO's.
A. Well, on the commercial side, typically the way those types of those things work PURPA being implemented on a state-by-state basis, the regulatory attorneys for the individual states keep the commercial guys in the loop on what process we follow to establish LEO's in the

different jurisdictions.
But, essentially, for me, personally, what that means is once Cube has established a LEO, that's the date we use to begin basically our analysis for our calculation of what it costs and stuff like that.
Q. Thank you.
Now, are you personally familiar -- well, strike that.
Are you familiar with the Cube Yadkin facilities that are referenced in the complaint?
A. Yes.
Q. And can you -- are those interconnected to the Duke grid facilities?
A. They're interconnected to both DEC and DEP. I believe Cube Yadkin has its own balancing authority.
Q. And there's -- how many facilities or how many different -- I'll ask it this way. The high level, how would you describe the Cube Yadkin facility?
A. There's four facilities there, nominally, 200 megawatts located on the Yadkin River. Three of them are qualifying facilities and one is not. They were owned by ALCOA for many, many years.
And I don't know. First quarter of 2017 I think ALCOA sold them; but, yeah, that's pretty much high level what I know.

Q. I'll go to the names of the facilities. See if they're familiar to you. The High Rock facility, is that one of them?
A. Yes.
Q. And Tuckerstown, is that one of them?
A. Yes. I think so.
Q. And Falls?
A. I think Falls goes by maybe a couple of names. Yeah, but Falls. And the last one is Narrows. I have to go back and look. I just remember one of them. It was referred to by two different names, but I think Narrows is the non QF of the four.
Q. And you said three of them were QF's. Is that High Rock, Tuckerstown, and Falls?
A. I think so. Yes. I think Narrows is the non QF.
Q. And do you know when they became QF's?
A. I believe ALCOA certified those, or filed the PURPA forms in September maybe of 2016.
Q. Now, does Duke have facilities nearby to those facilities?
A. I believe we have a couple of other hydros on that river system. Yes.
Q. Okay. Do you know what the names of those facilities are?

A. I forgot. I don't remember them.
Q. I'm sure I'm going to butcher this, because I moved my notes. But is Tillery or Blewett one of them?
A. Yeah. I think it's Tillery and Blewett. That sounds familiar.
Q. So do you know for the separate Cube facilities, do you know sort of how much output they have?
A. I don't have the exact outputs in front me; but I nominally think of those four plants as roughly Narrows being 100 and the other three plants adding up to 100, you know, thereabouts.
I think when you go back and look, you know, sometimes with hydros you can't pick exactly what the capacity is of those. But I believe all three of the smaller ones were in the 30 megawatt range, 33, 35, 38, something like that, and Narrows was a little bit over 100.
Q. So you got a pretty good memory there.
In approximately 2015 were these facilities owned by ALCOA?
A. I believe so. Yeah.
Q. And at some point, did Duke become aware that ALCOA was going to sell the facilities?
A. Yes.
Q. And do you know how Duke became aware of that?

A. I do not. I think that ALCOA would consider Duke sort of a natural potential buyer. I don't think that would be a stretch.

But M&A activity, I'm not involved with M&A. Look, I'm not involved with mergers and acquisitions. That would be our corporate development group.

Q. So you don't -- it's fair to say you don't have specific knowledge of Duke's potential purchase of the Yadkin facility?

A. No. I wouldn't be able to answer specifics of it. In other words, they have folks in corporate development. That's their job.

Q. Let me ask you a high level. Do you know why Duke was potentially interested in purchasing a facility?

A. Well, I think that there are some synergies there. And it's located, you know, in North Carolina. Duke is a pretty sizable provider of electricity. We have other hydros on the river and other hydros in general.

So I think it was -- you know, if it was something that was for sale, we felt it was a good price for our customers, it was something the commission would approve, I think it would make sense to participate and start the process to purchasing assets.

I would doubt 2016, 2017 was the first time they

looked at those assets. I don't have any knowledge of that.

Q. Okay. Okay.

And is it beneficial for Duke to own at least some hydroelectric facilities?

A. I think so. I think we've got hydro assets. And I think we're very fond of them.

Q. And why is that?

A. Well, I think, you know, we've got some carbon reduction goals. And I think hydros play an important role there, like say nuclear, solar, wind, stuff like that.

Q. And does it make a difference to those goals whether Duke owns the facility or purchases power plants?

A. I don't know. I can't really answer that. I'm not sure how the carbon goals are calculated, whether or not -- in other words, I don't know if PPAs and stuff like that are included in the math for those goals. It probably is, but I really don't know how that goal is calculated.

Q. I understand.

So, at some point, did Duke became aware that Cube Yadkin was going to purchase the facility?

A. Yes.

Q. And do you know how Duke became aware of that?

A. I think it was in the summer of 2016, summer of 2016.

Well, I don't know about that. That's what it looks like. I think the process, you guys probably will know better than me; but I think the process, ALCOA's purchase process, probably started, you know, months and months before then.

So I suspect we knew there were other bidders interested; but I believe the summer of 2016 is when we started getting communications from Cube that they felt like they were going to eventually own those power plants.

Q. And I'm sorry if you said it, and I missed it; but do you know approximately when you started getting outreach from Cube that they thought they might own the power plant?

A. You know, I don't. You know, I Squared Capital and Cube they were pretty well-connected. And they would communicate at the executive levels with Duke, which I'm not familiar with; but it looks to me like right around August of 2016 is when I started seeing the first e-mails about it. So I think, you know, summer of 2016 is when we heard about it.

Q. So August of 2016 is when you, Michael Keen, became involved; but it's possible there were some

communications before that?

A. I was assigned to this project on August 25 of 2016.

Q. Let me ask it this way: Is it fair to say you don't know what personally happened before that?

A. I've only got limited information what happened before that, just general conversations.

Q. Well, but I would like to know about that. What information do you have on what the communications were before August of 2016?

A. On August -- John Collins from Cube had sent an e-mail to one of our executives on August 23rd. I remember seeing that e-mail. And I think, at that point, they assigned a commercial person, and that's me.

So within two days, I was assigned the project. I'm not familiar with any conversations prior to that.

Q. Is it fair to say you don't know if those conversations occurred?

A. That's fair to say.

Q. Okay. I'll just ask a question so I know if we need to look at an exhibit or not.

Do you know what a BPR draft is?

A. No.

Q. Let's skip ahead.

You know, I apologize for my pronunciation here;

but do you know someone named Regis Repko?
A. I never met Regis Repko. He's an executive with Duke Energy. I don't know his role right now.
But, yes, when I refer to the executive that got the e-mail on August 23rd, that was the e-mail from Collins to Repko.
Q. I'll apologize, if you'll help me with this pronunciation. Is it Dhiaa Jamil?
A. Dhiaa Jamil? He's an executive with Duke Energy.
Q. Was there a meeting between Mr. Dhiaa Jamil and Mr. Repko, on the one hand, and Kristina Johnson and Mr. Collins at Cube, on the other, on August 8, 2016?
A. If there was, I was not familiar with it.
Q. Fair to say that you don't know what was discussed at that meeting, if there was one?
A. That's fair to say.
Q. Okay. Do you have the binder of documents that I sent over?
A. I do.
Q. Sorry for the -- on this paper.
Can we turn to Tab 194 when you have a moment?
A. Okay. I'm there.
Q. Okay. And you referenced an e-mail from Mr. Collins to Mr. Repko. Is this the e-mail you were

referring to?
A. I think so. Yes. Yes.
Did I say August 23rd?
Q. Yes, sir.
A. Yeah.
Q. And do you know what happened after this e-mail?
A. All I really know is that a couple days later I was assigned commercial responsibility for this transaction, for this project.
Q. And what does that mean, when you say you were assigned commercial responsibility? What was it that you were supposed to do?
A. I would work with this gentleman, Mr. Collins, contact him, and hear what he has to say and talk to him a little bit.
We have to be cautious, because frequently we have people call and want to sell stuff they don't own. And, you know, I'm talking to him about him trying to sell something that he's not the owner of, so I have to be careful of that.
But I reached out to John. And I don't have all the details, but we started communicating between voicemails, and e-mails, and phone calls. And, essentially, started working on what their interest might be.

Essentially, I'm in charge at that point of the commercial transaction. So I would, essentially -- I mean, even though Cube didn't really recognize that I would be the single point of contact with Duke Energy as it relates to the commercial transaction.
Q. When you say Cube didn't recognize that, what does --
A. You know, typically, you know, it's unusual to be talking to people about an asset they don't own. They usually don't do that. It puts us in a really awkward position.
You know, really, to tell you the truth, what should have been happening there, if someone wanted to enter into a PPA with us, it should have been someone from ALCOA or someone that owned the power plant. It's unusual for us to engage on a very deep level as it relates to someone who is a prospective owner. There's a lot of prospective owners out there.
And we see this very, very frequently at the hydros at the Carolinas. So I had to be cautious about how we approached this subject. But, essentially, I introduced myself to John, and just let him know that I'm the person that he'd be talking to going forward.
But I Squared Capital was well-connected. We had done, I believe, previous transactions with them at

the executive level. Cube Hydro also, Kristina Johnson, was well-connected. Knew a lot of our leadership folks.
So there was frequent communication between I Squared, Cube, and our upper management, which again is somewhat unusual.
Really, you know, because of Cube's connection, I would have to say, I hate to admit this, but they probably received a little bit better treatment, maybe favorable treatment, compared to most potential buyers we deal with; but that's the way it was. That's the way it went down.
Q. In what way did they receive better treatment?
A. Well, I mean, they have direct access to our executives in a lot of ways, which is definitely better treatment.
And, in addition to that, like I said, it's unusual for -- there's a lot of folks out there looking into buying power plants. And they like to get as much information as to prospective buyers as they can, which makes sense.
So we have to be cautious. If I was sending John a price signal that was either high or low, that could impact the transaction with ALCOA. So, you know, it's like someone trying to sell your neighbor's house.

And so from a commercial perspective, we have to make sure that we're cautious with these types. We did this a lot.

We get a lot of -- lot of folks call us and ask us a lot of questions about power plants, and how much we would enter into a PPA form and stuff like that, as we put a bid together and stuff like that; because, if you know what kind of PPA you're going to get, it helps us with your evaluation.

So they were treated -- I don't really like saying it; but they received favorable treatment.

Q. So the situation you're talking about, it sounds like you're talking about a situation where folks are approaching Duke and saying I'm interested in bidding on a project. But how common is it to speak with someone who's already under contract to purchase an asset?

A. I don't know how often we do that. You know, any time there's a potential transaction going on, it just puts us in a difficult position. We have to be careful that we're not -- we're not doing something that could harm either one of the parties, either the buyer or seller.

Typically, when we're talking about a PPA, we're talking with the owners. In fact, I would say always we talk to the owners.

Q. And do you have any knowledge of what the discussions were between, if any, between Cube and Yadkin about whether Cube was authorized to speak to Duke?

A. I know nothing about that. If that was the case, I never received anything from ALCOA on that.

Q. Did you ever request any information about that?

A. No.

Q. Just one moment. I'm sorry.

A. Sure. No problem.

Q. You said shortly after it was assigned to you, you had a discussion with John Collins about what his interest might be. Do you recall what he said that interest was, what Cube's interest was?

A. Yeah. I think at that time we had a conversation. I believe it was in September. It was our first call, if I remember correctly.

And he said that they would like to -- once they owned the facilities, I think, that they would like to sell the power to Duke Energy. I don't recall the exact phone call, but it was along those lines.

Q. Did he indicate whether he wanted to make a PURPA sale or non PURPA sale of power from the three QF's?

A. Well, I think probably he did. Yes. I think there was some talk about -- also, we probably talked

about Narrows, also.

Q. When you say, "some talk about," do you recall what he said about --

A. No. I don't recall what he said.

Q. And do you recall whether he --

A. The general, the general call seemed to say that he was calling as commercial representative of Cube, and that they were interested in potentially selling the output from the plant once they owned it.

I think we probably talked about both PURPA as it relates to the pre-PURPA machines, and also we probably talked about non PURPA agreement as it relates to Narrows.

Q. Going forward for either reference, do you mind if I call High Rock, Tuckerstown, and Falls, the PURPA machine?

A. That's fine.

Q. And do you recall what your response, if anything, was to him on that phone call about his desire -- their desire to sell power to you?

A. We talked about it in general.

What I tried to do is a few days later I sent him a letter trying to summarize the -- summarize the conversation. So, essentially, I sent a letter on the 21st of September.

Q. Well, let's just fish through a few documents here. Hopefully, we won't have to jump around too much; but let's go to 126.

A. I apologize. What number was that?

Q. Sorry. 126.

A. Thank you. Okay.

Q. All right.

So flip to the -- you see there's some Bates numbers at the bottom of the page?

A. Yes.

Q. It has Duke and 0021. And the second one, 22?

A. Yes.

Q. So, if you look on the bottom there, it looks like it's an e-mail to John Collins from Matthew E. Palasek?

A. Yes.

Q. Who's Matthew Palasek?

A. Matt is in corporate development. I think he was involved. I'm not sure what level; but he was involved in looking at buying the hydros for Duke Energy.

So Matt was probably the point of contact between Duke and ALCOA as part of the ALCOA's wish to sell that asset.

Q. And so would he have been involved in the discussions between ALCOA and Duke?

A. Yes.
Q. And it appears from this e-mail that there was perhaps a discussion between John Collins and Mr. Palasek on the 24th, if I'm doing the math right?
A. Okay.
Q. But you weren't on that call it doesn't sound like?
A. No.
Q. And you don't know what happened on that call?
A. No.
Q. And it looks like Mr. Palasek indicates that you will be the point of contact for discussion on a potential PPA?
A. That's correct.
Q. All right. So that's when you come into the loop?
A. August 25th, 2016.
Q. Okay. And then, just flipping forward as involved in the case with e-mails, it looks like Mr. Collins then writes you. Does that appear to be the e-mail you received from John Collins at the bottom of the page?
A. No. I think I was copied on it. I think the e-mail was to Matt.
Q. I apologize.

The second paragraph says, Mike, Nice to meet you.
A. Yeah. Yeah. Yeah.
Q. In any event, you were copied on this e-mail?
A. Yes, sir.
Q. Then Mr. Palasek indicates, I guess about four days later, that I guess he's potentially meeting with I guess Mr. Collins' boss.
Do you know anything about that meeting?
A. No.
Q. Do you know who Mr. Collins' boss was?
A. I think it was probably Kristina Johnson.
Q. And did she have some connections at Duke?
A. She did.
Q. Let's see. Then you responded to Mr. Palasek that you left a voicemail, and you're meeting with the analyst. And you indicate you may not have an obligation to take their unit under PURPA, if they have access to an organized market. Just getting started on the initial review.
Is that the e-mail you sent to Mr. Palasek?
A. Yes.
Q. And what does the initial review entail? What's involved there?
MS. FENTRESS: Object to the extent it's asking

for any kind of legal conclusion or any discussions that are covered by attorney/client privilege.
BY MR. DOWDY:
Q. Yeah. Don't tell me what you said to your attorneys. I don't want to know that. I just want to know at a high level what the initial --
MS. FENTRESS: Or what your attorney said to you.
BY MR. DOWDY:
Q. No. I'm not that nosy. I don't want to know any kind of conversations with attorneys.
I just want to know what the initial review process involved in a non privileged, non legal way.
A. So what I would do in a situation where I'm assigned something like that, I would put a team together, and set up probably some calls, and talk about the project and what we're looking at.
There would be attorneys involved, analysts, folks like that. And we would -- some manager folks probably. And we would talk about the potential opportunity and put a plan in place and what we were going to do next.
Q. How long did that process take to do the initial?
A. It varies depending on what the project is.
Q. So for a project like this one, how long would

the initial review process take?
A. Say probably couple weeks maybe. Lot of times it depends on the availability of the analyst, folks like that.
Q. I understand. All right.
Let me ask you to flip forward to 127.
Don't worry, Ms. Kendrick, I'm not going to ask about any of the areas that were redacted.
I just want to ask if, at the top, these are e-mails that are exchanged, the ones that are not redacted, if they're exchanged as part of the initial review process?
A. Yes.
Q. And are the folks, the ones at the top, the senders and recipients, were these the people that were on the team during the initial review process?
A. Well, Gary Freeman was my boss. And Jim Northrop was head of the analytical group. So Jim, or one of his folks, usually one of his folks, would be assigned to the team, and he would decide which person. The other gentleman, Mr. Tharp, was not part of the team.
Q. Sorry. Something beeped in my ear.
Who was not part of the team?
A. Scott Tharp.
Q. Who is Mr. Tharp?

A. He's a gentleman, business development manager for Duke Energy. He does primarily solar.

Q. Okay. It looks like internally this may be the e-mail where Mr. Freeman -- if you look at the e-mail August 25, 2016 at 2:01 p.m., it looks like this is where Mr. Freeman is internally assigning it to you; correct?

A. Yes.

Q. All right. So now, if we go -- sorry for all the flipping around. But if we go back a couple to -- let's see here, 125.

And I'll just ask you to look at that and let me know if you recognize that correspondence?

A. I do.

Q. In your own words, would you describe it for me?

A. Sure. I asked John a question of when they expected to close on the assets.

Q. Are you okay?

A. Yeah. I'm -- my laptop is plugged in, but it doesn't look like it's charging.

MR. DOWDY: It's okay. We're due for a break anyway.

THE VIDEOGRAPHER: It's 11:06 a.m. We're going off the record.

(Whereupon a discussion was held off the record.)

THE VIDEOGRAPHER: The time on the monitor is

11:15 a.m., and we're back on the record.

BY MR. DOWDY:

Q. Mr. Keen, are you ready?

A. I am ready. Thank you.

MR. DOWDY: Kendrick, everybody on your side here?

MS. FENTRESS: I believe so.

BY MR. DOWDY:

Q. All right. I will commence with the awkwardness. All right.

I believe we were looking at 125, Mr. Keen. And just to keep us moving along really quickly, the bottom one is a September 6 e-mail between you and Mr. Collins. And it looks like you asked him when Cube was expected to close on the assets; is that correct?

A. Yes.

Q. And then he writes you back and indicated a November 1st, 2016 close, is that correct, or approximate close?

A. That's correct.

Q. And he asks for an update on your internal discussion?

A. Yes.

Q. And I don't want to know the substance and what privilege may have been. But what was the nature of the

internal discussions you were having at the time?

A. Let's see. That date, September 6?

Q. Yes, sir.

A. I don't really recall what we were doing at that time, specifically; but we would have been getting a legal review of what the transaction might look like, doing some initial analysis, things like that.

Q. I understand.

Sounds like you were also dealing with a storm at the time?

A. Yes. Not the last one on this project. In Florida, we keep time based on hurricanes. Yeah. I remember that.

Q. From the news, it looks like you're always fixing lines somewhere based on a hurricane or snow storm.

All right. Now, I believe earlier you referenced a letter you sent. And that's the next thing I want to look at, and that requires some flipping. That's all the way back at Tab 33 or 34.

Let's go to 33 first. Okay? Are you there, sir?

A. I am.

Q. Sorry. Sorry.

I want to make sure I don't start asking before

you get there.

Okay. So this is an e-mail from you to Mr. Collins on 9/21/16; is that correct?

A. That's correct.

Q. And it indicates that you're sending a letter to him. You're attaching it, and it was also mailed; is that right?

A. Oh, yeah. Yeah. Yeah.

Q. If you flip to 34, I'll ask you if that's a copy of the letter?

A. That is a copy of the letter.

I'm here.

Q. I'm just looking at something. I apologize.

A. Okay.

Q. All right.

So what was the next step after this letter was sent?

A. In mid-October, we received a response from John Collins. I think we received it around October 11th, but it was undated.

Q. Okay. And, actually, we can look at that. Let's go to Tab 87.

A. I'm at Tab 87.

Q. Okay. And is that an e-mail sending a response letter to you?

A. Yes.
Q. And then take a look in Tab 88. Is that the letter itself?
A. Yes.
Q. Did you understand that in the October 11th letter, he's disagreeing with certain things you said in the September 21st letter?
A. He was agreeing with some and disagreeing with others. Yes.
Q. What did you understand him to be disagreeing with?
A. I don't think they felt like the organized exception was valid, I guess.
Q. What do you mean when you say, "organized exception?" What language are you referring to there?
A. The organized market exception. So it's my understanding that, if a qualified facility has access to organized markets, that there potentially could be an exception on the higher use obligation purchaser.
My responsibility in the organized market is not to make that decision, but it's my responsibility to be able to answer the attorney's questions as it relates to that.
As a commercial person, my responsibility would be to know whether or not those assets were being sold

into an organized market. But the decision on whether or not there's an exception on the PURPA for that, that would be a legal question.
Q. I apologize. My home phone is ringing in the background. It will stop in just a second.
And then what aspects of the -- of your letter did you understand him to be agreeing with?
A. Well, we both agreed they didn't own the power plants and ALCOA did. I believe that -- I think we both agreed that ALCOA -- I believe I had known at that time that ALCOA, the current owner at that time, had certified the plants as qualified facilities. I think we both agreed on that.
I don't know what else. I can read the letter, if you'd like and see what else they agreed to.
Q. So what was your understanding after receiving this letter? Were discussions going to be ongoing, or had that -- were discussions over, as far as you were concerned?
A. Well, from a commercial perspective, I felt like we would do some initial work to be prepared for when they owned the plants, so we could move forward with the potential transaction.
But as happened, my experience has been a lot of folks who have been trying to buy plants, it takes a lot

longer than they think. And that would be the case here, too.
It was something that was -- to give you an example, if they wanted us to calculate what it cost for when they thought they were going to own it, it would have been in October or November, something like that. They didn't end up owning it until the first quarter of 2017.
We didn't know if it was going to close or not. There's a lot of -- I'm sure you're aware, there are a lot of hurdles you have to overcome to get to the closing. We weren't sure they were going to close or not. A lot of these end up not closing.
We were kind of a little bit of wait-and-see to see when the transaction would actually happen.
Q. I'm just looking, and it's Exhibit 34, if you want to?
A. Exhibit 34?
Q. Yeah. Before you flip back, though, here's what I'm trying to look for and understand. How was it communicated to John Collins that we're in a wait-and-see, we're not done, this is all prospective?
A. I think that -- can you repeat that question?
Q. Yeah. I think that's fair.
How was it communicated to John Collins that

from Duke's perspective any discussions were anticipatory to Cube's owning those facilities?
A. That would have probably been done on the phone.
Q. And do you think you're the person that told him that?
A. Yes.
Q. And do you know whether it was before or after these letters, or before or after the September 21st letter?
A. I think it was probably before.
Q. Do you remember what his response was?
A. I don't.
Q. Let me ask you this: Why wouldn't that be communicated in writing?
A. To us, it's not really a big revelation that we wouldn't be transacting with somebody who doesn't own the power plant. I think he understood that they didn't own the power plant. And he didn't really know when the closing was going to happen.
So we don't know -- you know, you can't really calculate costs, or put a transaction together, if you don't even know what the start date is. You know, so -- I mean, from a commercial perspective, I don't think that was a big revelation for anyone.
Q. You talked about hurdles they might have to

clear to finalize the transaction. In your view, what are the major hurdles?

A. I don't know. Someone in the M&A group would know that better, but I suppose they would have to get the PURPA license transfer. I'm not sure all the -- the legal folks or the M&A people could answer what they would have to offer to get to a closing.

I have been involved in a few acquisition stuff years ago, but I'm sure there were some hurdles that they had to overcome. And I'm not sure that the State of North Carolina was real supportive of the PURPA license transfer either.

Q. What does that mean, when you say that North Carolina was not supportive of the license transfer?

A. It's my understanding, just from industry literature and stuff like that, that North Carolina had some issues with ALCOA and the way they operate its power plants.

And, if I recollect, the lawyers could probably answer it better. I do believe they might have intervened in the license transfer, or got involved in it somewhat. I don't remember the details of that.

But there were definitely, I think -- I mean, there are certain things you have to get done before you get to closing. So, when I said hurdles to overcome, I

wasn't really specifically talking about what those are; because I'm not really familiar with them.

And their closing was delayed three or four months at least. So it was longer than they thought it was going to be, too.

Q. Did you speak with -- before sending the September 21st letter, did you speak with anyone at Cube about their progress towards clearing these hurdles?

A. I don't know. I mean, it was a big interest to us, as you can tell from the e-mails and stuff like that, that we really would like to know, you know, when you own this plant. It was important for us to know when the transaction between us and them would start.

In other words, a PURPA or non PURPA transaction the start date is important to us, because it involves really the analysis, the benefits associated with the transaction itself.

Q. Is it Duke's policy never to negotiate PPAs with parties that don't currently own a QF?

A. I don't think Duke has a policy on that. Maybe they do. We have a lot of policies, but I don't know the answer to that, whether Duke has a policy for that.

But from a commercial perspective, we try to be very careful when we're dealing with people who don't own a power plant.

To give you an example, if John had figured out during my discussions that the transaction would be better or worse based on my conversations, he may have changed part of his process with ALCOA. So we just have to be very careful about that.

We also get a lot of people who are looking at power plants. And before they do that, they like to get some actual pricing signal that could help them determine the value of the asset. So we try to be cautious of that. And it can be very time consuming to respond to all the folks who are interested, too.

Q. At any point, was a hard line communicated to Mr. Collins, you know, we're not going to enter into a PPA with you -- strike that. We're not going to negotiate a PPA with you until you own it?

A. I think that's true. I can't recollect -- I wouldn't use the word, "hard line." But I think we made it pretty clear to John that, you know, if the owner of the facility wants to talk to us about establishing a LEO, or about entering into an agreement, we're happy to talk to him, and he wasn't the owner.

Q. And how was it made pretty clear to Mr. Collins?

A. I don't know. I mean, we talked briefly about when they thought they were going to end up owning the power plant.

It was very important for us to have that information before we put an analysis together. And, like I said before, we could potentially have an impact on the acquisition, and in a positive or negative way depending on whose counterparty -- and I think he understood that.

Q. Why do you think he understood that?

A. Because we talked about it a lot. It was a very important issue to me.

Q. All right. And just looking at 34, let's clear a couple things up real quick.

A. You're saying Tab 34?

Q. Tab 34. Yes, sir.

A. Give me a second.

Q. Absolutely.

Are you there?

A. I'm there.

Q. All right. So your letter, if you look at the second paragraph, third sentence, it says, As I communicated to you previously, Duke does not have any current need for energy or capacity, however, I need to remind you in the future Duke will likely issue a request for proposals, and Cube Yadkin can elect to submit a responsive bid.

A. Yes.

Q. Was that Duke's position at the time?
A. Yes.
Q. And it says, You further inform me that Cube Yadkin is considering certifying that three smaller units as qualifying facilities under the Public Utilities Regulatory Policies Act of 1978, PURPA. In that regard, I informed you that to the extent Cube Yadkin approached Duke under PURPA, and that under PURPA's requirements, Duke would likely have no obligation to purchase any output of energy or capacity from the Cube Yadkin system units that may be certified as qualified facilities.
And that was also Duke's position at the time?
A. Yes.
Q. Let me see if I understand this correctly.
That position -- it's my understanding -- just a moment.
If I understand the nature of the objection, that position is a legal position, and you're not the right person to ask about that; is that correct?
A. Which part of the letter are you referring to?
Q. That Duke would likely have no obligation to purchase any output of energy or capacity --
A. Like I said before, it's a legal opinion, whether or not the market exception would apply. It's my responsibility to determine whether or not the assets had

been sold into an organized market.
Q. And had you determined whether they had been sold into an organized market?
A. Yes. I had.
Q. And your determination was that they had been?
A. Yes, sir.
Q. And is that -- was that what you were referring to, the organized exception?
A. Uh-huh.
Q. Are you referring to anything else?
A. Yeah. I understand your question. Let me think about this. I believe that's what it was referring to. Yes.
Q. All righty.
And then, if we skip back to 88. Sorry for the hopping. Tab 88.
A. I'm there.
Q. Okay. And this is one of the items that you identified earlier that Mr. Collins was disagreeing to you about; right?
A. I don't recollect everything on this letter. If you like, I can read it; but I don't think he agreed with us, no.
But I can read the letter and comment on it, if you like; but I haven't read this whole letter in awhile.

Q. First of all, if, at any point, you need to read an entire document, stop me, and I want you to have time to do it.
A. Sure.
Q. But I'm looking at the last -- if you look at the very -- page 88 at the bottom. It's Duke 758 is the page number.
And the last paragraph, third sentence, I think, it says, We would anticipate that such discussions would, among other things, address the statement in the September 21 letter that under PURPA's requirements Duke would likely have no obligation to purchase any output of energy or capacity from the Yadkin system units that may be certified QF?
A. Right. Yes.
Q. While electric utilities may petition FERC to be relieved of their mandatory purchase obligation under PURPA, it does not appear that FERC has issued an order relieving Duke of such obligation, or that there are any other applicable exceptions or exemptions.
So that's the part of the letter --
A. Sure. I read it.
So what's your question?
Q. Did you understand that to mean that he was disagreeing --

A. Yes. Uh-huh.
Q. And I'm not going to ask you about the legalities of it, and I intend it to be a factual question.
Are you aware of Duke seeking an order to relieve it of PURPA purchase obligations with regard to the Yadkin facilities?
A. No. I'm not aware of that.
Q. Let's go -- let's skip ahead a little to 124, Tab 124.
A. Yes. I'm at Tab 124.
Q. Okay. And this is -- it looks like a calendar invite for a conference call. And it looks like you're sending it to Rosa M. Goss. Who is Rosa Goss?
A. I don't remember who Rosa Goss is. She might have been, I don't know, maybe a legal admin, or paralegal or something. I don't remember.
Q. And it looks like this is setting a call for the 27th, so this would be between the two letters we just looked at?
A. Yeah. I don't recollect that. I'm trying to see who the other participants are. That Tab doesn't really tell me very much.
Q. We may be not spending very much time on it. My question was going to be, because it's included in the

production, I want to know what that call was.
A. I don't remember that call.
Q. You don't remember it?
A. Nope.
Q. And so I take it that you don't know what was discussed?
A. That's true.
Q. Just so we get our timeline here, let's go to 195, Tab 195, if you would. Let me know when you're there.
A. I'm here. Yup.
Q. Okay. And does this appear to be an e-mail between Kristina Johnson at Cube, and Dhiaa Jamil at Duke?
A. Yeah. I see the -- I see the e-mail.
Q. Do you have any -- any knowledge of what happened at Duke after this e-mail was received?
A. Give me a second to read it.
Q. Absolutely.
A. Okay. I apologize. What was your question again? I've read it.
Q. So do you know what, if anything, happened internally at Duke in response to this e-mail?
A. Not really. I think the next milestone was a letter I sent to John Collins on the 14th, which I think

was, yeah, three days after. I'm kind of bouncing around time-wise, actually.
This was before the October 11th letter we just went over, but I think the next milestone after this -- well, I guess the October 11th letter we got from John and my response to him I think on October 14.
Q. I apologize for jumping around.
A. You don't have to apologize.
Q. My question is: Did anybody inform you of the e-mail being received by Mr. Dhiaa Jamil?
A. It's hard to recollect. I mean, like I had mentioned before multiple times, these guys were Cube and I Squared Capital were very well-connected. And there was a lot of upper management interaction on this transaction. So I'm not surprised about this e-mail, but I don't recollect anybody telling me about it.
Q. Throughout the course of your discussions with Cube, was anyone telling you that there would have been -- strike that.
Throughout the course of your discussions with Cube, were you ever made aware of the substance of negotiations -- I'm going to strike it again. I just can't ask a good question here.
Throughout your discussions with Cube, were you brought into the loop on discussions between executives

at Cube and executives at --
A. There was a timeframe when I was made aware of that. Yes. I mean, it was pretty obvious. We were getting -- you know, this was a very unusual transaction or project, in the fact that the executives were very involved. Probably more involved than anything I've ever worked on. I've been doing this a long time.
Q. So you responded to Mr. Collins' letter, and that would have been on about October the 14th; correct?
A. That's correct.
Q. And we've got that letter. That's at Exhibit 83?
A. Okay. I'll go there.
Q. Or Tab 83.
A. Yes. I'm there.
Q. So just confirm for me, if you will, is this a copy of the letter that you sent to Mr. Collins on the 14th?
A. Yes.
Q. And it looks like, if you look at the second paragraph, that Duke is maintaining that it's exempted from purchasing from the Yadkin facility under PURPA; is that right?
A. That's correct.
Q. And so what happens after this? What happens

after this letter? What's the next step?
A. I don't know. I don't know what happened after that. It looks to me like it was quiet for quite a while between us.
I think -- I think, if you look at the last sentence, that's probably, yeah. That's correct. I think after the mid-October 2016 letter, we had very little interaction from Cube for maybe five months, or something like that.
I think that was a pretty quiet winter as relates to this project. If you look at the last sentence there, it basically says, once you own the plant, we'll be happy to talk to you about, you know, what our -- you know, what our PURPA obligations are, whether you agree, or disagree, and what potential transactions you would be interested in.
The fact that they owned four plants, it was always the potential for the PURPA or non PURPA transaction or something along those lines. So I think maybe John took it to heart and said, let's get this thing closed. Let's get this power plant, and then we'll re-engage with these guys.
Q. So go with me to Tab 171.
A. Okay.
Q. Let me know when you're there, please, sir.

A. I'm at Tab 171.

Q. Now, this appears to be correspondence between David Fountain and Kendal Bowman.

And just for the record, who is Mr. Fountain?

A. I believe David was the -- I think he was the Duke Energy Carolina state president at that time.

Q. And who is Kendal Bowman?

A. Kendal is one of our attorneys up there. I think she works on rate cases and things like that with the commission. But I don't know in detail what she does, but she's an attorney.

Q. And it looks like there is -- it says the e-mail is sent on November 9th, 2016, so three-ish weeks after?

A. Let's see. I see November 8. Let's see. November 8, that's a voicemail or something.

Q. Yeah. It actually has my favorite about any voicemail, it says, This message --

A. Yeah. So let's see. Kendal and David on November 9th.

Q. I'm not asking anything about the redacted for privilege part. Don't guess about that.

A. Okay. So what was your question?

Q. So go to the top of the e-mail. The background for our meeting with Cube this morning.

So it sounds like there was some kind of meeting

with Cube about three weeks after you sent your letter to Mr. Collins.

A. Yeah. I wasn't -- I wasn't at that meeting.

Q. So you weren't involved in that meeting?

A. No.

Q. And I take it then that you don't know what was discussed at that meeting?

A. I vaguely recollect that. Maybe Kendal and David met with someone, maybe Kristina Johnson, or someone like that. But, no, I did not participate in that at all.

Q. You mean, other than the vague recollection of who might have been there, you don't know what was discussed?

A. No. I don't know anything about it.

Q. Okay. All right.

Let's look at 168 real quick.

A. Is that 1-6-8?

Q. Yes, 168. Yes, sir.

And I'll ask if that appears to be an e-mail at the bottom from Kristina Johnson to David Fountain?

And then it looks like at the top forwarding from Kendal Bowman to David Fountain; is that correct?

A. Yes.

Q. It looks like you're dealing with another

hurricane. It says, Dear David, I hope Stella isn't causing too many problems for you.

A. Yeah. That's not the last one; but, yeah.

Q. It says, We successfully closed on February 1 on the hydro plant.

Do you see that?

A. Yes.

Q. And it references a meeting with Mr. Fountain, Steve Jester, and Kendal Bowman at Duke?

A. That was probably the meeting from the previous tabs we talked about. But I don't know how the dates line up, because -- yeah. I don't know. That was November I think. So this is March. Maybe not. Okay.

Do you have a question?

Q. You were talking about meetings there. You don't know which meeting it's referring to?

A. No. No. Like I said, the executive involved in here was something I had never seen before. So I was not surprised I was not involved.

It looks like there's some references to attorneys, you know, in here, Kendal Bowman and Charlotte Mitchell.

I apologize. I was actually reading from that.

Q. Kendal Bowman and Charlotte Mitchell?

A. Yeah.

Q. And then it references, it says, Since our meeting with you, Steve Jester, and Kendal Bowman, in your offices, we have had several good meetings with Kendal and we are following up with a meeting with Steve the first week in April to discuss how we can work together to manage the Yadkin River and achieve mutual synergies.

Do you see that?

A. I don't see that, no. Why don't you give me a second? I'll read the e-mail real quick.

Q. Yes, sir. The second paragraph, but take your time.

A. Okay. I've completed reading it.

Q. So my question was: In the second paragraph, it refers to an initial meeting with Mr. Fountain, Mr. Jester, and Kendal Bowman. And I think I previously asked you about that, and you said you didn't know when that meeting was, or what was discussed at it; is that correct?

A. That's correct.

Q. And then there's -- then it says after that, We have had several good meetings with Kendal. And I take it that you don't know when those meetings were or what was discussed in them?

A. I don't know anything about those meetings.

Q. Okay. And let's see. Then you see where it says, the next paragraph, At Kendall's suggestion we will be filing an application for registration --
A. Yes. I'm familiar with that.
Q. Do you have any reason to disagree with that statement or think it's inaccurate that it was Kendal's suggestion?
A. No. I don't know that was only Kendal's suggestion. I think that to get -- you can get approval in a facility status, and you will have an opportunity to sell either RECs. So I think it was -- it was important to Cube that they could get that approval, then they could potentially sell RECs out of this facility to us.
But, yeah, I think that we didn't -- you know, we didn't -- our position on that was, if they could get renewal energy facility status then we would buy their RECs under RPPA, if we ever got that transaction.
Q. Okay. And the next paragraph references a meeting with Eli Hopson, and that was Cube's in-house counsel; right?
A. Are you asking me?
Q. Yes, sir. Do you know?
A. I believe he was -- I don't know if he was inside counsel or outside counsel, but I know that he represented, or at least I thought he represented, Cube

Yadkin.
Q. And Joann Sanford was also Cube's counsel; right?
A. I'm not familiar with that name.
Q. Okay. And Charlotte Mitchell, was she Cube's counsel?
A. I don't know.
Q. I'm sorry.
A. I mean, I think she was outside counsel for them; but I don't know the answer to that.
Q. That's okay. That's okay.
They also met with Kendal on February 17, and they agreed on an NDA and a term sheet.
Do you see that?
A. I do see that.
Q. And then it says, Cube Hydro also agreed to review the term sheet before moving forward on other options, such as going the QF route for PPAs on all three facilities, qualified facilities, on the Yadkin?
And then she asks about the NDA. I guess I'll just ask it this way about the entire e-mail. Is there anything in there that you disagree with or you think is incorrect?
A. I don't think there's anything in there, but this is definitely a situation here where I wasn't

involved with these discussions in any way. I was not involved in this at all.
Q. Were you involved in providing the NDA or the PPA for Cube?
A. Yes.
Q. And when did you first hear about needing to do that?
A. I believe it was March 20 of 2017. So it looks like it would be about five days after this e-mail.
Q. So let's go to Tab 104, if we can.
A. I'm at Tab 104.
Q. Okay. These are communications between -- you're not on these communications; is that correct? But these are communications between Cube and Duke?
A. Yes.
Q. And Cube inquires about an NDA; but, you know, to the best of your knowledge, you didn't know anything about it at the time; right?
A. Let's see. No. I don't think I was aware of that at that time, no. I don't recollect that. I don't think I really started getting involved in that piece until March.
Q. And -- all right. Let's -- let's skip to 123.
A. Which one are we at, 123?
Q. Tab 123.

A. I'm there.
Q. And this is Bates number 16. It looks like you're sending Donna Ortega a request to meet about the forward Cube Hydro new owner assets.
Looks like a meeting for March 1st, 2017. Do you have any recollection of what that meeting was about or what was going on there?
A. I do not.
Q. And who's Donna Ortega?
A. I don't know. Probably administrative assistant or something like that was helping me to schedule a meeting.
Q. And I take it you don't know who was at the meeting?
A. I don't. I don't remember it.
Q. Okay. Do you know if, at some point, you became aware that Cube had filed application for registration as renewable energy facilities?
A. I knew they filed for that, yes, in March.
Q. All right. Let's look at -- let me pull it real quick to see if we need to look at it.
All right. Let's -- give me one moment. Let's skip forward to -- skip back, I guess, to Tab 28.
A. Yes.
Q. Okay. So can you tell me what we're looking at,

Bates Duke number 94? Can you tell me what this is?
A. This is an e-mail from me to John Collins. And I have a cover letter for an attachment I sent him to talk about a non PURPA PPA at the Yadkin facilities.
Q. You said it's the first necessary step. Can you explain to me what that means?
A. Well, maybe it's the next step would have been better wording. Yeah. I believe that, you know, you referenced some of these e-mails between these executives and meetings ongoing, but I did not know about it.
I think in those meetings, it looks like there was a discussion of potentially trying to put an agreement together and to pursue a non PURPA PPA.
Let's see. This is dated March 22. I was made aware on March 15 of 2017 that Dave Fountain would be taking the lead at the discussions, but would be getting involved at that point.
So that was on March 15. And so, as part of those conversations, we agreed to send them a letter agreement, and we also agreed to pursue a non PURPA PPA.
Q. Let's go back to something you said there. John Fountain, why was he getting involved?
A. David Fountain. I think it goes back to what we talked a few times in that Kristina Johnson and others were, you know, putting pressure on the executive team.

And so I think, at some point, one of David's bosses, I think he was the state president at the time. I think one of his bosses probably suggested we get involved and make sure that we were doing what we needed to do.
Q. And -- and what does that mean when you say -- did you say taking the lead or getting involved?
A. I don't know how to frame it, but he was -- he was -- beginning in mid-March he was very involved, much more than a state president normally would be in a wholesale power transaction.
I think that came from the pressure that Kristina and others were regularly, if not constantly, reaching out to the management team at Duke.
Q. How often do you think they reached out to a management team at Duke?
A. A lot. More than any transaction I've ever worked on.
Q. When you say -- well, never mind. Never mind. I understand.
A. I Squared Capital was reaching out to our executives. And they were well-connected also.
Q. Do you have any idea who at I Squared was --
A. They were well-connected also. They reached out to Duke.
Q. Do you know who at I Squared Capital was

reaching out?
A. I have some of their business cards from some of the meetings we had in Carolinas, but I don't recollect their names right now.
I believe that we had sold our South America assets to I Squared Capital recently, like maybe 2016. So, you know, the I Squared folks knew our executives well and they looked like they would reach out to this discussion.
Q. Okay. Okay. All right.
If you flip to 29, is that the letter that you sent?
A. Yes. That looks like it, yes.
Q. I want to get a sense, so this e-mail, this is something you sent to -- you did send this to Mr. Collins; right?
A. That's right.
Q. Now, were there discussions going on -- the discussions for the non PURPA PPA, were those mostly between you and Mr. Collins; or were there sort of communications which you weren't involved?
A. I think at this stage, I was communicating with John regularly, yes.
Q. Okay. Okay. And was all of that in writing, or was some of it verbal?

A. It was not all in writing.
Q. Would it be by telephone?
A. Yes. All of our conversations were not in writing.
Q. So I want you to look at the March 22 letter. And I want us to look at the second paragraph.
A. Okay. Would you mind if I read that real quick?
Q. Yeah.
A. Okay. I'll read the second paragraph.
Q. Yeah. Read the paragraph, please.
A. I've read it.
Q. So do you recognize the language that it says at the end of the first sentence? It says, Subject to Cube Hydro expressly and unequivocally agreeing and acknowledging that any and all discussions for the sale and purchase of the output of the Yadkin system shall not be deemed as establishing any PURPA obligation on Duke, including without limitation by expressly or inquisitively establishing any legally enforceable obligation or pursuant to PURPA.
Now, let's start with the last one, the not establishing any legally enforceable obligation under or pursuant to PURPA.
Now, do you know if it's Duke's position in this case that one must file what's known as a NOC form, an

N-O-C, form to establish a legally enforceable obligation?
A. Yes.
Q. And I guess what I'm trying to understand is, if that's so, then why is it necessary to include this language in a letter?
A. I believe the -- again, as you recall, there were discussions, I guess, in February, whatever timeframe, between executives at Duke and Cube Hydro that I wasn't involved with.
As a result of those discussions, it was clear to me that the two parties had agreed to, as this language says, to talk about a non PURPA PPA. And I think both parties probably, but definitely Duke, had agreed to do a non PURPA discussion. And I think the parties with the attorneys involved probably wanted to --
MS. FENTRESS: I'm going to object.
THE WITNESS: Yeah. I'm sorry. Thanks, Kendrick.
I think we agreed to do a non PURPA discussion with them. I think Cube would like to have done that, because that way they could sell 200 megawatts to us instead of 100 megawatts to us.
So I think the idea was to put an agreement in place that would set up the framework for us to engage

in non PURPA discussions and that wouldn't impact potential PURPA issues, parallel PURPA issues. So that's why I think both parties agreed to execute the letter agreement and move forward non PURPA discussions.
And I think we just wanted some protections that there wasn't some type of ulterior motive maybe to try to create some type of PURPA issue as it relates to these non PURPA issues.
BY MR. DOWDY:
Q. So, if I understand correctly, this letter relates to the discussions occurring on or after the date of the letter; is that right?
A. Yes. And this was essentially the beginning of the process to negotiate the letter. I think we would formalize what had been discussed at the executive level that I was involved in prior to that.
Q. And do you recall whether Cube signed the letter right away, or whether they negotiated the letter?
A. They did not. I believe -- no. They sent me some comments.
Q. And, ultimately, did you guys agree on a letter, and were able to execute one?
A. Yes.
Q. And what happened after the -- in some previous

correspondence, we saw some discussion about an NDA. Do you know when that was completed?
A. May 8th.
Q. Okay. Okay. And trying to sort of understand. In other words, what happened? Why did it take until May 8th to get an NDA in place?
A. Well, let's see. On -- we sent this letter, the letter agreement, on March 22. We received a red line -- well, I don't know if it was a red line or response; but we received some comments on March 31st. We sent a revised letter agreement two weeks after that on April 12th.
We received another red line from Cube a week after that. And then one week after that, on April 25, the letter of agreement was finally signed.
At that point, on May 8th, which is about two weeks later, I'm sure some going back and forth on the language, the CA was signed.
Q. Is a CA, a confidentiality agreement?
A. Yes, sir.
Q. And it's the same thing as an NDA, correct, a non disclosure agreement?
A. I think so. You can use them interchangeably, but I don't know if there would be a difference.
Q. Hey, I'm a lawyer I don't either.

My question was whether you refer to them interchangeably. I do. All right. Thanks.
Can we take like a two to three minute restroom break?
MR. ALLEN: Sure.
THE VIDEOGRAPHER: The time on the monitor is 12:21 p.m., and we're going off the record.
(Whereupon a discussion was held off the record.)
THE VIDEOGRAPHER: The time on the monitor is 12:32 p.m., and we're back on the record.
BY MR. DOWDY:
Q. Welcome back, Mr. Keen.
By the way, when we get time and we need a break, or if you get hungry, just let me know. I tend to keep going, but I don't mean anything inconsiderate by it. But I imagine we'll finish by the middle of the afternoon, but one never knows. Let me know when you need a longer break to grab a bite to eat or anything.
So we last left off we were talking about an NDA or CA. And you had sent a copy to Mr. Collins on I believe it was the 8th of May, 2017; correct?
A. Can you repeat that question, please?
Q. Did you send the NDA to Mr. Collins on May 8th, 2017?
A. I believe that was the date it was executed, I

suspect. I don't recollect, but I suspect it went back and forth between the parties, you know, marking up the language for a while. But, yes, that was when it was executed.

Q. And then, what was the next step after that?

A. So, basically, now we had the letter agreement with CA. So at that point, I was leading meetings with the commercial team. We were doing some modeling, some analysis. We were requesting information from Cube on how we would model the plants.

There's a lot of requirements in your PURPA license, different types of limits they have. So we were having to model our system to see how those power plants would operate within our system.

So we spent a fair amount to do that. We also worked on trying to come up with a consensus on what the structure should look like. And there was a fair number of data requests to Cube for operational data.

Essentially, at that point, it was my responsibility to get an agreement together, and go through the modeling process, the analytical process, the approval process, and then draft it, put it in an agreement, and send it to Cube.

Q. When you requested information from Cube, did it provide -- did Cube provide that information to you?

A. They did. There were times when they were apologetic, because sometimes it would take them a while to get the information we needed.

Q. And what do you mean, "a while," like how long is that?

A. I don't know exactly. Sometimes I would -- I think the individual I was dealing with with data request at Cube at that time was Andy Longnecker. I think I would ask him for something, and maybe he would be on vacation for a week or two, so it would be delayed.

But we needed data, operational data, to model these plants. And, you know, sometimes a counter party gets a little uncomfortable with providing some data. So, but we worked well with Andrew and got the data we needed and eventually got an offer together.

Q. What do you mean when you say, "modeling?" What is that?

A. Well, what we'll do -- and I'm not an expert on this. We have people that do this, but we would, in some cases, try to figure out the value of an asset.

We will put it into our models, which allow us to see how it would operate. So we would basically put it into our system, model it, see how it runs, and then take it out.

And then by doing sort of change, change,

change, you can see how much value it added to the system. That's one of the processes we go through. We go through a lot of others.

And this one was an engine trading deal, since we didn't have the capacity needed at the time. It was essentially energy owned transaction, so we were looking at the trading markets.

We were looking at new build economics. We were looking at some sensitivity analysis to compare the numbers we were coming up with to see how they bounce against say our trading that we had going on at that time.

We were -- we were -- over the years, we had been buying power here and there from the Yadkin assets for years. We were looking back at kind of how that works.

So we were looking at a whole lot of data, both external and internal, to try to present an offer to Cube during that time.

Q. And, as part of that process, it sounds like -- if I understood you correctly, you were requesting information mostly from Mr. Andrew Longnecker?

A. Well, from Cube, I think he was our contact to get data from Cube. But I was also collecting a lot of data from a lot of Duke folks on different aspects of the

agreement or the potential agreement.

Q. And can you think of a time -- two part question here.

First, can you think of anything you requested from Andrew Longnecker that you did not receive?

A. I don't recollect. You know, requesting stuff from him, I don't really remember any of the details associated with those requests; but I just remember -- I think that Andrew and I worked well together, and were able to get things done. But I know that, when you're working over the summer, summer vacations, you have family things going on. Sometimes there's delays.

There was a lot of work going on to put together, because we were looking at it from many different angles to come up with the pricing that we felt we could -- would not harm our customers, and we would be able to get through the commission with cost recovery.

At the same point, try to meet Cube Hydro's needs. So it was a very difficult transaction to put together, because we had really no capacity. We were long on capacity. There were no buyers of capacity at that time.

So when we have to take out the capacity value and stuff like that, it's a difficult thing to do to try to make something that works. There was a lot of analysis being done.

Q. If you were low on capacity, why were you engaged in discussions for PPA with Cube at the time?

A. Well, we weren't low on capacity. I'm sorry. We were long on capacity. We had plenty of capacity.

So, in a situation where you're like that, and you're doing a bilateral market based agreement, capacity is not factored into the analysis, it's an energy only transaction.

So, if you think about it, it has to compete with our assets, as well as, the marketplace. In other words, if I can buy on the market for 20 bucks, why would I pay Cube 30 bucks, or whatever it is?

So we have to look at the market. We have to look at our own generation and all that; but it had to work on an energy basis. We pay too much for it, our customers would be harmed. And in addition to that, we would risk not getting cost recovery.

Q. Yeah. I asked my question incorrectly. I'm sorry; but I appreciate the clarification, Mr. Keen.

So, if I understand it correctly, and maybe this isn't the right way to put it. But Duke could use the energy, but it didn't have any need for the capacity?

A. No. We didn't have any need for the capacity.

Q. No need for the capacity, but you could use the

energy output?

A. We could use the energy when it's lower in the market place, or what we could generate for. And, you know, there was no -- the other thing we had to look at, Cube was reluctant to give up the environmental attributes at this time.

In addition to that, they had not received new renewable energy status from the commission. I think they still haven't received that. So the renewal energy certificate value that could have been assigned to the transaction, I don't think that was -- we were spending some time on that, and trying to figure out how to work through that process, too.

So, you know, we were actually trying to do an RPPA, which is a renewable purchase power agreement, but we just couldn't seem to make the renewable piece work based on the rules and regulations of Carolina.

Q. You said it was reluctant to give up the environmental attributes of the --

A. Yeah. If you look at some of the draft agreements we received later from Cube Hydro, they basically have their language five, six pages long of the environmental attributes they were keeping for themselves.

And, of course, they weren't renewable energy,

so the RECs had no value to us either. So, you know, it just made the -- it just made the product less valuable to us if we didn't get environmental attributes from them. In other words, you know, the RECs, the carbon, and stuff like that.

Q. So do you recall generally at the time what kind of rates you were getting -- what kind of rates you were paying in the marketplace for energy?

A. I'd have to go back and review the analysis and all the data we put together. I don't -- I don't remember all the due diligence that went into putting those numbers together. There was a significant quantity, many iterations. There was a lot going in.

Q. I take it the same is true for self generation. You don't specifically recall, you know, sort of what the cost of that was?

A. Well, you got to remember that's pretty straightforward from when you're looking at just the energy. You have the cycle plant, renewed, the hydros. You know, we got a general idea of what the dispatch is like. But we did have our portfolio management people do a lot of work to model the self generation; but, you know, what's on the margin changes day-to-day and as prices change.

No question that these hydro assets have a lot

more value in a high gas environment. And we just haven't been in a high gas environment for a long time.

Q. And do you recall when you circulated a first term sheet to Cube?

A. We sent them our first on August 10th, 2017.

Q. And -- while -- so between the time that you sent them the term sheet and August 8, were there continued meetings between Duke and Cube?

A. I don't recall there being any meetings, no. I don't remember those. I'm sure there were a lot of calls to try to, you know, update them on where we were and get the data we need back and forth. We would get data from them and then ask more questions and additional followups.

I believe there was some interaction, but I don't believe there was any face-to-face meetings during that timeframe. At least, I don't recollect.

Q. I understand. I understand.

And let's look real quick at -- let's go to Tab 95.

A. Okay. Would you like me to read this?

Q. Take a look at that e-mail, if you would. I know you weren't copied on it. Just review it, if you would.

A. You said 95; right?

Q. Yes, sir.
A. You said I was copied or I wasn't copied?
Q. I do not believe you were copied.
A. I thought you said I was copied on it, and I was thinking I was looking at the wrong one.
Let me read this.
Q. Yes. Take a look.
A. This is July 27. Yes. Okay. I've read it.
Q. Okay. Okay.
And it references, well, a couple of things -- that Cube is getting frustrated, or at least expressing frustration that they feel it's taking too long to get a PPA.
Were you aware that they were expressing frustration?
A. I think they would wish it had happened sooner. Yes.
Q. And it references a conversation with Dhiaa?
A. Yeah. I would expect that this is probably Kendal and Dave are getting ready for a meeting. But I'm not familiar with that meeting at all.
Q. You don't know if it happened; or, if so, what was said there?
A. No. I wasn't invited.
Q. I understand. I understand.

A. I'm okay with that.
Q. Let me see one thing. Okay.
So the next thing you know that happens is that a term sheet will be sent in early August; right?
A. Yes.
Q. And without flipping through, fair to say that you communicated to Mr. Collins that he would probably have a term sheet in August?
A. I don't know if I was talking to John Collins or Andrew Longnecker. I can't recollect when they switched.
MR. ALLEN: If I could just interpose?
We had generally filed an objection, Joe, about anything related to pricing or term sheets, whether they're related to selling on the market, or whether it was related to avoid costs associated with the PURPA QF requirements.
We can continue along this line, but it's really difficult to see if it has anything to do with whether or not Cube is entitled to a waiver under the NOC form.
It seems to me we're chasing rabbits on this one. It doesn't seem relevant. It doesn't seem to me that it's going to lead me to anything that's relevant to the limited scope the commission has assigned to this hearing.

Maybe you can enlighten.
MR. DOWDY: Well, I mean I think in our communications back and forth we sort of -- I understand Duke takes a more narrow view of it than we do. I'm not so much trying to get into the substance of what the terms were, just to establish what the timeline was, if they didn't work out a non PURPA arrangement, but just to fill in the timeline and what it -- what was involved.
So I mean I understand the part you disagree about relevance, but I don't expect I'm going to spend a whole lot longer on that.
MR. ALLEN: We'll hold off for now, but it seems like we kind of are heading down this term sheet proposal request fairly extensively at this point; but continue.
MR. DOWDY: Yeah. I mean, fair enough.
MR. ALLEN: I mean, it's not what Cube says is relevant. If you look at the commission order, that's what they said the hearing was going to be limited to. So we're not deciding what the scope of the hearing is. The commission has already said that and the court of appeals has said that. So it's not our view. It's the view of the two tribunals.
MR. DOWDY: Well, anyway, I don't want to get

into an argument on the phone. I'm going to move through this pretty quickly. I do think it's relevant. I can explain it.
We can have a lawyer call outside of the witness' presence, if you want to. Why don't I just try to kind of move quickly through this and then move on to what I have to ask next.
MR. ALLEN: I'm good with that. That's good.
MR. DOWDY: I appreciate your congeniality.
BY MR. DOWDY:
Q. In any event -- all right.
So let's -- I will try to move in just a little more quickly, because I think it's documented in the records.
But I got to find my place again. I apologize.
All right. On August 10th 2017, you forwarded the term sheet to Mr. Collins; is that right, Mr. Keen?
A. I don't -- I sent the term sheet to Cube Hydro on August 10th, 2017. I don't recollect whether it was to John Collins or Andrew Longnecker, or who it was; but that was the day it was delivered. I can't remember who it was e-mailed to.
Q. And after that, after receiving the term sheet, do you know anything about whether there were communications between Duke executives and Cube

executives?
A. Yes.
Q. Do you know what those discussions were?
A. All I know is that Cube did not like the offer.
Q. And do you know if there was a discussion between Kristina Johnson and Dhiaa Jamil --
A. On August 16, Dhiaa Jamil did have a conversation with Kristina Johnson, as far as I know.
Q. And do you know what that discussion was?
A. I don't know the details, but I do know that Cube, I'm sure, didn't like the term sheet -- didn't like maybe the pricing or the structure, but they didn't like something. I didn't think they would like that, so I wasn't surprised at that.
Q. Okay. Okay.
And then without getting into it, they made a counterproposal?
A. We made a counterproposal, and then they sent us a counterproposal. That's correct.
Q. And so they sent a proposal to you, and then the parties had a meeting; correct?
A. That's correct.
Q. And following that meeting, then you sent a second term sheet; correct?
A. That's correct.

Q. And that would have been -- do you know about when the second term sheet was sent?
A. September 25, 2017.
Q. So I had my time incorrect then.
Was there a meeting between Cube and Duke on September 18th, 2017?
A. Yes. That was right after Hurricane Irma. It hit the Florida panhandle.
Q. After you sent the updated term sheet, it looks like there was a conference call between Cube and David Fountain, and maybe some others; is that correct?
A. October 6th there was a conference call. I don't remember exactly everybody in attendance on the call.
Q. And after that, it looks like there was some -- I'm not going to ask what the substance was. But there was some lawyer-to-lawyer discussion, maybe between Mr. Hopson and Kendal Bowman; is that correct?
A. I knew there was a -- my understanding there was a call on October 12 to discuss legal issues. I don't know if -- I can't recollect if I was there or who was there; but I do know there was a follow-up to talk about specific legal issues.
Q. Okay.
A. That was I think October 12th.

Q. Okay. Fair enough.
And then it looks like 1/3/2018 Cube sends a --
A. Hold on a second. I got to make a correction here. I apologize.
Q. No. Please.
A. On October 6th we had a conference call with them to discuss the term sheet they had received on September 25.
On October 12th, six days after that, Cube requested a call with Duke to discuss legal issues. And it looks to me like that call was actually held on November 15. So there were calls on November 15. And I do not remember those meetings, who was there. I just don't remember.
Q. Okay. And then it looks like Cube offers a counter term sheet, counterproposal on January 3rd, 2018; is that correct?
A. Yeah. So we sent them the September 25th offer. And then January 3rd of the following year they responded.
Q. I don't want to go term-by-term, but can I generally ask this question? Was the primary disagreement value and length of term?
A. Well, I mean, I guess from Duke's perspective there was. Essentially, the September 25th offer was

essentially a PURPA offer. It was based on our Energy avoided costs. It was based on the North Carolina House Bill 589, which had a five-year term.
Using the methodology for the avoided cost at that time, it did not include the Narrows facility, because it simply was a PURPA offer. And the pricing in that offer were based on our avoided costs at the time.
We did agree, I think in that offer, to buy RECs from them, if they did get new facilities status. So the September 2017 was a PURPA offer; but, you know, they didn't like it.
Their two offers I think their one price was 60 bucks and the other one was like 48, which was well above our avoided costs, and well above anything going on in the marketplace. Our opinion, totally unjustified.
Q. And then at the meeting, the parties discussed their meetings on consideration in value. And I take it Duke wasn't persuaded in what Cube was saying?
A. No. We were not.
Q. All right. So they made the counter offer. And it looks like there was a meeting between Duke and Cube on January 30, 2018. Were you at that meeting?
A. I believe I was at that meeting. You want me to answer any questions on that, I would have to review my notes. We had, you know -- I can't remember who was at

that. That might have been the meeting where the I Squared Capital guys were there. I can't remember. But there's a meeting somewhere, it might help to refresh my memory; but I'm trying to figure out which meeting that was.

Q. Well, look, if you would -- and I don't want to spend too long. I'll take as long as you want, but I don't want to spend too long. So we've got other things we're going to cover.

At Tab 96, and it's Duke document 1138, are those your notes?

A. No. On February 23 -- is this dated? This is January 30th.

I don't know whose notes those are. Really nice handwriting, though. Really nice handwriting. If it was my notes, you wouldn't be able to read them. I don't know whose those are.

The only time I saw them was when they showed up Friday in this binder, but I could look at them, if you like. Who was there? Oh, yeah. Let's see.

They do reference in these handwritten notes that, at some point, they wanted us to meet with their -- Cube wanted us to meet with their analytical folks, the academic guys that do the modeling and all of that.

And we met with them in Charlotte on February

23rd. I knew that was going to be a total waste of time, but we did it anyway.

Q. So let's look at -- go to -- go to Tab 10 real quick, if you would.

A. Sure. Okay. I am at Tab 10. That's quite a string of e-mails there.

Q. Yeah. There's a lot there.

A. Let me know what you want me to do.

Q. Well, what I wanted to look at was -- flip to the document that -- 34, the document number 34.

A. Okay.

Q. And there's an e-mail from John Collins to David Fountain. And I know you're not copied on it, so take a minute and read that e-mail.

A. I'm going to read the January 31st e-mail.

Looks like -- yeah. Okay. I mean, I recollect that.

Q. The reason I pointed to this e-mail, you said the further meeting with the consultants might be a waste of time. And it seems like there may be a disconnect.

As I read the e-mail, perhaps Cube felt like there was some progress made and maybe you didn't feel that way.

A. We see that a lot with the -- a lot of the ITTs in private equity, they'll hire consultants like these

guys that will run theoretical models and things like that. And they'll come up with what they think the market should be like in the southeast. That is a challenge to do.

The southeast is really its own market. And it's a challenging market to predict with, like the Black Shoals, and all these different models and things that people use. We've seen it many times.

What we base our knowledge on is we have extremely capable analytical folks in our company that know our avoided costs. They know the methodology that are supposed to be used by different commissions. And they're very, very, very, good at it. And these guys are coming in just, you know, just can't do that. They just can't do that.

As far as if they're going to predict the market, I don't have to; because I know everybody in the southeast, and I get bids in all the time.

So I know -- I have access to traders. I have access to the long-term markets. I know what the market is. I don't need someone coming in running a model telling me what it is.

They're very rarely right. All they really had to do is contact ten or 12 people in the southeast, and they would know what the market is. They wouldn't have

to do these predicted models and charge them for it. It was a waste of time.

But we were bending over backwards for them to try to do it. I knew it. They didn't believe me, but we know what the market is. We're involved in the market every day. We know what stuff costs and what it sells for. It's my job. That's what they pay me to do and that's what they pay our traders to do. These guys, they didn't know, but it's not unusual.

Q. And is it unusual -- did you perceive at the time that Cube felt the meetings were going well?

A. I wouldn't have thought that. No. I thought it was very clear to us and to them that we were really far apart.

I mean, if you look at the last two offers that we traded with them, they were around a ten year term at 48 bucks escalating, I might add, at three percent. And we were fixed at around on an average price around -- I think our on peak was 32, and off peak 39, an average of 34. If they could have gotten the RECs, that would have been another $4. Maybe put them in the 40s, but we were very far apart, both on price and term.

And, as you know, you got questions about the structure and what was involved. You know, how's it going to dispatch? Who's going to get the environmental attributes?

Beyond the pricing, there was a lot of differences too at that time. I just don't know how much the commercial guys transacted at, at these levels. In other words, I don't know how many deals their commercial people had actually done in the southeast.

Q. Okay. Okay.

So what's the next step after the technical meeting?

A. We received a -- I call it the ultimatum letter. We received a letter. John Collins sent a letter to David Fountain on March 9th. I believe that was the next step.

Q. Look at Tab 44, and tell me if that's the letter you're referring to.

A. I'm going to need a moment to read it. Okay?

Q. Yes. Yes. Yes.

A. Yeah. I'm getting there. Hang in there.

Q. I think it's on 190.

A. Yeah. That's what I'm reading. Okay. I read most of it.

Q. Is that the ultimatum communication that you're referring to?

A. Yeah. That was it. What's the date of this? This is March 9th? Yeah.

Q. And when you say an ultimatum, what was the ultimatum, as you understood it?

A. Let's see. We wanted a clear signal by Tuesday, March 13, or they were going to terminate the letter agreement and proceed -- the piece of it that sounds like an ultimatum to me is the part in -- looks like it's the third paragraph of that e-mail, where it says that, If we don't get a clear signal by close of business Tuesday, March 13, they'll force to terminate the letter of agreement and file a complaint with the NCUC. Yes. That was clear. We understood that.

Q. Okay. And after that letter, Duke doesn't -- didn't send another term sheet; did it?

A. No.

Q. Look with me at Exhibit 62 for a minute, Tab 62. I apologize.

A. Okay.

Q. And that e-mail ultimately gets forwarded to you. And, if you look at the second e-mail down from the top of the page, on 558, March 5, 6:38 p.m.?

A. I can't believe I was working then.

Q. It says, Meeting the team tomorrow at 5:30 to finalize recommendation.

Is that the Duke team?

A. Yes. I believe so.

Q. It says, This looks like this is going to end up with a complaint to the NCUC Commission; is that right?

A. Uh-huh.

Q. And then, Mr. Johnson says, David Johnson --

A. Yes. I believe -- David is not my boss now. I think maybe sometime around that timeframe, he had replaced Jerry Freeman; but, yeah, he was my boss at that time.

Q. And he says, That is probably a good outcome in this case. Thanks for the update.

What does that mean, "a good outcome?"

A. Well, you'd have to ask David what that means, but I do think that we -- as I mentioned earlier, that when you don't have a need for capacity, you know, we just want to be in a situation where we weren't overpaying for something.

I think there was some concern at the commercial level that the pressure the I Squared Capital and Cube put on the executive that maybe it would end up forcing the commercial guys to do a transaction where either we overpaid, or customers got harmed.

So I think what David was referring to, David Johnson, was that we offered our avoided costs. I mean, there was no mechanism really for us to offer more than that at that time, because we didn't have the capacity.

So I think, at this stage of the game, a complaint to the commission, may seem like a big deal to the attorneys, but from our perspective, we felt like we were following the commission's rules. So to us, if you tell the commercial guys we're going to the commission, it's not like we go, Ooh, wow, that's bad; because all we're trying to do is follow the commission's rules. And that's what we did. So we weren't necessarily worried about it, though.

In this timeframe, I think -- is this 2018? We had an RP out that we promised we would participate in and they did. We had a market solicitation out at this time, which they did get a bid out later that year. So we did get a chance to compete for the lead and do bidding that was years away still.

Anyway, I hate putting words in David Johnson's mouth, but I think that's what he was referring to.

Q. So that RFP, when was that?

A. Oh, my God. I don't remember when that was. I think he issued it, I can't remember, maybe the middle of 2018. If you talk to our commercial folks, they can give you the whole scoop on that. They put a bid into the RFP.

Q. Okay. All righty.

Are you doing okay?

A. I'm fine. I'm doing good.
Q. Let me just find one thing and we'll move on.
So my understanding is that after that, Cube terminated the discussions under the letter agreement; right?
A. Yes. Yeah. They terminated the letter agreement March 20th of 2018.
Q. All righty.
Let's look at Exhibit 199, Tab 199. That's in the little binder.
What we're going to look at, there's some numbers at the top, Mr. Keen, there's a page number 140 near the back of the exhibit.
A. Can you say the page number again, please?
Q. 140.
A. Yes. I'm there.
Q. Okay. And can you tell me what this document is?
A. Looks like a Notice of Commitment form.
Q. This a Duke form?
A. I believe so. Yes. Uh-huh.
Q. And can you tell me, in your own words, what the purpose of this form is?
A. The purpose for a Notice of Commitment form is for a QF to basically notify either DEC or DEP that they

are committing to selling the output of their qualifying facility to us.
Q. And is it -- could Cube have submitted this form to you, to Duke, on September 16, 2016?
A. No.
Q. And why do you say, No?
A. It would have had to come from the owner.
Q. And why do you say that?
A. Because I mean a prospective buyer, or someone who's looking to buy an asset, can't commit, in my opinion -- you lawyers may disagree -- can't commit to selling it. It has to come from the owner.
There are situations where you could have someone commit and sell the output of a plant, but they don't own it. How can you commit to sell the output of a plant, if you don't own it? You don't accept from people who might own a power plant.
Q. Okay.
A. I mean, I don't know. That's the way we look at it from a commercial perspective.
As far as the regulations, as it relates to the laws, and all that, that the attorneys would have to answer that. But from a commercial perspective, you can't commit to sell a facility you don't own. That has to come from the owner.

Q. And then I take it that you would give the same answer for September 28, 2016, that Cube could not have submitted a NOC form?
A. Yes.
Q. And for October 11, 2016?
A. Yes.
Q. And any time prior to November 15, 2013(sic)?
A. I'm not familiar with that date; but we do not take Notice of Commitment forms for people who don't own the power plant.
Q. And let's just look at the sections, if we can. And I'll ask -- if you'll look with me at section three, it says that, The seller certifies as follows. And it has several options, four options about CPCN requirements.
Do you see that?
A. Yes.
Q. I'm not asking for legal definitions. If you have an understanding of what a CPCN is?
A. I do not.
Q. Do you know if there was a CPCN for the facilities in 20 -- or let's say as of November 15, 2016?
MR. ALLEN: Objection.
He said he didn't know what a CPCN was.
THE WITNESS: The answer is no.

I don't know anything about whether these facilities had CPCNs or not. I do not know anything about that process.
BY MR. DOWDY:
Q. Let me just make sure I understand.
You don't know anything about the CPCN process, and you don't know anything about whether the facilities had one? You don't know anything about CPCNs?
A. I don't deal with this at all. We have other people deal with CPCN. I don't do it.
Q. Okay. And so I take it that -- well, do you know, if someone does not have a CPCN, how they would complete section three of the form?
MR. ALLEN: Objection.
That's a legal question. If he doesn't know about a CN, how would he know about how to complete a form related to a CPCN form?
MR. DOWDY: I think that's circular. He's in the process of accepting the forms. And it's Duke's deposition. And I do think that's relevant to the case.
THE WITNESS: Well, the answer to your question is, I don't do these forms. We have -- I don't know what you call it -- contract analysts that work in our department. And when we get a notice, they're the

ones who review them. They'll send it to me when it's properly filled out and all that. Or they'll just let me know that we have a completed CPCN, and here's the date.

So I don't typically get the Notice of Commitment form. It's typically sent to our contracting department.

BY MR. DOWDY:

Q. Okay. So I take it you don't know what a contract analyst would do, if section three was not completed?

A. I don't know specifically, but I will tell you that there are times when we get Notice of Commitment forms that are not filled out correctly or completed, and we will get back to the person that sent it to us and work the process and try to get it completed correctly.

So, in other words, there have been cases when we've got a NOC form, and it wasn't completed correctly. So it wasn't technically completed at that point. So we either had to add something or take something out.

I don't know the details. We have, like I said, we have people that take care of this stuff.

Q. I'll just ask it this way, and I'll save us some time, I think.

Do you have any knowledge of what the analyst

would have done, if they received this form from Cube Yadkin in October of 2016?

A. I don't know what they would have done. I don't know.

Q. At any point prior to the filing of the complaint in the commission, did anyone at Duke tell Cube that Duke believed that Cube needed to submit a NOC form?

A. I don't know the answer to that.

Q. And prior to the filing of the complaint in this action, did anyone at Duke tell anyone at Cube that Cube needed to obtain a CPCN?

A. I don't know the answer to that either.

MR. DOWDY: Guys, I'm going to ask to take about another five or ten minute break.

I don't think we have a whole lot of time left, but I could be as much as an hour. I don't know if anybody wants to grab a bite to eat or anything.

THE WITNESS: As far as I'm concerned, just let me know when you want me back. Is it five or ten?

MR. DOWDY: Is that fine with you?

THE VIDEOGRAPHER: On the monitor, it's 1:29 p.m., and we're going off the record.

(Whereupon a discussion was held off the record.)

THE VIDEOGRAPHER: The time is 1:46 p.m. and we're back on the record.

BY MR. DOWDY:

Q. All right, Mr. Keen. Welcome back. Thank you for your patience and indulgence. I think we don't have too much time left, and we can all get back to fun things instead of work.

Okay. I don't want to ask what your discussions with counsel were. But were you involved in preparing Duke's answer to the complaints in this action?

A. Which document is that?

Q. That's 198, sir.

A. 198. Let me look at it real quick.

Q. Yes, sir.

A. Yes.

Q. And let me ask you to turn, at the top it's got a number 109. They're numbered at the top instead of the bottom. Well, they're numbered at both the top and the bottom, but 109 at the top.

A. 109 at the top?

Q. Yes, sir.

A. Page 29 at the bottom?

Q. Yes, sir.

A. I'm there.

Q. All right. Do you see allegation 52 about a CPCN relative to a transaction between Duke Power Company and Northbrook Carolina Hydro?

A. I do see 52. Yes.

Q. Do you know anything about that? Do you have any knowledge regarding that paragraph?

A. I don't know anything about that.

Q. Let's go to shorten up that section. Hold on just a second.

When we were going through the topics earlier, you indicated that at a high level you could answer questions about the avoided cost rates and calculation that would have been available to the Cube Yadkin of the QF output, if there had been a PURPA PPA in October 2016; is that right?

A. I can answer high level general questions about how we calculate avoided costs. Yes.

Q. Well, do you know -- do you know when Duke -- do you know whether in November of 2016 Duke sought new standard rates?

A. Yes. I can't remember the exact date. I think it was around mid-November.

Q. November 15, 2016 sounds correct?

A. Yup. I do know that that was -- I do know that happened. Yes.

Q. So, if a company got a PURPA PPA before November 15, 2016, if it established -- go ahead.

A. I don't know that exactly, because I'm not sure which date they used, or when it was happening; but I will tell you that the way we do our analysis is when we get a NOC form, a completed NOC form, the date of that NOC form is what we use to base, not only the costs including the avoided costs, but also the methodology that was valid at that time based on the jurisdiction's commission.

So, if you -- if you -- if you send us a NOC form in October, whatever, then you will get the avoided costs and whatever commission approved methodology was used at that time; because in North Carolina, South Carolina authorities, the methodologies and instructions, and the costs, they change frequently.

That's why the NOC, it sets the date on which the analysis will be based, both the numbers and the methodology.

Q. So, and here's what I'm trying to understand.

A. Sure.

Q. Let's assume a NOC form with a date of October 11th, 2016. Would the rates, would the avoided cost rates, be higher or lower than after the rate change in November of 2016?

A. I believe the changes in November resulted in lower avoided costs; but, you know, a lot of that depends on the term, when you do the calculation.

Again, I'm talking from a generic perspective. In general, I believe it resulted in lower avoided costs.

Q. But from a generic perspective, what are the terms of a PPA that would affect the price?

A. When you say, "terms," are you talking about the tenor?

Q. Yeah. I mean what are the -- you said there were a number of factors, "from a generic perspective," that would affect --

A. Yeah. You know, one is the size of the plant. You might be able to use the standard agreement. The terms can vary.

I mean, I think there was a time when you could have done -- I think our costs allowed a term maybe as long as maybe 15 years, again, depending on the dates we get it.

So to give you an example, if I got a North Carolina NOC form that established that it was completed, I would talk to Kendrick, and folks like that, and say, Hey, we got this. What's the methodology? Are we using the right methodology?

The analysts that are doing it will have questions, you know, based on the current methodology, what terms are -- that we can offer. What, you know, specifically how they do the actual modeling and

calculations itself.

So to give you an example, in some situations, you would just pick up maybe a tariff that's available, if you did a NOC form, depending on what size, you would get that actual tariff.

Depending on certain situations, you would get a negotiated rate. Where, for example, if you submit a NOC form in October, you would get maybe the October avoided costs. Well, the October avoided costs are available the end of November. And then we would calculate it and put a PPA into that. So, even though you would send the NOC form in and get the October avoided costs, it would be later.

And in North Carolina, there's different calculations depending on what size hydro you are. In other words, if you're a small hydro, as defined in the commission, that would determine your calculation differently than if you were a large hydro.

So I would say that the NOC form, basically -- the key thing for us is it lets us know which costs we're going to use in the analysis, and which methodologies we're going to follow that the commission has required for us at that time.

So you're exactly right. If a law came out, a regulation came out and said November 15th, from that

point forward, avoided costs are going to be lower, then you would want one before November 15th; but other things affect avoided costs, too.

I get this all the time from hydros. When should I send in my NOC form? Okay? Because they want the highest rates they can get. Well, I don't know. I mean, if gas prices go up next month, it's better you hold on and don't submit the NOC form yet. But, you know, there's no real guaranties.

So it is not always, you know, an easy decision on when you want to submit your NOC form; but that does set the pricing methodology that we use to calculate costs for the cost for that PPA.

I will tell you that avoided costs have been generally trending down for a number of years. Typically, the higher price contracts we have now are the older contracts. The newer ones tend to be lower priced, because avoided costs tend to be trending down. Part of that is the fact that natural gas has been between two and three bucks for a long time.

Q. But so I take it you don't know exactly what avoided cost rate could have been offered for the Yadkin QFs in --

A. No. But I do know -- but I will tell you in September of 2017 what they were, because that's what we gave you. So, if you go to look at the September 2017, those were our avoided costs at the time. That essentially was a PURPA agreement in September 2017.

So, if you look at those numbers, you'll know what they were at that time. I don't -- for us -- we would have to go back and do an analysis for what date you wanted, but they would be lower in '16 than they were in '17. I'm sorry. They would be lower in '17 than they were in '16, generally. I would expect there were some circumstances when that's not true.

Q. But they would be lower in September of 2017 than they were in September or October of 2016?

A. I think so. Yes. Without doing the exact analysis for the technology, and the terms, and all that stuff, I think generally you can say that avoided costs have been trending lower; so, yes.

Q. And how does the length of a contract impact all that? Is it for a longer PPA, would you get lower costs, higher costs?

A. That's a good question. The -- the -- some folks, owners, think that costs are low, so they'll try for a short term and hope that gas prices go up, so they'll lock in.

Some folks feel like they have to -- they'll just -- since prices are so low and gas prices are so

low, they'll lock up a shorter term, so they may want a two year deal, hoping the costs go up. Or, you know, they may want to do a five year deal. Depending on the jurisdiction and the rules and the technology, the terms are dictated by the regulator on what we can and can't offer and what we have to offer.

But to give you an example, one thing that has a big impact on this is the -- a big impact on avoided costs is whether the utility you're dealing with has a capacity need, and whether or not that capacity need will increase the avoided costs.

So to give you an example, Duke Energy Carolinas next capacity need is 2026. So when you calculate the avoided cost, there isn't a capacity component until 2026.

So there would be energy only avoided cost for the first five years or until 2026. And then, you get both capacity and energy. So when the utility's capacity is -- and, of course the rules of how that applies also is important.

Q. So Duke has not had a capacity need for some time, if I understand your testimony correctly?

MR. ALLEN: We're getting into pricing now?

MR. DOWDY: I don't agree.

MR. ALLEN: Well, what does it have to do with

whether or not you should have gotten a waiver as to whether or not you get the capacity cost down?

MR. DOWDY: I'm happy to have that conversation outside the presence of the witness, if you want.

And I'm almost finished anyway, so I don't really see what the difference was anyway.

MR. ALLEN: It will need not lead to anything relevant; but since you're close to finishing, we'll move on.

THE WITNESS: You said Duke Energy. You have to be more specific than that.

BY MR. DOWDY:

Q. Okay. I'm talking about the two respondents in this action.

A. Okay. Well, it depends on when you're asking the question. But Duke Energy Carolinas' next capacity is 2026. I don't know -- you know, the IRP was released in October I think. So based on that, it's 2026. When it was previously released, I can't remember when it was, but it was a few years out.

And DEP, they had a nearer term capacity, which we filled when I mentioned the IRP, we bought around 2,000 megawatts of PPAs. Unfortunately, Cube wasn't one of those, because their prices were uncompetitive. But we did recently buy a couple thousand megawatts for DEP.

So their capacity need has now been pushed out further, too, because of that. But I don't remember exactly where it is. I think it's maybe in the 2024 timeframe.

But the only thing I was really telling you is when -- in some cases, when the capacity need is that the utility will have an impact on that avoided cost calculation, the more capacity need you have, the more value the capacity will be added to the avoided costs.

BY MR. DOWDY:

Q. Right. Did I understand you to say, at some point, it was possible to obtain longer term PPAs in 2016, and at some point thereafter it was not?

A. I believe HB 589 --

MS. FENTRESS: I think we're asking for a legal determination.

THE WITNESS: Yeah. I mean, I don't have the documents right in front of me, because the language can be a little squirrelly; but -- and it depends on which technology and different sizes and whether you're PURPA or not. And I mean it's more complicated than that.

BY MR. DOWDY:

Q. Let me ask you this: To your knowledge, has Duke ever asked for a waiver of the NOC form requirement?

A. I'm not aware of that ever happening.
Q. Does that mean it hasn't, or that you don't know?
A. I don't know.
Q. Do you know if Duke has ever entered into a PURPA PPA with a provider that did not have a CPCN?
A. I don't know the answer to that.
Q. Do you know if Duke has entered into a PPA with a PURPA buyer that didn't submit a NOC form?
A. I don't know the answer to that.
Q. And Duke has signed hydroelectric PPAs with four entities from January 2015 to July 2017, hydroelectric; is that correct?
A. I don't know the answer to that.
Q. Were you involved in the Spencer Mountain facility?
A. Yes.
Q. Do you know if that facility completed a NOC form?
A. I don't remember.
Q. What about Northbrook, do you know if that facility completed a NOC form?
A. All hydros that I manage, all 50 of them, are required to submit a NOC form, if they're going to want their contract to be extended.

Q. But do you specifically recall whether one was submitted for Northbrook?
A. I don't remember that. Well, one thing, let me correct you. Northbrook owns about ten hydros with us. So when you say, Northbrook, that doesn't narrow it down for me.
Northbrook has submitted NOCs -- well, I'm not going to get into that; but hydros owned by Northbrook had submitted NOC forms for a long time, and recently had submitted NOC forms, too. Northbrook understands how it works. So they do submit NOC forms.
But, specifically, did they submit one and on what date and all that? Like I said, the NOC forms go to the contract analyst. And I confirm with them whether or not the NOC form has been received and completed. I don't tend to look at them.
Q. I understand. All right.
Well, I'll just ask the same two things quickly about Madison. Do you know whether that facility, whether a NOC form was completed for that facility?
A. I don't know. I don't recall.
Q. And what about Barbara Ann Evans?
A. I don't know. I suspect we have those.
And, if you wanted to, we'll send them to you; but we don't allow hydros to do contracts or do PPAs

without a NOC form.
MR. DOWDY: All right. I'm going to take about five minutes and look at my notes. And then I think I've only got one or two more questions and I'll be finished, at least I will be. I don't know if anybody else has anything, but --
THE VIDEOGRAPHER: The time on the monitor is 2:08 p.m., and we're going off the record.
(Whereupon a discussion was held off the record.)
THE VIDEOGRAPHER: The time on the monitor is 2:15 and we're back on the record.
BY MR. DOWDY:
Q. Mr. Keen, thank you for your time today. I just have a few final questions that I ask everybody.
Thinking back on the deposition, to the best of your recollection, is there anything that you answered incorrectly that you'd like to change your answer?
A. No.
Q. And so, as far as you know, were all the answers you gave truthful to the best of your ability?
A. Yes.
Q. I don't have any more questions.
A. Great. Thank you.
Q. I doubt it, but your counsel may.
MS. FENTRESS: I don't believe we have any

questions.
Thank you.
THE VIDEOGRAPHER: The time on the monitor is 2:16, and we're going off the record.
COURT REPORTER: Who will be ordering?
MR. DOWDY: I will.
COURT REPORTER: You will, Kendrick?
MS. FENTRESS: Yes.
COURT REPORTER: And there's no rush on it; right?
MR. DOWDY: No. Not for me anyway. I can't speak for Kendrick.
MS. FENTRESS: We'll take it when you're done.
(Whereupon the proceedings adjourned at 2:16 p.m.)

CERTIFICATE OF OATH

STATE OF FLORIDA)
COUNTY OF LEE)

I, Shannon McCann, Shorthand Reporter and Notary Public, State of Florida, certify that Michael Keen remotely appeared before me on the 8th day of December, 2020 and was duly sworn.

WITNESS my hand and official seal this 17th day of December, 2020.

Shannon McCann
____
Shannon McCann, Notary Public, State of Florida
My Commission: GG 322810
Expires: July 14, 2023

REPORTER'S DEPOSITION CERTIFICATE

STATE OF FLORIDA)
COUNTY OF LEE)

I, Shannon McCann, CSR (NJ), certify that I was authorized to and did stenographically report the deposition of Michael Keen; that a review of the transcript was requested and that the transcript is a true and complete record of my stenographic notes.

I further certify that I am not a relative, employee, attorney, or Counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or Counsel connected with the action, nor am I financially interested in the action.

DATED this 17th day of December, 2020.

Shannon McCann
____
Shannon McCann, CSR (NJ)

CHANGES AND SIGNATURE

WITNESS NAME: Michael Keen, 12/08/2020

PAGE LINE CHANGE REASON

I, Michael Keen, have read the foregoing transcript and hereby affix my signature that same is true and correct, except as noted above.

____
Michael Keen

CHANGES AND SIGNATURE 1/3

WITNESS NAME: Michael Keen, 12/08/2020

PAGE	LINE	CHANGE	REASON
13	20	GPA to PPA	incorrect
14	8	projects to products	"
15	11	towing to tolling	"
15	23	fuel to Florida	"
16	11	Add 'Florida' before 'Power'	"
16	25	delete "used to"	"
30	6	form to for	"
32	9	plant to plants	"
62	15	Add 'new' after 'get'	"
62	16	renewal to renewable	"
66	21	John to David	"
74	11	PURPA to FERC	misspoke
75	8	Andy to Andrew	"
75	25	delete change, change,	incorrect
76	1	delete change and 'base case, change case'	"
76	4	engine to energy	incorrect

I, Michael Keen, have read the foregoing transcript and hereby affix my signature that same is true and correct, except as noted above.

Michael Keen

CHANGES AND SIGNATURE 2/3

WITNESS NAME: Michael Keen, 12/08/2020

PAGE	LINE	CHANGE	REASON
76	5	Needed to Need	incorrect
76	6	owned to only	"
79	17	insert "North" before "Carolina"	"
80	19	insert 'combined' before 'cycle'	"
80	19	Renewed to renewable	"
86	18	counterproposal to proposal	misspoke
91	24	ITTs to IPPs	incorrect
96	5	Delete 'NOT'	misspoke
96	7	Jerry to Gary	incorrect
96	25	replace 'the' with 'a need for'	misspoke
97	11	RP with RFP	incorrect
97	13	replace 'a' with 'to'	"
97	13	replace 'out' with 'on'	"
97	13	replace 'we' with 'they'	"
97	14	lead with load	"
97	14	delete sentence after load	misspoke

I, Michael Keen, have read the foregoing transcript and hereby affix my signature that same is true and correct, except as noted above.

Michael Keen

CHANGES AND SIGNATURE

3/3

WITNESS NAME: Michael Keen, 12/08/2020

PAGE	LINE	CHANGE	REASON
112	22	IRP to RFP	Misspoke
113	8	Replace 'more' with 'earlier the'	Misspoke

I, Michael Keen, have read the foregoing transcript and hereby affix my signature that same is true and correct, except as noted above.

Michael Keen

ACHIEVING A NET ZERO CARBON FUTURE

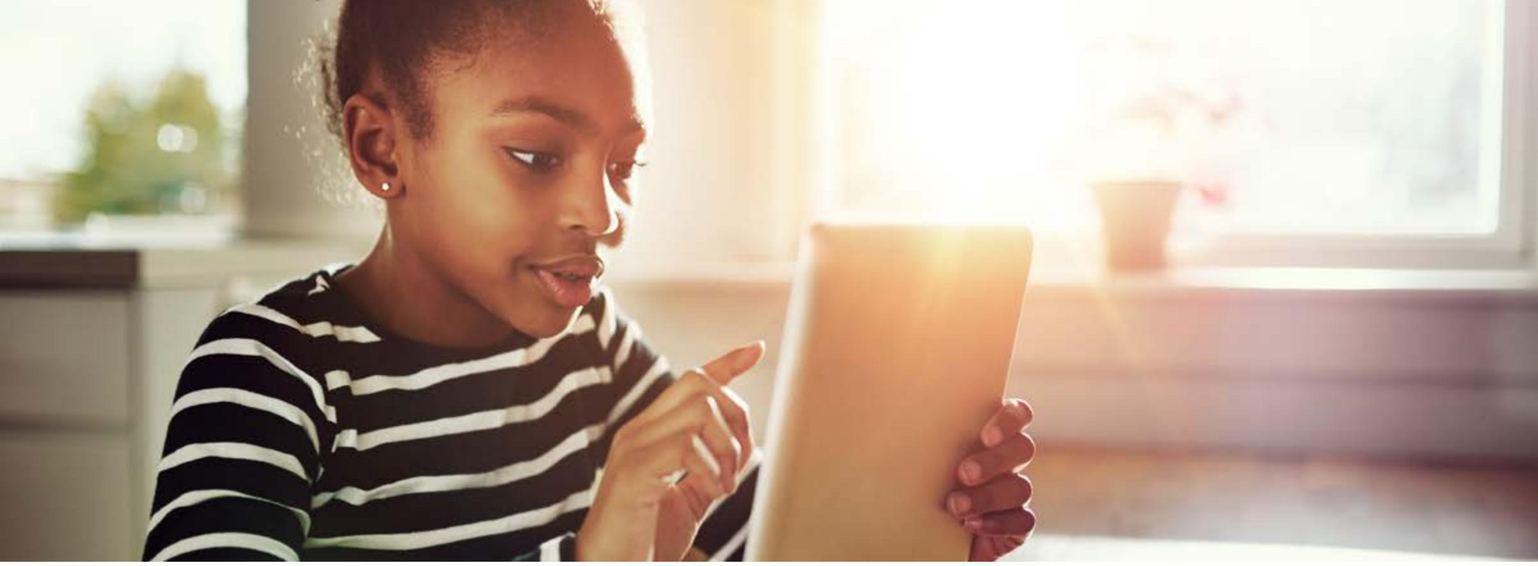
Duke Energy 2020 Climate Report

DUKE ENERGY®

BUILDING A **SMARTER** ENERGY FUTURE®

Contents

Duke Energy published this Climate Report during the COVID-19 (coronavirus) pandemic. Learn about the company's response to this crisis at dukeenergyupdates.com.



Executive Summary

As one of the largest electric and gas utilities in the U.S., Duke Energy embraces its responsibility not only to power the communities where our customers live and work, but also to address risks from climate change. Addressing the challenges climate change presents is a mission on which we all agree. We must double down on the hard work that will inform the technology, pace and cost of the transition, while always keeping affordability and reliability for our customers as our guiding beacons. Duke Energy will continue to help lead the effort to develop solutions to this complex challenge.

This report discusses how we are leaning in to this challenge and addressing climate risks by, first and foremost, reducing our own emissions and, secondly, by adapting our system to be more flexible and resilient.[1]

Our plans are guided by new carbon reduction goals that were announced in September of 2019. Duke Energy aims to reduce carbon dioxide (CO_2) emissions from electricity generation at least 50 percent below 2005 levels by 2030 and to achieve net-zero CO_2 emissions by 2050.[2]

We have already made significant progress toward our updated goals, reducing CO_2 emissions 39 percent since 2005, ahead of the industry average of 33 percent.[3] To build our path to net zero, we will work collaboratively with stakeholders and regulators in each of the states we serve to develop specific plans that best suit their unique attributes and economies. This will be an exciting transformation that evolves and adapts over time. This report offers insights into the complexities and opportunities ahead and provides an enterprise-level scenario analysis with an illustrative path to net zero, based on what we know today.[4]

This scenario analysis was conducted using our industry-standard resource planning tools and assuming normal weather (averages over the past 30 years). The major findings of this scenario analysis are:

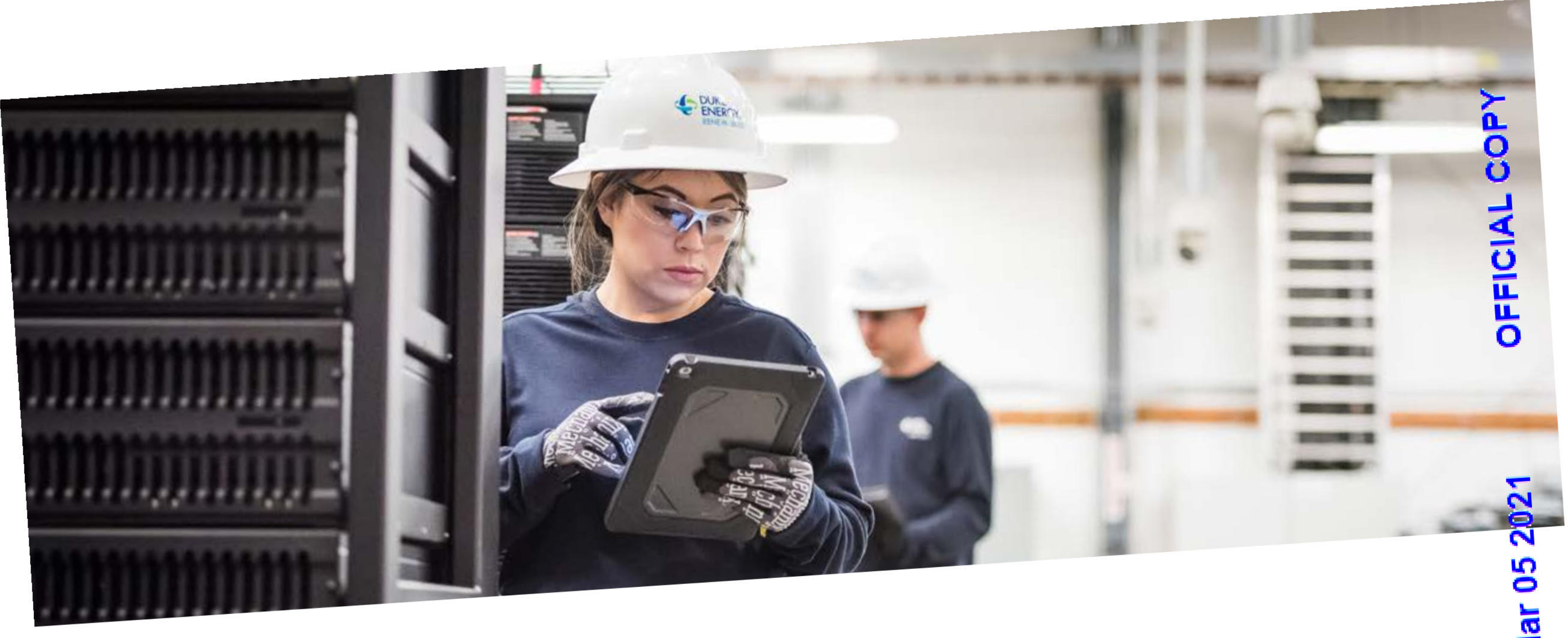
- We are on track to achieve our 2030 goal of reducing CO_2 emissions from electricity generation by at least 50 percent from 2005 levels.
- The path to net zero by 2050 will require additional coal retirements, significant growth in renewables and energy storage, continued utilization of natural gas, ongoing operation of our nuclear fleet, and advancements in load-management programs and rate design (demand side management and energy efficiency). Importantly, this path also depends on the availability of advanced very low- and zero-carbon

[1] This report, like our 2017 Climate Report to Shareholders, is aligned with the disclosures recommended by the Task Force on Climate-related Financial Disclosures (TCFD).

[2] These goals are enterprisewide. Each jurisdiction will have a different trajectory toward achieving them.

[3] U.S. Energy Information Administration, *Monthly Energy Review*, March 26, 2020.

[4] This scenario analysis does not model specific climate policies but has helped us identify key attributes of policies that will help us achieve our goals. These are discussed in the policy risks section on page 15.



technologies that can be dispatched to meet energy demand. These "zero-emitting load-following resources" (ZELFRs) will need to be installed as early as 2035. This analysis projects that ZELFRs will make up 12 percent of the capacity mix and supply 30 percent of energy by 2050 due to their ability to operate at full output over extended periods regardless of weather conditions. See sidebar on ZELFRs.

- Our analysis also shows that while we project adding large amounts of renewable energy, natural gas units remain a necessary and economic resource to enable coal retirements and to maintain system reliability as we transition.[5] Natural gas – reinforced by adequate transport capacity – allows us to retire our remaining 16 gigawatts (GW) of coal and transition to net-zero CO_2 emissions by 2050 while maintaining affordability and reliability. Notably, as increasingly larger amounts of renewable energy and other zero-emitting resources are added, Duke Energy's natural gas fleet will shift from providing bulk energy supply to more of a peaking and demand-balancing role.

- We project continuing to need natural gas because, in jurisdictions such as ours where hourly demand for electricity is not well-correlated with hourly renewable generation, renewables are not operationally equivalent to natural gas generation, particularly for prolonged periods of cloudy weather and/or low wind speed conditions.

  - We conducted a "no new gas" sensitivity to stress-test this projection. We find that while energy storage can help address the capacity and energy gap created by retirement of coal units, installation and operational challenges arise as we attempt to rely on current commercially available storage technologies to provide intermediate and baseload capabilities.

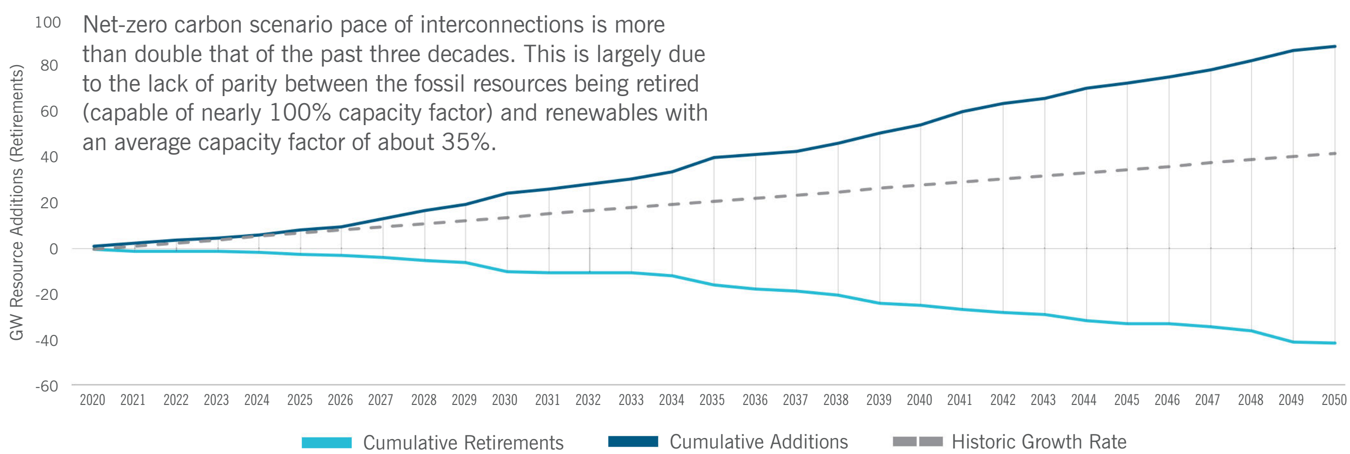
  - For example, to enable coal retirements and accommodate load growth without adding natural gas, Duke Energy would need to install over 15,000 MW of additional four-, six- and eight-hour energy storage by 2030. That equates to a little over 17 times all the battery storage capacity installed nationwide today (899 MW).[6] The largest battery storage facility that exists in the world today is the Tesla-built 100-MW Hornsdale Power Reserve in Australia.[7] A larger 400-MW battery storage facility is currently under development in the Southeast.[8] These are important and encouraging developments, but it is notable that Duke Energy would need to build nearly 40 storage facilities like the one under development in the next nine years to reach

[5] Note that our analysis does include economic hurdles for natural gas to address the risk of stranded assets (see page 23 for discussion).
[6] EIA, U.S. Utility-scale battery storage power capacity to grow substantially by 2023, July 2019. https://www.eia.gov/todayinenergy/detail.php?id=40072 (showing 899 MW of battery storage as of 2019 and projecting 2,500 MW installed by 2023).
[7] https://hornsdalepowerreserve.com.au/
[8] http://newsroom.fpl.com/2019-03-28-FPL-announces-plan-to-build-the-worlds-largest-solar-powered-battery-and-drive-accelerated-retirement-of-fossil-fuel-generation

15,000 MW of storage. Due to this tight time frame, challenges would likely include regulatory approvals and permitting, interconnection studies and associated upgrades, and potential supply chain issues, considering the current early stage of the utility-scale battery storage industry.

- Taking this scale of battery implementation to real-world, reliable and affordable operations would require further detailed analysis and on-the-ground experience – among other factors – to determine operational feasibility. We are not aware of any electric utility in the U.S. that has attempted to serve customers reliably at scale with such a high proportion of capacity from energy storage. We discuss the detailed analysis needed before such implementation on page 29.
- If such an amount of storage is possible from an operational standpoint, we found that the incremental costs of achieving net zero under this sensitivity would increase by three to four times above that of the net-zero scenario that utilizes natural gas (even without including the likely significant additional costs for transmission and distribution system upgrades). These costs could especially have an impact on Duke Energy's low- and fixed-income customers and energy-intensive businesses.

- Achieving net zero, even with gas, will require an unprecedented and sustained pace of capacity additions. For example, we will need to add new generation to our system over the next three decades at a pace more than double the rate at which we added generation over the past three decades. This is illustrated in the chart below.



- In the net-zero carbon scenario, renewables (solar and wind) contribute over 40,000 MW of those additions, representing 40 percent of the summer nameplate capacity of Duke Energy's system by 2050 and generating the largest portion of energy. To put this into perspective, Duke Energy's total summer generating capacity today is approximately 58,000 MW and grows to over 105,000 MW by 2050. The requirement for such large needed additions arises because replacing traditional electric generating capacity with renewables plus storage is not a one-for-one proposition. Due to the intermittency of renewables, significantly more capacity must be built, even with storage available, to provide the same level of reliable electricity generation as a fossil plant. Therefore, achieving net zero will also depend on our ability to site, construct and interconnect new generation, transmission and distribution resources at an unprecedented scale in a timely manner.[9]

[9] See University of North Carolina, "Measuring Renewable Energy as Baseload Power," March 2018. https://www.kenaninstitute.unc.edu/wp-content/uploads/2018/05/Kenan-Institute-Report-Measuring-Renewable-Energy-as-Baseload-Power-v2.pdf

- Our modeling demonstrates that if these resources are integrated into the grid as forecast, we will be able to serve customers under normal weather, which is the way we have planned the system in the past, when the vast majority of resources were dispatchable over long durations (weeks rather than hours). More work is needed to better understand the ability of renewables and storage to meet capacity needs, and how that will change as more of these resources are added to displace conventional generation. We are already embarking on these analyses and expect that collective industry understanding will improve over time.
- While we did not explicitly account for transmission and distribution needs in this analysis, it should be recognized that retirements of certain coal (and, later on, gas) units, as well as the addition of large volumes of renewables and energy storage, will require substantial investments in our transmission and distribution systems. Federal and/or state policy changes may be needed in order to achieve such large transmission and distribution investments in a timely manner.

The actual pathway that Duke Energy takes to achieve net-zero carbon emissions by 2050 will be based on the availability and cost of evolving technologies, federal and/or state climate policies, and stakeholder and regulatory input and approvals. During the 2020s, significant innovation and technological advancement will be critical to ensure we have viable technology options by the 2030s.

To help enable these new technologies, we are committed to working with the private and public sectors to drive research, development and demonstration of technologies such as advanced nuclear; carbon capture, utilization and storage (CCUS); hydrogen and biofuel utilization for power generation; and longer-duration (up to seasonal) storage.

We are embracing this extraordinary challenge, collaborating with regulators, policymakers and other stakeholders to help develop the best policies and options that will reduce carbon emissions and meet the needs of our customers for affordability, reliability and sustainability.

Zero-Emitting Load-Following Resources

Our analysis makes it clear that advanced very low- or zero-emitting technologies that can be dispatched to meet energy demand are needed for Duke Energy to transition to its net-zero carbon future. There are several technologies that could play the role of zero-emitting load-following resources (ZELFRs), such as:

- **Advanced nuclear** – Advanced nuclear includes a wide range of small modular light-water reactors (SMRs) and advanced non-light-water reactor designs. Small modular light-water reactors are closest to commercial deployment, with early designs targeting commercial operations in the mid-to-late 2020s. Advanced non-light-water reactor concepts are also under development and are expected to be commercially available in the 2030s.
- **Carbon capture, utilization and storage (CCUS)** – CCUS technologies for the power sector are in the early stages of deployment, with a few small-scale projects on coal having achieved commercial operation and several natural gas projects currently in development, spurred by the 45Q tax credit, which provides an incentive for utilizing or storing captured CO_2. Demonstration of CCUS at scale for natural gas power plants is an important milestone for commercial deployment in the power sector, as is building public, environmental and regulatory confidence around the transportation of captured CO_2 and its utilization and geologic storage.
- **Hydrogen and other gases (including renewable natural gas)** – Hydrogen and other low- or zero-carbon fuels are increasingly gaining attention for their potential to contribute to a net-zero carbon grid. For example, many existing natural gas turbines are already capable of co-firing hydrogen, and vendors are focused on developing models capable of firing 100 percent hydrogen. Key opportunities include cost-effectively producing hydrogen (or other gases, including renewable natural gas) from very low- or zero-carbon processes and ensuring safe and effective methods of transportation.
- **Long-duration energy storage** – Long-duration energy storage includes a wide range of thermal, mechanical and chemical technologies capable of storing energy for days, weeks or even seasons, such as molten salt, compressed/liquefied air, sub-surface pumped hydro, power to gas (e.g., hydrogen, discussed above) and advanced battery chemistries. These technologies are at various stages of research, development, demonstration and early deployment

Other technologies will also be important. We continue to explore pumped storage hydro opportunities (a mature technology), as well as advanced renewables (such as offshore wind and advanced geothermal and solar), energy efficiency and demand response.

Duke Energy is actively involved in efforts to advance research, development, demonstration and deployment of advanced technologies. For example, we are a founding member and anchor sponsor of the Electric Power Research Institute/Gas Technology Institute's Low Carbon Resource Initiative, which is a five-year effort to accelerate the development and demonstration of technologies to achieve deep decarbonization. And we have participated in extensive research over the past few years on CCUS, including, for example, a study of membrane-based carbon capture that was conducted at our East Bend facility in Kentucky. We are also involved in both the Midwest Regional Carbon Capture Deployment Initiative and the Midwest Regional Carbon Sequestration Partnership.

We are also a founding member of EEI's Clean Energy Technology Innovation Initiative, which is partnering with several non-governmental organizations (NGOs), including Clean Air Task Force, the Center for Climate and Energy Solutions, and the Bipartisan Policy Center, to identify areas for advocacy on advanced technologies.

Robust and sustained government support is vital to ensure the commercialization of these advanced technologies; Duke Energy will continue to advocate for sound public policies that advance this needed support.

Introduction

In the following sections, this report highlights Duke Energy's commitment to address climate change:

- **Governance** – discusses Board of Directors oversight, executive compensation and lobbying/ political expenditures policies.
- **Strategy** – discusses how various inputs inform and drive Duke Energy's plans to a net-zero carbon future.
- **Risk Management** – addresses Duke Energy's process for identifying physical and transition (policy and economic) risks, and measures for addressing these risks.
- **Metrics** – identifies the company's specific CO_2 reduction goals, progress toward those goals, as well as other greenhouse gas (GHG) metrics.
- **Scenario Analysis** – discusses our analysis of a net-zero carbon emissions scenario to provide insight into areas of near-term and longer-term focus needed to achieve our net-zero 2050 goal.

Governance

Board Committee Oversight

The Duke Energy Board of Directors understands the importance of climate change issues, as well as their significance to our employees, customers and communities, and recognizes the potential impact and opportunities for our business and industry. In 2019, the Board was instrumental in the development of Duke Energy's updated carbon reduction goals, including review and discussion at multiple meetings of the Corporate Governance Committee, along with insights from external experts at a full Board meeting.

Given the wide scope of climate risks, including physical, policy and economic risks, the Board and its committees are all actively involved in oversight, as shown in the table on the next page.

BOARD OF DIRECTORS
RISK MANAGEMENT OVERSIGHT STRUCTURE

Corporate Governance Committee

- Oversees risks related to sustainability, including climate risks
- Oversees risks related to public policy and political activities
- Oversees the company's shareholder engagement program, receives updates on shareholder feedback and makes recommendations to the Board regarding shareholder proposals, including those related to climate
- Evaluates the composition of the Board to ensure a proper mix of skills and expertise to oversee Duke Energy's risks and strategy

Finance & Risk Management Committee

- Oversees process to assess and manage enterprise risks, including climate risks (page 11)
- Oversees and approves major investments that are supportive of the company's climate strategy, such as renewables, grid modernization, natural gas and storage
- Oversees financial risks, including market, liquidity and credit risks

Operations & Nuclear Oversight Committee

- Oversees risks related to our nuclear fleet, our largest carbon-free resource, as well as risks related to our non-nuclear regulated operations
- Oversees operations and environmental, health and safety matters, including improvements at our generation facilities and coal ash basins to better withstand severe weather events (page 12)

Regulatory Policy Committee

- Oversees regulatory and policy risks related to climate change, including review of federal and state policies at every regularly scheduled meeting (page 15)

Compensation Committee

- Oversees risks related to our workforce and compensation practices, including those related to climate

Audit Committee

- Oversees the company's disclosures, internal controls and compliance risks, including those related to climate
- Oversees risks related to cybersecurity and technology

The day-to-day direct management of climate and carbon-reduction policies is the responsibility of the company's federal government and corporate affairs team. This team reports to the executive vice president for external affairs and president, Carolinas region, who is a member of the Duke Energy senior management team and reports directly to the chair, president and chief executive officer. The federal government and corporate affairs group has organizational responsibility for developing Duke Energy's position on federal legislative and regulatory proposals addressing climate change and greenhouse gas emissions and for assessing the potential implications of such proposals to the company – as well as for engaging stakeholders to help shape our climate strategy. In addition, Duke Energy's state presidents have responsibility for developing the company's positions on state-level legislative and regulatory proposals addressing climate change and greenhouse gas emissions, and for engaging stakeholders at the state level to help shape the company's climate strategy.

Compensation

The Compensation Committee has designed our compensation program to link pay to performance, with the goal of attracting and retaining talented executives, rewarding individual performance, encouraging long-term commitment to our business strategy and aligning the interests of our management team with those of our shareholders. The Compensation Committee has aligned several performance metrics with our sustainability strategy, including:

- Zero-carbon generation – We incorporate a nuclear reliability objective and a renewables availability metric in our short-term incentive plan to measure the efficiency of our nuclear and renewable generation assets.
- Environmental events – To enhance our commitment to the environment, we incorporate a reportable environmental events metric into our short-term incentive plan.
- Customers – To prioritize the customer experience and their growing demands to be served by cleaner energy, we incorporate a customer satisfaction metric in the short-term incentive plan, which is a composite of customer satisfaction survey results for each area of business.
- Safety – Safety remains our top priority. We include safety metrics in both our short-term and long-term incentive plans based on the total incident case rate of injuries and illnesses among our workers to emphasize our focus on an event- and injury-free workplace.
- Governance – We continue to incorporate sound governance principles and policies in our compensation program that reinforce our pay for performance philosophy and strengthen the alignment of interests of our executives and shareholders.

Duke Energy continues to review its compensation program performance metrics with the Compensation Committee.

Political Contributions and Lobbying

As a public utility holding company, Duke Energy is highly regulated and significantly impacted by public policy decisions at the local, state and federal levels. It is essential for us to engage in public policy discussions to protect the interests of Duke Energy, our customers, employees, shareholders and communities. Participation in public policy dialogues includes contributing to organizations, including trade associations, that advocate positions that support the interests of Duke Energy, our customers, employees, shareholders and communities.

Duke Energy has developed a robust governance program around our public policy engagement. The day-to-day management of our policies, practices and strategy with respect to public policy advocacy is the responsibility of the jurisdictional presidents at each applicable state level and our senior vice president for federal government and corporate affairs, who, along with other senior leaders across the company, make up a Political Expenditures Committee (PEC). The PEC is responsible for annually developing the company's political expenditures strategy and approving, monitoring and tracking our political expenditures. The company's Political Expenditures Policy sets out the principles governing corporate political expenditures and political action committee contributions. Under this policy, the senior vice president for federal government and corporate affairs provides a semi-annual update to the Corporate Governance Committee of the Board. This includes updates on the company's strategy and political expenditures, including payments to trade associations and other tax-exempt organizations that may be using the funds for lobbying and political activities. (See Duke Energy's Corporate Political Expenditure Reports).

In addition to our participation in trade associations for public policy engagement purposes, we participate in industry trade organizations for many non-political reasons as well, including business, technical and industry standard-setting expertise. As member-driven organizations, these trade associations take positions that reflect the consensus views of their members. We may not support each of the initiatives of every organization in which we participate or align in strategy with every position of every organization; however, in our interactions with them, we seek to harmonize the organizations' positions on climate change with those of Duke Energy. We believe our continued input into these discussions with organizations with whom we may not always totally agree enables us to educate others on our positions and enables us to better understand their positions.

Strategy

Informing Our View

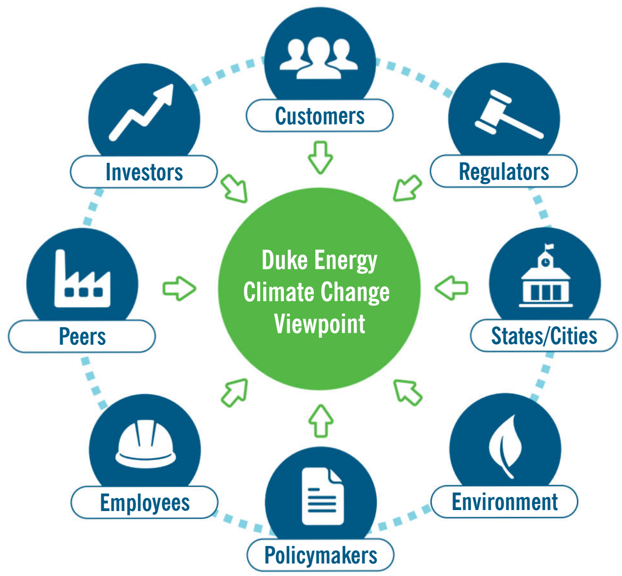
At Duke Energy, we are committed to leading in the effort to address greenhouse gas emissions and to build a cleaner, smarter energy future. As we talk with customers, investors and other stakeholders, reflected in the figure to the right, it's clear that they share that interest. It's also clear that unnecessarily compromising reliability and affordability, especially for our most vulnerable customers, is not an option.

An increasing number of our customers are calling for electricity from non-carbon-emitting sources. For example, Apple, BMW, Facebook and Google are all members of the "RE100," a coalition of companies committed to sourcing 100 percent of their electricity from renewable sources. In some cases, this is through a commitment to match 100 percent of the companies' electricity use with renewable energy purchases.

But it's much more than the interests of our large corporate customers. Counties and cities in Duke Energy's service territories have developed ambitious sustainability or 100 percent renewable energy goals, most by 2050. Further, North Carolina's governor issued an executive order followed by a Clean Energy Plan that calls for reducing greenhouse gas emissions from the power sector by 70 percent by 2030 and to achieve carbon neutrality by 2050. Additionally, climate change remains a prominent topic of discussion in federal political and policy arenas, as can be seen in proposals to address climate change being developed by Democratic and Republican leadership in Congress. The challenge inherent in these goals is not in their establishment, but rather in the development of the right mix of executable options to get the entire economy to net zero by 2050.

Climate change also continues to be a focus of engagement and discussion with the company's shareholders and employees. Both groups want to be sure we are recognizing and responding appropriately to the risks and opportunities that climate change presents.

To continue to power the lives of our customers, support the vitality of communities and exceed the expectations of our customers and stakeholders, we need to deliver energy that is cleaner and smarter than ever before.



Accelerating Our Carbon Reduction Goals

We recognize the long-term challenge climate change presents and that reducing CO_2 emissions in the power sector is a major part of the effort to address this challenge. Given the input discussed above, our assessment of climate-related risks and opportunities, as well as the declining cost of renewables and sustained low cost for natural gas, in 2019 we updated our carbon reduction goal. We are confident that we can achieve at least a 50 percent reduction in CO_2 emissions from electricity generation by 2030 compared to 2005 levels (a more aggressive target than our most recent 40 percent by 2030 goal).

We've also added a longer-term goal of achieving net-zero carbon emissions from electricity generation by 2050. Our goal to attain a net-zero carbon future represents one of the most significant planned reductions in CO_2 emissions in the U.S. power sector. It is also consistent with the scientifically based range of both 1.5 and 2 degrees Celsius pathways, as

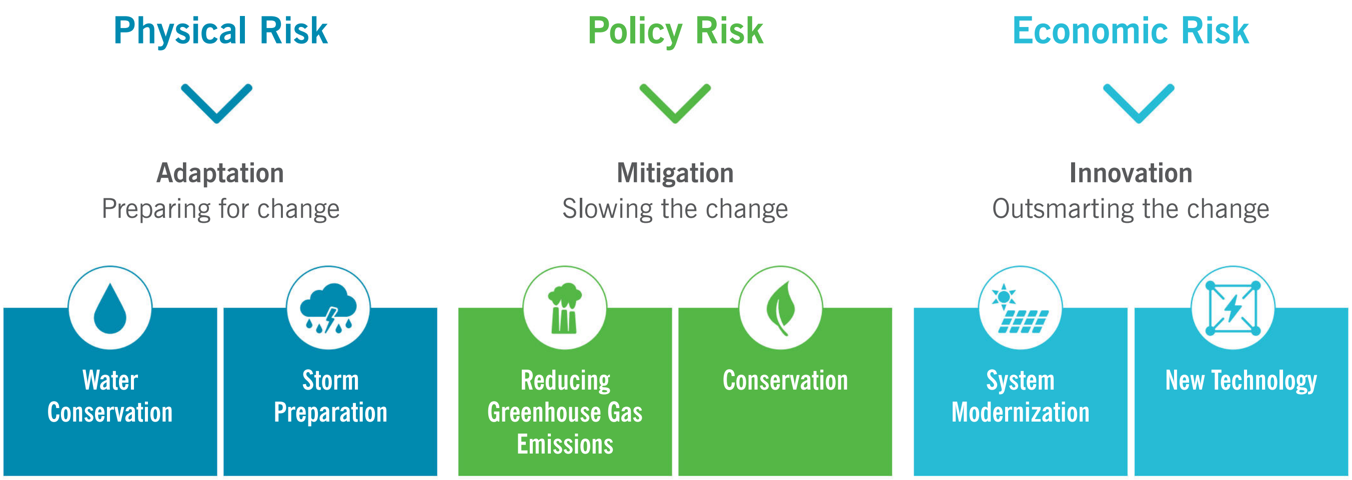
discussed in the sidebar on page 30. Implementing this bold vision requires us to begin planning and executing now. The choices and investments we make near term will be foundational to achieving net zero by midcentury. Continuing to modernize our fleet and grid at a measured pace will help protect customers from dramatic price increases. At the same time, we must pursue innovation by advocating for sustained investments in low- and zero-carbon technologies for this vision to become reality.

Charting the Path

Achieving our carbon reduction goals will require at least five elements. We will continue to:

- **Collaborate and align with our states and stakeholders as we transform**. The steps and timeline for this transition will be unique in each state we serve, and we'll collaborate with customers, communities, policymakers and other stakeholders to determine the best path.
- **Accelerate our transition to cleaner energy solutions**. We're planning to at least double our portfolio of solar, wind and other non-hydroelectric renewables by 2025. We'll continue to need dispatchable, load-following, low-cost natural gas to speed the transition from coal and maintain affordability and reliability. New natural gas infrastructure will be required to fuel this transition and balance renewables. We'll continue expanding energy storage, energy efficiency, as well as electric vehicle infrastructure to support decarbonization of the transportation sector, now the largest CO_2-emitting sector.
- **Continue to operate our existing carbon-free technologies, including nuclear and renewables**. Our nuclear fleet's nearly 11,000 MW of carbon-free generation in the Carolinas – enough to serve nearly 7 million homes – is central to our ability to meet these goals. In September 2019, we announced that we will seek to renew the operating licenses of the 11 reactors we operate at six nuclear stations for an additional 20 years, which will extend their operating lives to and beyond midcentury.
- **Modernize our electric grid**. The company is investing in a multiyear effort to create a smarter and more resilient grid that can protect against extreme weather and cyber or physical attacks. These grid improvements also support adding more renewables while avoiding outages and providing customers more control over their energy use.
- **Advocate for sound public policy that advances technology and innovation**. This includes advanced renewable energy, longer-duration (up to seasonal) storage, new nuclear technologies, low- and zero-carbon fuels and effective ways to capture carbon emissions. The company will also support permitting reforms that will enable the deployment of new technologies and construction of critical infrastructure, both needed to address climate change.

As we partner with customers, policymakers, regulators and stakeholders in our respective states to make our transition, our integrated resource plans, financial plans and other regulatory filings will progressively reflect our proposed path (in accordance with the time frames mandated for each).



For example, Duke Energy has already retired 51 coal units totaling more than 6,500 MW since 2010, and we plan to retire an additional 900 MW by the end of 2024. In rate cases filed in 2019, we proposed to shorten the book lives of another approximately 7,700 MW of coal capacity in North Carolina and Indiana. We are also converting three of our largest coal plants in the Carolinas to run partially or fully on natural gas, providing resiliency and reducing carbon emissions. We recognize the importance of our power plants to the communities that host them and the workforce that operates them. As we retire coal plants, we will continue to strive to transition impacted employees to new opportunities and will work to match communities with appropriate resources.

Taking a Comprehensive Approach

Addressing the complex challenge of climate change requires more than just carbon emissions reductions. Our holistic approach to addressing physical and transition (policy and economic) risks associated with climate change includes three key areas of focus: adaptation, mitigation and innovation.

- Adaptation – Duke Energy is taking steps to prepare for the changing global climate, including water conservation and storm preparation.
- Mitigation – We are working to slow climate change with a variety of carbon reduction and land conservation efforts.
- Innovation – Duke Energy is helping drive the new technologies necessary for a net-zero carbon future.

Risk Management

Our Approach

Climate change risks – including physical and transition (policy and economic) risks – are included in the company's Enterprise Risk Management (ERM) process. The ERM process is used to identify, assess, quantify and respond to a comprehensive set of risks in an integrated and informed fashion. ERM provides a framework to manage risks while achieving strategic and operational objectives and continuing to meet the energy needs of our customers.

Duke Energy performs a comprehensive enterprise risk assessment on an annual basis to identify potential major risks to corporate profitability and value, including risks related to climate change. To inform the annual risk assessment, the ERM group works with subject matter experts to identify and characterize key risks, including climate- and environmental-related risks. In addition, our chief risk officer meets with business unit leadership to discuss risks on a quarterly or semi-annual basis. The ERM group shares the annual enterprise risk assessment with the Board and reports regularly to the Finance and Risk Management Committee.

To assure Duke Energy is incorporating climate, technology and economic risks into our long-term planning, we annually, biennially or triennially (depending on the state) prepare forward-looking integrated resource plans (IRPs), or similar regulatory filings, for each of our regulated electric utility companies. These 10- or 20-year plans help us evaluate a range of options, considering forecasts of potential future climate policies, future electricity demand, fuel prices, transmission improvements, new generating capacity, integration of renewables, energy storage, energy efficiency and demand-response initiatives.

In recognition of the increasing role of distributed energy resources, the company is expanding its planning and is developing new Integrated Systems and Operations Planning (ISOP) tools that will inform and evolve the current IRP process. This effort will significantly enhance the coordination of modeling and analysis across generation, transmissions, distribution and customer program planning functions. ISOP is motivated by the expectation that advancements in technology and declining costs will make non-traditional solutions such as energy storage increasingly competitive relative to traditional resources. ISOP will include enhancements to modeling processes necessary to accommodate renewable growth and value new technologies, such as energy storage, electric vehicles and advanced customer programs. In the areas of distribution planning, ISOP builds on our objective of enabling higher levels of distributed energy resources by developing planning tools that can fully leverage the intelligent grid control capabilities of our grid modernization efforts.

Physical Risks

Extreme weather events – including hurricanes, heavy rainfall, more frequent flooding and droughts – can impact our assets, electric grid and reliability. Due to the location of some of our service territories, we must be especially vigilant about adapting to these risks.

Storms and Heavy Rainfall Events

We are making strategic improvements to make the power grid more resistant to outages from severe weather and flooding, and adding new technologies that make the grid more resilient:

- Upgrading utility poles and power lines to make them more resistant to power outages and able to withstand higher winds and more extreme conditions.
- Using data to identify the most outage-prone lines on our system and placing those lines underground. In Florida, we recently announced a ten-year plan to underground and make other improvements to power lines that run through heavily-vegetated areas, and have stated a goal of either undergrounding or hardening all feeders and laterals by 2050. We are also upgrading underground routes to allow for more remote restoration opportunities.
- Installing a smart-thinking grid that can automatically detect power outages and quickly reroute power to other lines to restore power faster than ever. In 2019, self-healing technologies prevented more than 600,000 extended outages across the company's six-state electric service area and saved customers more than 1 million hours of total outage time.

We have developed mitigation measures that are being installed to keep substations better protected and in operation during severe storms. These measures include:

- Improved barriers that better withstand flooding to keep these essential systems operating.
- Targeted relocation of equipment – while barriers are usually the most effective solution, in some instances we will relocate equipment to nearby property that is outside the area prone to flooding.
- Remote communication, monitoring and restoration capabilities – we are installing new technology to monitor the health of key systems in substations, as well as self-healing capabilities that can help to reduce the number of customers impacted by a substation outage, even if crews are not able to physically reach the substation.

We have made improvements at our power plants to ensure they are capable of withstanding heavy rainfall events and flooding. For plants near the coast, these actions also help protect against potential sea level rise impacts:

- Raised the foundation of the new Citrus Combined Cycle Station in Florida to protect the station from hurricane storm surges.
- Increased structural hardening and improved equipment protection at the Brunswick Nuclear Station in North Carolina to better resist flood impacts.

- Evaluated and prioritized our fossil sites for possible flood risks and performed detailed modeling of the top four sites against 100- and 500-year storms and riverine flooding; additionally, updated our site-specific natural disaster preparation procedures.

In addition to our extensive mutual assistance partnerships with other utilities and contractors to bring additional resources in quickly to support our crews responding to major outage events, we have also improved our storm preparation and response capabilities:

- Improved storm and damage forecasting capabilities enable us to stay ahead of the storm, identifying likely areas of impact and moving resources into place ahead of the storm to respond faster.
- The use of drones to better assess damage and support crews in the field.
- Improved communication and control capabilities to give crews in the field more information and assistance when they need it.
- Improved customer communication tools to help keep customers informed about outage response and estimated times of restoration.

Water Availability

Many sources of electricity require significant amounts of water for cooling purposes. A prolonged drought could therefore risk reliable electricity generation.

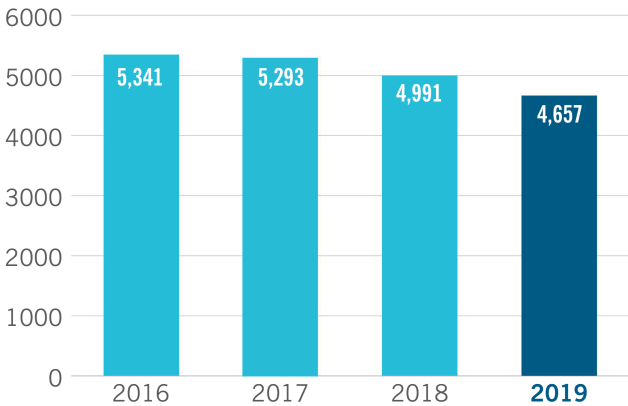
Several of Duke Energy's fossil and nuclear power plants in the Carolinas are located on hydroelectric reservoirs that the company operates. Of course, water availability is an important consideration in those watersheds, both to Duke Energy and to others. In these areas, we collaborate with local water utilities, environmental groups and recreation enthusiasts on watershed and drought planning. Our hydroelectric projects also have drought response plans (known as "low inflow protocols" (LIPs)) embedded in their Federal Energy Regulatory Commission (FERC) operating permits; the LIPs work to conserve water in the reservoirs and protect all water intakes in the watershed, including those for Duke Energy's facilities, until it rains again. Duke Energy's hydroelectric projects also have procedures in place for managing operating conditions during "high inflow" (high rainfall) events.

Except for emergency situations, Duke Energy endeavors to maintain lake levels within the ranges set forth in its FERC licenses under normal operating conditions. Lake levels are closely monitored, and operational adjustments are made based on various factors, including weather forecasts.

Other Duke Energy facilities are protected from drought because they have closed-cycle cooling and/or operate on large sources of water or on cooling reservoirs; one (the Brunswick Nuclear Station) withdraws water from an estuarine environment and so is not susceptible to drought-related risks. We have also implemented equipment and operational changes at nuclear and coal plants to reduce potential drought-related risks.

In 2018, we adopted a new goal to reduce annual water withdrawals by our generation fleet by 1 trillion gallons from the 2016 level by 2030.

Water Withdrawn for Electric Generation (billion gallons)



Our transition to cleaner energy by replacing coal and natural gas plants that use once-through cooling systems with natural gas combined-cycle plants that use closed-cycle cooling systems, and with renewables, reduces the amount of water withdrawn and thereby reduces the risk to operations from potential future droughts.

Ash Management Program

Duke Energy has instituted a comprehensive ash management program that ensures that waste facilities, which are typically located at generating stations near waterbodies for cooling water, operate properly even in extreme weather. Scientific studies of our ash basins and landfills, dam safety inspections, emergency planning, ongoing environmental monitoring efforts and more – performed by the company and independent experts – address the operational, environmental, strategic and financial risks associated with effectively managing coal ash today and for decades to come.

Permanently closing ash basins is the most effective step we can take to address climate risk. The scope, scale and speed of the company's work to close basins make us an industry leader. Under our comprehensive ash management plan, we have:

- Completed extensive ash basin and cooling pond dam improvements across our fleet, which have enhanced dam safety and provide greater protection from severe weather.
- Stopped all flows into ash basins as part of the coal ash basin closure process (except at the Gallagher plant, which will retire in 2022), and the basins are being dewatered. This and other closure preparations have dropped the level of water in the basins significantly, creating space to accommodate significant rainfall.
- Excavated nearly 28 million tons of ash enterprisewide since basin closure began, with more than 5 million tons moved in 2019 alone. We have completed excavation of the basins at our Dan River, Sutton and Riverbend stations. As announced in January 2020, Duke Energy, state regulators and community groups agreed to a plan to permanently close the company's remaining coal ash basins in North Carolina primarily by excavation.

We are also utilizing operational experience and best practices from across the industry to modify and improve our facilities.

- Prior to severe weather, the company takes several steps to prepare for potential ash basin response, including pre-staging equipment and trained professionals, actively reducing water levels if needed and placing construction materials on-site to respond quickly if repairs are necessary.
- At the retired Sutton Plant in Wilmington, a special synthetic turf rated to withstand hurricane-force winds is being used to cap each landfill cell because it provides additional protection against erosion and strong winds that occur in the region.
- We've expanded or built new emergency spillways at cooling ponds at three facilities near the coast (H.F. Lee, Weatherspoon and Sutton) to safely move water through the system if necessary in order to prevent damage to the facilities. The company has robust emergency action plans for each facility covering ash basins and certain dams, which detail specific protocols to address a variety of situations, including severe weather events. These plans are reviewed annually with emergency managers and first responders, shared with regulators and updated as needed.

Policy Risks

Federal or state policies could be enacted to put a legal constraint on power plant emissions, add a price on carbon or mandate certain energy mixes. Other policies may be needed to enable our net-zero transition, such as those to facilitate the siting and cost recovery of needed transmission and distribution upgrades.

Since the publication of our 2017 Climate Report, the U.S. Environmental Protection Agency repealed the 2015 Clean Power Plan and finalized its replacement, the Affordable Clean Energy (ACE) rule. States will determine how the rule will be implemented, so we will better understand any potential impacts to our system once states finalize their plans over the next two years.

In addition, several bills have been introduced in the 116th Congress that seek to establish a price on CO_2 emissions, and House Energy and Commerce Committee leadership has introduced the Climate Leadership and Environmental Action for our Nation's (CLEAN) Future Act. This draft legislation includes a mandate to transition to 100 percent clean electricity by 2050. Other legislative approaches provide substantial support for the development of technologies needed for the net-zero transition, such as the American Energy Innovation Act. It is unclear when or if any of these proposals will be enacted by Congress.

Federal policymakers could also impose mandates that restrict the availability of fuels or generation technologies – such as natural gas or nuclear power – that enable Duke Energy to reduce its carbon emissions.

At the state level, the North Carolina governor recently directed the development of a state Clean Energy Plan that proposes to explore a variety of policies and actions that will seek to reduce carbon emissions, modernize the utility regulatory model and advance clean energy economic development opportunities. The North Carolina Clean Energy Plan calls for a 70 percent reduction in greenhouse gas emissions in the power sector by 2030 and aims to achieve carbon neutrality by 2050. Duke Energy is actively participating in the stakeholder process to inform and shape the final policy proposal. The stakeholder process is currently slated to provide recommendations to the governor by year-end 2020. It is likely that proposals generated through the process would require legislative or regulatory action to be adopted.

In Indiana, legislation was enacted in 2019 that established a 21st Century Energy Policy Development Task Force. The task force is comprised of members of the House and Senate as well as gubernatorial appointees representing various energy-related stakeholders. The statute requires the Indiana Utility Regulatory Commission (IURC) to examine Indiana's future energy resource needs; existing policies regulating electric generation portfolios; how shifts in electric generation could impact reliability, resilience and affordability; and whether state regulators have appropriate authority regarding these matters. This report is due in July 2020. The IURC has a contract with Indiana University for a second study, not required by statute, to examine the impact

of plant closures on local communities. The task force's recommendations are due to be reported to the General Assembly and the governor by December 2020.

Duke Energy has long advocated for climate change policies that will result in reductions in CO_2 emissions at reasonable costs over time. We support market-based approaches that balance environmental protection with affordability, reliability and economic vitality.

Duke Energy's View on Effective Carbon Policy

It's our view that effective policies to reduce CO_2 emissions should include these principles:

- Cost-effective
- Market-based
- Equitable
- Provisions for all emitting sectors
- Environmentally effective
- Promotes technology development
- Politically sustainable

While it is unclear what specific policies will receive formal consideration in Congress, our analyses have identified some key policy attributes that we believe will allow us to achieve our net-zero goal while allowing us to maintain lower costs for our customers. These attributes will also help to incentivize the adoption of new, low- and zero-emitting technologies. Therefore, we believe climate policy should:

- Incentivize a zero-carbon trajectory at the lowest cost, rather than simply imposing a price or dictating a certain generation mix.
- Recognize that nuclear and natural gas generation remain essential to transitioning to an affordable and reliable net-zero carbon future.
- Recognize that regardless of whether (and which) market-based mechanism is adopted, robust and sustained support for research, development, demonstration and deployment of advanced technologies is critical.

Duke Energy factors policy risk into our strategies by evaluating carbon price scenarios in the development of our integrated resource plans. Since 2010, Duke Energy has included a price on CO_2 emissions in our IRP planning process to account for potential climate legislation or regulation. Incorporating a price on CO_2 in our IRPs allows us to evaluate existing and future resource needs against a potential climate change policy risk in the absence of policy certainty. We use a range of potential CO_2 prices (including no CO_2 price) to reflect a range of possible policy outcomes.

Other policies may be needed to enable our zero-carbon transition. For example, without streamlined permitting of transmission and distribution, the buildout of large volumes of renewables and energy storage will be a greater challenge.

Economic Risks

Our continued efforts to drive carbon out of our regulated electric utilities' operations help mitigate Duke Energy's financial exposure to potential future climate legislation or regulation. However, potential regulations or legislation to address climate change may require Duke Energy's regulated electric utilities to make additional capital investments to comply and could increase operating and maintenance costs. (Our commercial unit, Duke Energy Renewables, is already 100 percent carbon-free.) As with costs incurred for complying with other types of environmental regulations, our regulated electric utilities would plan to seek cost recovery for investments related to carbon reduction through regulatory rate structures.

To mitigate the risk of stranded assets, we will engage with regulators – and with stakeholders – prior to retiring existing assets or making investments in new generating capacity. This robust regulatory approach supports our future ability to recover costs as we position our fleet for the transition to lower carbon emissions.

Another area of economic risk for our strategy is technology risk. As noted earlier, a critical part of our net-zero carbon strategy is the need for new technologies that are not yet commercially available or are unproven at utility scale. If these technologies are not developed or are not available at reasonable prices, or if we invest in early-stage technologies that are then supplanted by technological breakthroughs, Duke Energy's ability to achieve a net-zero target by 2050 at a cost-effective price could be at risk.

To reduce this risk, we are investing in new technology research, including the Electric Power Research Institute/Gas Technology Institute's Low Carbon Resource Initiative, which is a five-year effort to accelerate the development and demonstration of technologies to achieve deep decarbonization.

We also support policies to increase technology research, development, demonstration and deployment at the federal level. For example, Duke Energy has supported, on its own and through trade associations, including the Edison Electric Institute and the Nuclear Energy Institute, a package of technology-promoting legislation in the 116th Congress.[10] We are also a founding member of EEI's Clean Energy Technology Innovation Initiative, which is partnering with several NGOs, including Clean Air Task Force, the Center for Climate and Energy Solutions, and the Bipartisan Policy Center, to identify areas for advocacy on advanced technologies.

As we deploy increasing amounts of renewables, siting risk becomes a consideration – both for the renewables themselves and for the transmission infrastructure needed to enable the energy generated to travel to load centers. This could force Duke Energy to adopt more expensive or less optimal (from an operational standpoint) options.

Climate policies or activities to mitigate physical risks can add material costs to the price of electricity and customer bills. This could in turn affect projected electricity utilization increases (such as from growth in demand and electrification of other sectors), as well as Duke Energy's most vulnerable customers.

Another area of economic risks is risks related to insurance. Property insurance companies have said publicly that they intend to stop providing insurance to companies that have above a certain amount of coal generation, or have said that they will only provide coverage if a company has a plan to decrease that over a reasonable period of time.[11] As noted above, Duke Energy has retired significant amounts of coal capacity and has plans to retire more. The below discussion of our strategy to meet our net-zero CO_2 emissions goal shows that coal will be phased out of our generation fleet.

Opportunities

Duke Energy is focused on the challenges climate change presents. We stand ready to meet those challenges while also recognizing concern about climate change can mean opportunities for our regulated electric utilities to make investments in renewables, energy efficiency, energy storage,

[10] See October 3, 2019, letter from Edison Electric Institute, the Nuclear Energy Institute and 26 other trade organizations to leaders McConnell and Schumer supporting a package of seven technology-promoting bills; October 15, 2019, letter to Speaker Pelosi and leaders McCarthy, McConnell and Schumer from Duke Energy and 24 organizations and companies supporting the Nuclear Energy Leadership Act; and March 2, 2020, letter from EEI, NEI, the U.S. Chamber of Commerce and 36 other organizations supporting the S. 2657, the American Energy Innovation Act.

[11] See, for example, "Liberty Mutual to Limit Coal Underwriting, Investments; Names First Sustainability Officer," Insurance Journal, December 16, 2019.

grid modernization, as well as in electric vehicle infrastructure. Duke Energy's commercial renewables business can benefit from increased interest in renewables throughout the country. And new technologies to reduce emissions represent both a risk and an opportunity.

Renewable Energy

Customer demand for electricity from renewable sources has increased due, in part, to concerns about climate change. Duke Energy has responded with initiatives in both its regulated and commercial renewables businesses and will continue to seek additional opportunities. In addition, regulatory or legislative policies related to climate change can prove to be a driver for opportunities for increased deployment of renewable generation sources.

Our commercial renewables business, Duke Energy Renewables, operates wind and solar generation facilities across the U.S., with a total electric capacity of approximately 4,000 MW. The power produced from commercial renewable generation is primarily sold through long-term contracts to utilities, electric cooperatives, municipalities, and commercial and industrial customers. Our five-year capital plan, rolled out in February 2020, included a $2 billion investment, net of tax equity financings, and we plan to continue to invest in this business beyond the next five years.

Opportunities for increased renewable energy also benefit our regulated generation business, where we have installed and are operating approximately 460 MW of solar and anticipate at least 660 MW to be added in the next three years. We also purchase substantial amounts of renewable energy in the form of long-term purchased power contracts, backed by the strength of our balance sheet. These purchases totaled nearly 4,000 MW at the end of 2019, and we are projected to add nearly 2,300 MW in the next three years.

Policies have also been approved in several of our states to encourage increased use of renewable energy, including, for example, our Green Source Advantage program for renewable energy in North Carolina (to which the city of Charlotte has signed on) and the Renewable Energy Credit (REC) Solutions programs in several of our regulated jurisdictions (in the latter, we work with large customers to procure RECs to meet their renewables needs).

Energy Efficiency

Some of the most effective carbon reductions we can make involve helping customers avoid energy usage in the first place. Again, regulatory or legislative policies related to climate change can prove to be a driver for opportunities for increased deployment of energy efficiency. These opportunities are available for both our regulated and commercial businesses.

Our Carolinas utilities rank first in the Southeast in energy efficiency.[12] Our overall energy efficiency initiatives have helped customers in our regulated jurisdictions reduce energy consumption and peak demand by nearly 19,000 gigawatt-hours and 6,700 MW, respectively, since 2008. This cumulative reduction in consumption is more than the annual usage of 1.58 million homes, and the peak demand reduction is equivalent to more than 10 power plants each producing 600 MW. Learn more about energy efficiency.

Energy Storage

Battery storage and microgrids are key technologies that can help better integrate solar into the grid while, among other uses, improving customer reliability and grid security, as well as reducing economic impacts to customers through the ISOP framework described above. Duke Energy plans to invest roughly $600 million over the next five to 10 years to expand battery storage by almost 400 MW. The company also has more than 2,000 MW of pumped storage hydro power, another energy storage method that can provide long-term storage. We plan to install upgrades at our Bad Creek pumped storage hydro facility in South Carolina to increase its capacity by more than 300 MW.

Grid Modernization and Infrastructure Expansion

Climate change presents opportunities for Duke Energy to continue to modernize its grid to benefit customers both for resilience against the physical risks from climate change and for increased utilization of renewables. This opportunity can mean increased investments in both transmission and distribution assets, as well as in energy storage, as discussed above.

[12]Southern Alliance for Clean Energy, "Energy Efficiency in the Southeast: 2019 Annual Report," January 2020, https://cleanenergy.org/blog/energy-efficiency-in-the-southeast-2019-annual-report/.

Smart meters are just one example of how Duke Energy is working to modernize the grid for the benefit of our customers. Duke Energy has installed smart electric meters for more than 80 percent of its customers. With these meters, and time-of-use rates, customers can plan their energy use so that they can save energy and money. Time-of-use rates encourage customers to use energy when demand is lower, which can make energy more affordable for customers while helping the company maintain reliability during peak periods. The company is currently piloting several new time-of-use rates in North Carolina and has proposed several variations of pilot programs in Indiana. These pilots are designed to work in conjunction with newly-installed smart meters to provide price signals at times of peak demand to customers. The pilots will allow the company to develop new, cutting-edge rate designs that will work with renewables and electric vehicles.

Electric Vehicles

Part of our contribution to reducing overall greenhouse gas emissions also involves helping lower emissions from the transportation sector. We've proposed a bold $76 million initiative in North Carolina, to date the largest investment in electric vehicle infrastructure in the Southeast. This will include nearly 2,500 new charging stations that will lead to a statewide network of fast-charging stations and will help fund the adoption of electric school buses and electric public transportation. Similar pilot programs are being considered by regulators in South Carolina ($10 million), Indiana ($10 million), Ohio ($16 million) and Kentucky ($3 million). We also expect to have installed more than 500 charging stations in Florida by 2022. Duke Energy is also adopting electric vehicles into its fleet, having acquired roughly 600 vehicles thus far. Learn more about the benefits of electric vehicles.

New Technologies

To get to net-zero carbon emissions, while keeping energy affordable and reliable, new technologies that are economically competitive at commercial scale are necessary. Technologies such as CCUS, longer-duration (up to seasonal) energy storage, new nuclear technologies, and yet-to-be-imagined discoveries, as well as innovative use of greener fuels such as renewable natural gas and hydrogen will be important. To take advantage of these opportunities, we are supporting policies that will advance new technologies and investing in research and development for these important innovations, as discussed on page 5.

Metrics and Targets

Greenhouse gases (GHG) emitted by Duke Energy facilities include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and sulfur hexafluoride (SF_6). The burning of fossil fuels to generate electricity is by far the primary source of Duke Energy's GHG emissions, producing emissions of CO_2, CH_4 and N_2O. The other sources of Duke Energy GHG emissions include CH_4 emissions from natural gas distribution operations, and emissions of SF_6, an insulating gas used in high-voltage electric transmission and distribution switchgear equipment.

As of year-end 2019, Duke Energy has reduced CO_2 emissions 39 percent from electricity generation since 2005, ahead of the industry average of 33 percent.[13] In 2019, we accelerated our carbon reduction goal from 40 percent to more than 50 percent by 2030. We also added a longer-term goal of achieving net-zero carbon emissions by 2050. Progress toward our CO_2 and other sustainability goals will continue to be updated on an annual basis in our Sustainability Report.

In the following tables, we adhere to the World Resources Institute/World Business Council for Sustainable Development Greenhouse Gas Corporate Protocol Standard, which classifies a company's GHG emissions into three "scopes." Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy (that is consumed by the reporting company). Scope 3 emissions are all indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company.[14]

Scope 1 Emissions

Greenhouse Gas Emissions from Electricity Generation (thousand short tons CO_2 equivalent (CO_2e))

	2005	2017	2018	2019	2030 Goal	2050 Goal
CO_2	153,000	105,000	105,000	93,000	76,500 *(At least 50% below 2005)*	Net-zero
CH_4[15]	420	230	218	186	–	–
N_2O[16]	731	391	369	361	–	–

All data based on ownership share of generating assets as of December 31, 2019.

Methane Emissions from Natural Gas Distribution (thousand short tons CO_2e)

	2016	2017	2018	2019
CH_4	184	175	176	185

Sulfur Hexafluoride Emissions from Electric Transmission and Distribution (thousand short tons CO_2e)

	2016	2017	2018	2019
SF_6	573	536	337	535

SF_6 emissions fluctuations are due to maintenance, replacement and storm repair needs.

[13] U.S. Energy Information Administration, *Monthly Energy Review*, March 26, 2020.
[14] See https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf.
[15] No goal is established for methane emissions from electricity generation – see methane sidebar.
[16] No goal is established for N_2O emissions from electricity generation; emissions of this gas will decline with reductions in fossil fuel use.

Reducing Methane Emissions

Duke Energy has been an industry leader in driving down methane emissions. Since 2001, Duke Energy's Piedmont Natural Gas unit has been a member of EPA's Natural Gas STAR program, which emphasizes best management practices to voluntarily reduce methane emissions and report those reductions. In 2016, all of Duke Energy's gas operations became founding members of EPA's Methane Challenge.

Duke Energy is also monitoring, through its memberships in the Edison Electric Institute (EEI) and the American Gas Association (AGA), the development of the EEI/AGA Natural Gas Sustainability Initiative (NGSI), an initiative that focuses on the measurement and disclosure of methane emissions throughout the entire natural gas supply chain.

To reduce methane emissions and improve the safety and reliability of the natural gas system in Ohio and Kentucky, Duke Energy implemented the Accelerated Main Replacement Program (AMRP) in 2000. The program's purpose was to replace cast iron and bare steel pipelines (and associated services) with plastic or coated steel pipe.[17] The program was completed in Kentucky in 2010 and in Ohio in 2015. Piedmont Natural Gas had already completed a similar program when it merged with Duke Energy in 2016. We also recently completed an accelerated service line replacement program in Kentucky in which approximately 30,000 service lines were replaced. In total, Duke Energy's Natural Gas Business Unit has replaced 1,454 miles of cast iron pipe on its distribution system with either plastic or cathodically protected steel.

It should be noted that the methane emissions we report above (a total of less than half of one percent (0.5%) of our CO_2 emissions from electricity generation, on a CO_2 equivalent basis) are, as required by EPA, based on EPA emissions factors. For emissions from electricity generation, EPA emission factors are applied to the amounts of the various fossil fuels we combust. For emissions from our natural gas distribution system, methane emissions are calculated by applying EPA emission factors (for different pipe materials) to the miles of natural gas pipelines we operate, and to the number of services. We also quantify leaks based on leak survey data. Given this, as our natural gas distribution system expands, emissions (all other things being equal) will tend to increase. We are carefully evaluating our sources of methane emissions and potential avenues to reduce them further.

[17] In natural gas parlance, "service" means the service pipe that carries gas from the main pipe to the customer's meter.

Scope 2 and 3 Emissions

In 2019, Duke Energy reported to CDP (formerly known as the Carbon Disclosure Project) 25,600 tons of Scope 2 CO_2 equivalent emissions for 2018. These are estimated from power purchases for Duke Energy facilities that are not served by Duke Energy itself.

In 2019, Duke Energy reported to CDP the following categories of Scope 3 CO_2 equivalent emissions for 2018:

Category	Thousand short tons CO_2e
Fuel and energy-related activities (not reported in Scope 1 or 2). This is an estimate of CO_2 emissions associated with electricity Duke Energy purchased for resale.	11,122
Use of sold products. These are CO_2 emissions from the use of natural gas that Duke Energy delivers to its end-use customers.	19,811

Net-Zero Scenario Analysis

The following analysis examines a scenario, including sensitivities, for achieving our net-zero CO_2 emissions goal by midcentury, along with the potential impacts on the generation portfolio of our regulated electric utilities. This analysis was conducted using the same industry-standard expansion planning and hourly production cost modeling tools that we use for integrated resource planning. The analysis, however, did not include transmission and distribution modeling that would be required to assess cost and technical feasibility of interconnecting such large quantities of renewables with operational feasibility.

It should be emphasized that the scenario analysis presented is intended only to provide an enterprisewide directional illustration of the impact of changes in the generation fleet. The results presented are indicative of potential options to meet Duke Energy's targets but **do not represent specific utility resource plans and will change over time as new information becomes available**. We will work collaboratively with stakeholders and regulators in the states we serve as we develop future resource plans pursuant to regulatory requirements.

Key Assumptions and Considerations

Any analysis that goes out three decades includes numerous uncertainties and assumptions. Because it is based on currently available technology and cost information, the company's IRP process provides a relatively more certain view through 2030. Projecting beyond that time frame requires assumptions for how technology, electricity demand and costs may evolve several decades in the future. To follow the spirit of the IRP process in the modeling from 2030 to 2050, the technologies considered were limited to those in which we have reasonably high confidence in their likely commercial availability and in current projections of their costs. With those caveats, our net-zero scenario analysis makes the following assumptions:

NET-ZERO SCENARIO ASSUMPTIONS	
System Load	Average annual increase of 0.46 percent from 2020 to 2050. This is based on an EPRI study done for the Carolinas that assumes significant adoption of energy efficiency measures in buildings and industry, resulting in flat electricity demand through 2050 (offsetting all load growth due to new customers).[18] On top of this, the study assumes significant transportation electrification, resulting in the 0.46 percent per year load growth we assume here. While this study was done for the Carolinas, similar adjustments in the load forecast were applied to all our jurisdictions.
Existing Nuclear	All existing nuclear capacity is relicensed and authorized to operate for an additional 20 years (for a total operating life of 80 years). Existing nuclear generation is assumed to be capable of reducing output by up to 20 percent to aid in balancing generation and load.
Accelerated Coal Retirements	All coal units in the Carolinas, except those that have been or are being modified to run fully or partially on natural gas, are retired by 2030. All remaining coal units except the Edwardsport Integrated Gasification Combined Cycle plant are retired by 2040. Edwardsport is retired by 2045. For the net-zero carbon scenario, Cliffside 6 was assumed to operate exclusively on natural gas by 2030, until its retirement in 2048. Note that these are modeling assumptions and do not necessarily match retirement dates filed in regulatory proceedings. Future resource plans will be developed working collaboratively with stakeholders and regulators in the states we serve, pursuant to regulatory requirements.
Natural Gas Assets	To test the economics of the model, all natural gas combined-cycle units built in the 2020s are assumed to have a 20-year book life. Beyond 2030, all natural gas additions are assumed to be combustion turbines (“peakers”) only. We also explored a sensitivity where no new natural gas electricity generation was added.
Markets	No market Regional Transmission Organization energy purchases or purchased power agreements are assumed beyond 2035 due to the uncertainties of how the markets and other utilities’ resource plans will evolve that far into the future. This is a conservative approach to ensure that customer load is served. Actual plans would consider market purchases if they were the most economical.
Fuel Prices	Coal prices are projected to continue to remain low into the future, but a slightly higher, though still relatively low, natural gas price trajectory in the near- to mid-term continues to support gas as baseload or intermediate generation ahead of coal. Nuclear prices remain low relative to both coal and gas and support continued operation of Duke Energy’s existing nuclear fleet.

[18]Electric Power Research Institute, “North Carolina Efficient Electrification Study: Task 1 Energy System Assessment,” November 2019.

Technology Prices[19] (approximate overnight capital costs)	▪ Combustion Turbines – \$550/kilowatt (kW) (represents multi-unit site) ▪ Combined Cycle – \$650/kW (represents 2x1 advanced class) ▪ Small Modular Nuclear Reactor – \$5,500/kW ▪ Natural gas combined cycle (NGCC) with CCUS – \$2,000/kW (cost is at the fence line; cost to transport CO_2, which is highly dependent on location, as well as the cost of injection, would be additional) ▪ Solar – \$900/kW ▪ Wind – \$1,300/kW (on shore) to \$2,400/kW (offshore) ▪ Pumped storage hydro – \$2,500/kW (existing reservoirs) ▪ Lithium-ion storage – \$900/kW (4 hour) to \$1,600/kW (8 hour) – consistent with the NREL annual technology baseline and excludes allowance for degradation, limits of depth of discharge, and owners and interconnection costs **NOTES:** Interconnection costs for these technologies were not explicitly considered in the scenario analysis. This assumption yields an optimistic view of the costs of adding large quantities of renewables to the grid. Typical costs of transmission access for various types of renewables are shown below as a percentage of total project costs: ▪ Conventional generation – 10 percent (constrained area) ▪ Solar – 20 percent (bundled solar in constrained area) ▪ Wind (offshore and out of state) – 25-50 percent (location-dependent) ▪ Batteries – 20 percent (depends on location and primary use) Transmission access cost is expected to increase with greater amounts of renewables and will be dependent on location, type, amount and existing infrastructure. Due to uncertainty in these factors, projections of future transmission access costs were not included.

[19] These prices are in line with NREL's Annual Technology Baseline: https://atb.nrel.gov. Escalations are based on the Energy Information Administration's Annual Energy Outlook 2019.

Battery Storage	Batteries are assumed to be available to store energy for four, six or eight hours. It is also assumed that there are no limitations on the supply chain for batteries and that they can be interconnected in a timely manner and without cost constraints. To ensure safe operation of batteries and account for degradation throughout the life of the assets, there is an assumed overbuild of batteries to provide the proper safety margin in the depth of discharge; this overbuild was incorporated in the analysis but was not reflected in the "technology prices" section above for purposes of comparability with publicly available information. Seasonal battery storage and associated cost information is not currently available and its development is uncertain, so it is not assumed in the model. We view ongoing research into battery storage as vital to reducing costs and enabling longer-duration storage, but because the timing of technological breakthroughs for battery storage remains unclear (as do the costs of battery storage after the breakthroughs), we did not speculate on the timing or cost impact of a breakthrough in battery technology in this limited analysis.
Technology Innovation	ZELFRs are assumed to be commercially available for deployment in the mid-2030s. ZELFR is a generic placeholder in this modeling effort for a gap in commercially available utility-scale technology to complement very high penetration of renewables. ZELFRs must be flexible to respond to dynamic changes in both load and renewable generation, and must also be capable of sustained generation over long durations to handle severe weather events like "polar vortex" cold events and long-duration generation outages such as those that can occur after hurricanes. For purposes of cost analysis, costs for ZELFRs were based on small modular nuclear reactors as the most feasible option given that 2027 is the expected commercial operation date for the first NuScale SMR reactor and that we have reasonable confidence in the current cost data. For an operational assessment (not based on cost), we also analyzed a generation mix that assumes ZELFRs are combined-cycle power plants that use natural gas, hydrogen or biofuels (such as renewable natural gas), with CCUS as appropriate. In reality, a combination of several technologies will likely be utilized.

Net-Zero Scenario Analysis Results

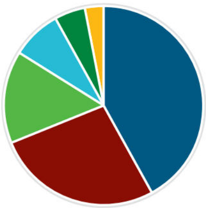
As discussed above, this analysis was conducted using the same industry-standard expansion planning and hourly production cost modeling tools that we use for integrated resource planning, and assumes normal weather. **It is important to note that the following results are solely illustrative and reflect only one of the possible generation mixes that would result in net-zero emissions by 2050.** We have projected ZELFRs in two ways: (1) with ZELFRs being relatively less-flexible resources, such as a small modular nuclear reactor (SMR), and (2) with ZELFRs being flexible and easily dispatchable (like a NGCC with CCUS). This analysis assumes ZELFRs are half SMRs and half NGCC with CCUS. (It should be noted that NGCC with CCS could also be biofuels or hydrogen.)

These results do not represent definitive utility resource plans. Each utility's resource plan will be developed in conjunction with regulators, policymakers and stakeholders, and will require regulatory approval under our legal mandate to provide affordable and reliable energy.

The following charts show the company's 2019 actual regulated electric utility capacity mix and potential 2030, 2040 and 2050 capacity mixes (in GW) under a net-zero carbon scenario analysis.

Duke Energy Regulated Generating Capacity, GW

2019



42% Gas (25 GW)
27% Coal (16 GW)
15% Existing Nuclear (9 GW)
8% Renewables* (5 GW)
5% Purchase/Sales (3 GW)
3% Storage (2 GW)

2030

49% Gas (36 GW)
20% Renewables* (15 GW)
12% Existing Nuclear (9 GW)
12% Coal (9 GW)
6% Storage (4 GW)
1% Purchase/Sales (1 GW)

2040

39% Gas (34 GW)
35% Renewables* (31 GW)
10% Existing Nuclear (9 GW)
8% Storage (7 GW)
7% ZELFRs (6 GW)
1% Coal (1 GW)

2050

44% Renewables* (47 GW)
23% Gas (24 GW)
12% Storage (13 GW)
12% ZELFRs (13 GW)
9% Existing Nuclear (9 GW)

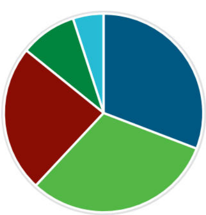
*Renewables include hydro, wind, solar, landfill gas, biomass, etc.

The following charts show the company's 2019 actual regulated electric utility generation (energy) mix and potential 2030, 2040 and 2050 generation mixes (megawatt-hours) under a net-zero carbon scenario analysis.

Duke Energy Regulated Generation, MWh

2019

39% CO_2 Reduction



31% Gas
31% Existing Nuclear
24% Coal
9% Purchase/Sales
5% Renewables*

2030

52% CO_2 Reduction

42% Gas
30% Existing Nuclear
14% Renewables*
11% Coal
3% Purchase/Sales

2040

78% CO_2 Reduction

29% Renewables*
29% Existing Nuclear
25% Gas
16% ZELFRs
1% Coal

2050

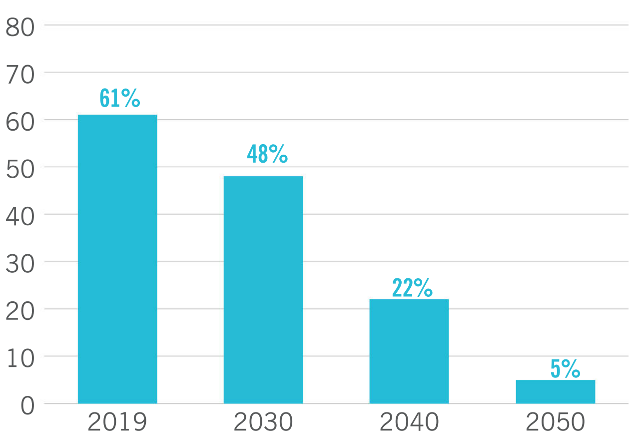
95% CO_2 Reduction

36% Renewables*
30% ZELFRs
28% Existing Nuclear
6% Gas

*Renewables include hydro, wind, solar, landfill gas, biomass, etc.

The following chart shows a projection of how Duke Energy's CO_2 emissions will decline as our electric generating fleet transforms.

Percent of 2005 CO_2 Emissions



Key Insights

We are on track to achieve our 2030 goal of reducing CO_2 emissions from electricity generation by at least 50 percent from the 2005 baseline. The trajectory to make very deep reductions in CO_2 emissions by 2050 in line with our net-zero goal will depend on the availability of advanced low- and no-carbon technologies. Some emissions may be more cost-effectively addressed through the purchase of offsets; we project that would be about 8 million tons in 2050 (approximately 5 percent of our 2005 emissions).[20] Other key insights from the extensive modeling that was conducted to analyze this scenario include:

- **Renewables must be diversified and balanced with energy storage.** Renewables will play a key role in meeting the need for carbon-free energy. Diversity of renewables helps to reduce the need for storage, but even with a balanced portfolio of wind, solar and energy storage, further additions of renewables above a certain point – which varies among each of our modeled jurisdictions – have diminishing value and ultimately become uneconomic for carbon reduction. For example, for solar, this is due to the inability to shift the timing of renewable generation (which peaks midday) to match early- and late-hour peak energy demand. See page 29 for external studies that have reached a similar conclusion, including a study of the impacts of integrating increasing amounts of renewables into Duke Energy's Carolinas territories performed by the National Renewable Energy Laboratory.
- **Maintaining existing nuclear is critical.** Achieving net-zero CO_2 emissions by 2050 requires our existing nuclear fleet to be granted subsequent license renewals. The first Duke Energy nuclear power plants will approach the end of their current operating licenses in the early 2030s.

[20] Carbon offsets are the reduction of greenhouse gas emissions to the atmosphere. These can include modified agricultural practices, tree planting and reductions in other sectors. The market for carbon offsets decades in the future is very uncertain, but given its likely importance for the power sector and other large energy producers/users, we hope and believe that a robust market will emerge. We are monitoring negotiations under Article 6 of the Paris Agreement, where rules for carbon trading and the use of offsets will be developed.

- **ZELFRs will need to be installed by 2035.** In order to achieve our net-zero goal, ZELFRs are needed starting in 2035 to retire older fossil generation, maintain grid reliability and balance the intermittency of renewables.[21] These technologies need to be developed and refined over the next 10 years so that we can confidently plan to use these to serve our customers reliably while achieving net-zero carbon emissions. In the net-zero carbon scenario, ZELFRs make up 12 percent of capacity and supply 30 percent of energy due to their ability to operate at full output over extended periods regardless of weather conditions. The need for dispatchable net-zero carbon resources is driven by the fact that renewable resources are not well-correlated with the winter load shape that drives resource planning requirements for much of the Duke Energy fleet; in addition, the current cost and scale of energy storage technology makes backing up very large amounts of renewables with storage over long durations impractical. If ZELFRs become available and economically feasible prior to 2035, this would provide opportunities to accelerate coal retirements and achieve additional carbon reductions at a relatively low cost.

- **Unprecedented, sustained pace of capacity additions will be needed.** The net-zero carbon scenario requires Duke Energy to add new capacity at a rate double that achieved nationwide during the highest-growth decade in U.S. history, and more than double the rate at which Duke Energy added capacity over the past three decades. Moderate load growth combined with coal and gas retirements, along with the intermittency of renewables and the need for storage capacity, are key drivers for these unprecedented capacity additions. Replacing traditional electric generating capacity with renewables plus storage is not a one-for-one proposition. Due to the intermittency of renewables, significantly more capacity must be built, even with storage availability, to provide the same level of reliable electricity as a fossil plant.[22] This build rate will be challenging from many aspects, including permitting and regulatory approvals, labor, supply chain and interconnection needs.

- **Benefits of natural gas to facilitate the retirement of coal and balance renewables.** Natural gas continues to play a critical role in achieving our 2030 and 2050 carbon reduction goals. Deploying low-cost natural gas helps speed the transition from coal and balance the intermittent nature of renewables. Even in 2050, natural gas capacity needs to remain on the system to maintain reliability, especially during times of peak electricity demand. However, the mission of the gas fleet will change from supplying 24/7 power today to a peaking and demand-balancing function by 2050. This remaining gas generation is projected to represent 5 percent of 2005 emissions, netted to zero through carbon offset purchases.

We conducted a sensitivity analysis that assumed our regulated electric utilities are not allowed to build any additional natural gas generation. This constraint would make maintaining reliable and affordable electricity very challenging, while providing a modest 5 percent decrease in cumulative CO_2 emissions between 2020 and 2050.

This “no new gas” sensitivity presents significant challenges, some of which may be very difficult to overcome, including interconnection and operational and supply chain issues associated with unprecedented additions of energy storage over a very short period of time, as well as regulatory approvals, permitting, construction and greater costs to customers. For example, Duke Energy alone would need to add more than 15,000 MW of energy storage by 2030, more than 17 times the entire battery storage capacity (899 MW) of the entire United States today.[23] Our analysis shows that the incremental cost would be three to four times that of the net-zero scenario that includes gas, and would require the construction and operation of enormous amounts of renewables and energy storage. And this analysis

[21] This capacity is especially important in our Midwest and Florida jurisdictions as they do not currently have nuclear capacity.

[22] See, for example, University of North Carolina: “Measuring Renewable Energy as Baseload Power,” March 2018. https://kenaninstitute.unc.edu/publication/measuring-renewable-energy-as-baseload-power/. To equal 1 MW of natural gas combined-cycle generation, the company would need to add 5 MW of solar with 4 MW of four-hour lithium-ion batteries. The true costs of renewables are therefore substantially higher than the levelized cost of electricity reported in many studies that do not include the cost of backup power.

[23] EIA, U.S. Utility-scale battery storage power capacity to grow substantially by 2023, July 2019. https://www.eia.gov/todayinenergy/detail.php?id=40072.

does not include the substantial transmission and distribution upgrade costs and permitting challenges necessary to enable the increased interconnection of energy storage and renewables. Aside from the implications of the cost impacts to our customers, especially low-income customers and energy-intensive businesses, the dependence of the "no new gas" sensitivity on a rapid addition of energy storage increases the possibility that existing resources would need to be relied upon for a longer time frame than anticipated.

Before considering the "no new gas" sensitivity as a serious alternative, it would be necessary to perform more extensive analysis to address the fact that production cost models have "perfect foresight" (with respect to weather, unplanned generation outages, etc.), while in the real world, operators do not know when such changes will occur and may not have the energy storage in the needed state (of charge or discharge) to manage actual conditions. Based on our historical experience with pumped-hydro energy storage, we understand that relying more heavily on renewables and limited-duration energy storage for capacity (the role dispatchable resources have traditionally played) will increase the complexity of planning and operating the system. Further, highly technical analysis is needed to ensure that the "perfect foresight" assumption is not masking potential system reliability challenges that would need to be addressed.

- **Focused efforts will be required to improve forecasting and portfolio balancing capabilities.** The challenges of balancing load with increasing levels of renewable generation will warrant exploration of opportunities to reduce renewable forecast error and improve our ability to react. Improving the accuracy of renewable generation forecasts will reduce the need for backup requirements (either storage or quickly ramping natural gas). Opportunities to improve forecast accuracy could include advanced sensing/monitoring equipment as well as continued advancements in wind and irradiation forecasting techniques. In order to react more quickly, we are focused on improving the flexibility of our generation fleet, which can be achieved by installing more flexible and dispatchable resources; we are also reviewing potential market opportunities to better enable our grid to accommodate more intermittent, carbon-free resources. We are also exploring opportunities to add flexibility on the demand side through innovative customer programs and rate design.

Third-Party Renewables Studies

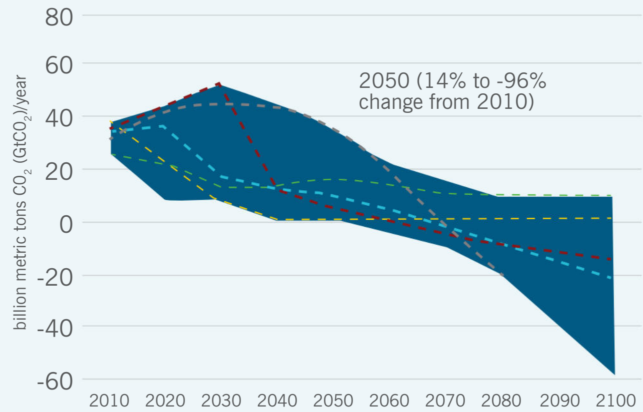
Several recent studies have examined the potential penetration of renewables in the power system. These studies, including one performed by DOE's National Renewable Energy Laboratory (NREL) of Duke Energy's Carolinas system, all conclude that further additions of renewables above 40%-50% of energy served have diminishing value and become increasingly uneconomic for carbon reduction. The studies also find that diversity of renewable resources (wind and solar) enables larger shares of carbon-free generation. Several of these studies are listed below.

- MIT: "Deep Decarbonization of the U.S. Electricity Sector: Is there a Role for Nuclear Power?" September 2019. https://globalchange.mit.edu/publication/17323
- NREL: "Duke Energy Carolinas and Progress: Zero-Emission Resource Integration Study," December 2019. www.nrel.gov/docs/fy20osti/74337.pdf
- MIT: "Storage Requirements and Costs of Shaping Renewable Energy Toward Grid Decarbonization," Joule, November 2019. https://www.sciencedirect.com/science/article/abs/pii/S2542435119303009.

Duke Energy Carbon Reduction Goals and 1.5 and 2 Degree Celsius Global Emissions Scenarios

Many stakeholders are interested in companies' analyses of scenarios that will limit global average warming to 2 degrees Celsius or lower. To inform our view of scenarios and how these relate to our climate goals, Duke Energy has been engaged for nearly two years with the Electric Power Research Institute (EPRI) in a project evaluating scientific understanding of the relationship between company scenarios and global climate goals. The purpose of the project is to develop a strong technical foundation for company analysis and decision-making on scenarios and climate goals. Among other things, the project has assessed the relevant science through a number of studies and derived insights for companies and stakeholders.[24] We find, upon a review of EPRI's conclusions, that the scenario we analyze in this report to achieve our net-zero climate goal is consistent with scenarios limiting global average temperature increase to less than 2 degrees Celsius, and is also consistent with scenarios that limit global average temperature increase to less than 1.5 degrees Celsius.

The EPRI studies find, among other things, that there are many emissions pathways consistent with limiting warming to any particular global average temperature due to uncertainty about future economic conditions, technology advances, energy consumption, other emissions and elements that affect climate change, physical system dynamics, and policy action. For example, the figure above (figure ES-2 from EPRI's 2018 study) shows the range for 408 global emissions pathways derived from peer-reviewed literature that are consistent with limiting warming to less than 2 degrees Celsius.



Global net CO_2 emissions pathway range for pathways consistent with limiting global average temperature to less than 2C. Range for 408 scenarios (shaded area) and illustrative select scenarios (dotted lines) shown. Source: Rose and Scott (2018)

Similar to global economy-wide emissions outcomes, EPRI also concludes that "large ranges of global electricity carbon dioxide (CO_2) emissions pathways and budgets are consistent with limiting warming to 2°C." In addition, the EPRI studies find that the global and sectoral results provide only partial representations of uncertainty, with key uncertainties relevant to individual companies absent (e.g., uncertainty about policy design details and company-specific circumstances).

Importantly, the EPRI study goes on to compare this literature-derived range of pathways with single pathways used by the Science-Based Targets initiative (SBTi) and the United Nations Environment Programme's Finance Initiative.[25] The study concludes that while these single pathways lie within the ranges of the pathways described above, they do not capture the "uncertainty evident in the literature regarding global emissions pathways consistent with limiting warming to 2°C." The factors behind the different pathways are uncertainties relevant to companies and important to consider, in addition to the uncertainties absent (e.g., alternative policy designs).

[24] Rose, S.K., M. Scott, 2018. Grounding Decisions: *A Scientific Foundation for Companies Considering Global Climate Scenarios and Greenhouse Gas Goals*. EPRI. Palo Alto, CA. 3002014510; Rose, S.K., M. Scott, 2020. *Review of 1.5˚C and Other Newer Global Emissions Scenarios: Insights for Company and Financial Climate Low-Carbon Transition Risk Assessment and Greenhouse Gas Goal Setting*, EPRI, Palo Alto, CA. 3002018053.

[25] *Ibid* 2018, Appendix A.

Given that Duke Energy's net-zero by 2050 target is within the range of the scenarios shown in the EPRI analyses, the company believes that the scenario analyzed is consistent with limiting global warming to 2 degrees Celsius. Further, we believe the target is also consistent with limiting warming to 1.5 degrees Celsius according to EPRI's 2020 study. Note, however, that the EPRI analyses find that global scenarios have limited value as benchmarks for assessing company strategies for a variety of reasons, including that the aggregate scenarios do not represent the unique circumstances, uncertainties and risks relevant to individual companies. Furthermore, given that future markets, technology and policy are uncertain, as noted in the net-zero scenario analysis above, exactly how we will achieve our net-zero goal is uncertain; the analysis shown in this report is illustrative of pathways we might take.

Looking Ahead

The actual pathway that Duke Energy takes to achieve net-zero carbon emissions by 2050 will be based on evolving technologies, costs, demand for electricity, public policy, stakeholder input and regulatory approvals. During the 2020s, significant innovation and technological advancement will be critical to ensure we have the viable technology options needed by the 2030s to achieve a net-zero carbon future by the 2050s. As we have done for more than a century, we will collaborate with regulators, policymakers and other stakeholders to evaluate the best options to meet the needs of our customers, while balancing affordability, reliability and sustainability.

Cautionary Statement Regarding Forward-looking Information

This document includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Forward-looking statements are based on management's beliefs and assumptions and can often be identified by terms and phrases that include "anticipate," "believe," "intend," "estimate," "expect," "continue," "should," "could," "may," "plan," "project," "predict," "will," "potential," "forecast," "target," "guidance," "outlook" or other similar terminology. Various factors may cause actual results to be materially different than the suggested outcomes within forward-looking statements; accordingly, there is no assurance that such results will be realized. These factors include but are not limited to:

- State, federal and foreign legislative and regulatory initiatives, including costs of compliance with existing and future environmental requirements, including those related to climate change, as well as rulings that affect cost and investment recovery or have an impact on rate structures or market prices;
- The extent and timing of costs and liabilities to comply with federal and state laws, regulations and legal requirements related to coal ash remediation, including amounts for required closure of certain ash impoundments, are uncertain and difficult to estimate;
- The ability to recover eligible costs, including amounts associated with coal ash impoundment retirement obligations and costs related to significant weather events, and to earn an adequate return on investment through rate case proceedings and the regulatory process;
- The costs of decommissioning nuclear facilities could prove to be more extensive than amounts estimated and all costs may not be fully recoverable through the regulatory process;

- Costs and effects of legal and administrative proceedings, settlements, investigations and claims;
- Industrial, commercial and residential growth or decline in service territories or customer bases resulting from sustained downturns of the economy and the economic health of our service territories or variations in customer usage patterns, including energy efficiency efforts and use of alternative energy sources, such as self-generation and distributed generation technologies;
- Federal and state regulations, laws and other efforts designed to promote and expand the use of energy efficiency measures and distributed generation technologies, such as private solar and battery storage, in Duke Energy service territories could result in customers leaving the electric distribution system, excess generation resources as well as stranded costs;
- Advancements in technology;
- Additional competition in electric and natural gas markets and continued industry consolidation;
- The influence of weather and other natural phenomena on operations, including the economic, operational and other effects of severe storms, hurricanes, droughts, earthquakes and tornadoes, including extreme weather associated with climate change;
- The impact of the COVID-19 pandemic;
- The ability to successfully operate electric generating facilities and deliver electricity to customers including direct or indirect effects to the company resulting from an incident that affects the United States electric grid or generating resources;
- The ability to obtain the necessary permits and approvals and to complete necessary or desirable pipeline expansion or infrastructure projects in our natural gas business;
- Operational interruptions to our natural gas distribution and transmission activities;
- The availability of adequate interstate pipeline transportation capacity and natural gas supply;
- The impact on facilities and business from a terrorist attack, cybersecurity threats, data security breaches, operational accidents, information technology failures or other catastrophic events, such as fires, explosions, pandemic health events or other similar occurrences;
- The inherent risks associated with the operation of nuclear facilities, including environmental, health, safety, regulatory and financial risks, including the financial stability of third-party service providers;
- The timing and extent of changes in commodity prices and interest rates and the ability to recover such costs through the regulatory process, where appropriate, and their impact on liquidity positions and the value of underlying assets;
- The results of financing efforts, including the ability to obtain financing on favorable terms, which can be affected by various factors, including credit ratings, interest rate fluctuations, compliance with debt covenants and conditions and general market and economic conditions;
- Credit ratings of Duke Energy and its registered subsidiaries may be different from what is expected;
- Declines in the market prices of equity and fixed-income securities and resultant cash funding requirements for defined benefit pension plans, other post-retirement benefit plans and nuclear decommissioning trust funds;
- Construction and development risks associated with the completion of Duke Energy's capital investment projects, including risks related to financing, obtaining and complying with terms of permits, meeting construction budgets and schedules and satisfying operating and environmental performance standards, as well as the ability to recover costs from customers in a timely manner, or at all;
- Changes in rules for regional transmission organizations, including changes in rate designs and new and evolving capacity markets, and risks related to obligations created by the default of other participants;
- The ability to control operation and maintenance costs;

- The level of creditworthiness of counterparties to transactions;
- The ability to obtain adequate insurance at acceptable costs;
- Employee workforce factors, including the potential inability to attract and retain key personnel;
- The ability of subsidiaries to pay dividends or distributions to Duke Energy Corporation holding company (the Parent);
- The performance of projects undertaken by our nonregulated businesses and the success of efforts to invest in and develop new opportunities;
- The effect of accounting pronouncements issued periodically by accounting standard-setting bodies;
- The impact of United States tax legislation to our financial condition, results of operations or cash flows and our credit ratings;
- The impacts from potential impairments of goodwill or equity method investment carrying values; and
- The ability to implement our business strategy, including enhancing existing technology systems.

Additional risks and uncertainties are identified and discussed in Duke Energy's reports filed with the SEC and available at the SEC's website at sec.gov. In light of these risks, uncertainties and assumptions, the events described in the forward-looking statements might not occur or might occur to a different extent or at a different time than described. Forward-looking statements speak only as of the date they are made and Duke Energy expressly disclaims an obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

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