OFFICIAL COPY

INFORMATION SHEET

PRESIDING: Finley, Brown-Bland, Bailey, Dockham, Patterson and Gray
PLACE: Dobbs Building, Raleigh, NC
DATE: Friday, April 21, 2017
TIME: 9:30 a.m. – 12:43 p.m.
DOCKET NO.: E-100, Sub 148
COMPANY: Duke Energy Carolinas, LLC; Duke Energy Progress, LLC; and Virginia Electric and Power Company d/b/a Dominion North Carolina Power
DESCRIPTION: General Electric – Biennial Determination of Avoided Cost Rates for Electric Utility Purchases from Qualifying Facilities - 2016
VOLUME: 8

APPEARANCES

FOR DUKE ENERGY CAROLINAS, LLC and DUKE ENERGY PROGRESS, LLC:
Lawrence B. Somers, Esq.
Kendrick C. Fentress, Esq.
E. Brett Breitschwerdt, Esq.
Robert W. Kaylor, Esq.

FOR VIRGINIA ELECTRIC and POWER COMPANY d/b/a DOMINION NORTH CAROLINA POWER:
Andrea R. Kells, Esq.
Bernard L. McNamee, II, Esq.
Horace P. Payne, Jr., Esq.

FOR SOUTHERN ALLIANCE FOR CLEAN ENERGY:
Gudrun Thompson, Esq.
Lauren J. Bowen, Esq.
Peter Stein, Esq.

FOR NORTH CAROLINA SUSTAINABLE ENERGY ASSOCIATION:
Peter Ledford, Esq.
Charlotte Mitchell, Esq.

FOR CAROLINA INDUSTRIAL GROUP FOR FAIR UTILITY RATES I, II and III:
Adam Olls, Esq.

FOR NTE CAROLINAS SOLAR, LLC:
M. Gray Styers, Jr., Esq.

FOR CYPRESS CREEK RENEWABLES:
Thadeus B. Culley, Esq.

FOR NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION:
Michael D. Youth, Esq.

FOR CAROLINA UTILITY CUSTOMERS ASSOCIATION:
Robert F. Page, Esq.

FILED
MAY 15 2017
Clerk's Office
N.C. Utilities Commission

FOR NORTH CAROLINA PORK COUNCIL:
Kurt J. Olson, Esq.

FOR THE NORTH CAROLINA ATTORNEY GENERAL:
Jennifer T. Harrod, Esq.

FOR THE USING AND CONSUMING PUBLIC:
Tim R. Dodge, Esq.
Lucy E. Edmondson, Esq.
Heather D. Fennell, Esq.
Robert Josey, Jr., Esq.

WITNESSES
As a panel: John R. Hinton, Jay B. Lucas and Dustin R. Metz

EXHIBITS

Public Staff Witness Metz Confidential Exhibit 1 - (Identified and Admitted)
Public Staff Witness Metz Exhibits 2 and 3 – (Identified and Admitted)
DEC/DEP Public Staff Panel Cross Exhibits 1 – 5 – (Identified and Admitted)
Confidential DEC/DEP Hinton Cross Exhibits 6 and 7 – (Identified and Admitted)
DEC/DEP McConnell Cross Examination Exhibit Number 4 (Identified in Volume 6)

(COURT REPORTERS NOTE: An Order Rescinding Confidential Treatment of Exhibit, filed May 1, 2017, ordered that DEC/DEP McConnell Cross Examination Exhibit Number 4 no longer be treated as confidential and shall be included in the public record.)

COPIES ORDERED: Email: Harrod, Fenterss, Somers, Kells, Culley, Ledford, Mitchell, Bowen, Dodge, Fennell, Edmondson and Josey
Hard Copies: Finley, Buffkin, Sessoms
REPORTED BY: Kim Mitchell
TRANSCRIBED BY: Kim Mitchell
DATE TRANSCRIBED: May 8, 2017

TRANSCRIPT PAGES: 153
PREFILED PAGES: 114
TOTAL: 267

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/18
DOCKET #: E-100, Sub-148
NAME OF ATTORNEY Kendrick Fentress
TITLE Associate General Counsel
FIRM NAME Duke Energy
ADDRESS
CITY Raleigh NC
ZIP

APPEARING FOR:

APPLICANT ✓ COMPLAINANT ____ INTERVENOR ____
PROTESTANT ____ RESPONDENT ____ DEFENDANT ____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

✓ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
✓ Copies of transcript.

Signature: Kendrick Fentress
(Required for transcript distribution)

Email:

✓ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
✓ Copies of the confidential portion.

Signature: Kendrick Fentress
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/18/17
DOCKET #: E-100, Sub 148
NAME OF ATTORNEY Lawrence B. Somers
TITLE Deputy General Counsel
FIRM NAME Duke Energy Corp.
ADDRESS
CITY
ZIP

APPEARING FOR: Duke Energy Carolinas, LLC + Duke Energy Progress, LLC

APPLICANT ✓ COMPLAINANT ____ INTERVENOR ____
PROTESTANT ____ RESPONDENT ____ DEFENDANT ____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☐ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
___ Copies of transcript.

Signature: _____
(Required for transcript distribution)

Email:

☐ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
___ Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE April 16, 2017
DOCKET #: E-100, Sub 148
NAME OF ATTORNEY Robert W. Kaylor
TITLE Attorney
FIRM NAME Law Office of Robert W. Kaylor, P.A.
ADDRESS 353 E. Six Forks Rd. Ste. 260
CITY Raleigh NC
ZIP 27609

APPEARING FOR: Duke Energy Carolinas, LLC
Duke Energy Progress, LLC

APPLICANT _____ COMPLAINANT _____ INTERVENO R _____
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docks rch.html under the respective docket number.

☐ Please check box for an e lectronic copy of the transcript. There will be a charge of $5.00 for each emailed copy .
___ Copies of transcript.

Signature: _____
(Required for transcript distribution)

☐ Please check box for c onfidential portion of regular transcript, only if a confidentiality agreement has been signe d.
___ Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE 4-18

DOCKET #: E-100 Sub 148

NAME OF ATTORNEY F. Brett Breitschwerdt

TITLE

FIRM NAME McGuire Woods LLP

ADDRESS

CITY

ZIP

APPEARING FOR: Duke Progress

APPLICANT X COMPLAINANT ____ INTERVENOR ____

PROTESTANT ____ RESPONDENT ____ DEFENDANT ____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

__ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.

___ Copies of transcript.

Signature: F. Brett Breitschwerdt

(Required for transcript distribution)

Email:

__ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.

___ Copies of the confidential portion.

Signature: _____

(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE 4/18/17

DOCKET #: E100 Sub 148

NAME OF ATTORNEY Andrea Kells

TITLE Counsel

FIRM NAME McGuireWoods

ADDRESS 434 Fayetteville St.

CITY Raleigh

ZIP 27601

APPEARING FOR: Dominion

APPLICANT ✓ COMPLAINANT _____ INTERVENOR _____

PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

✓ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.

1 Copies of transcript.

Signature: _____

(Required for transcript distribution)

Email

✓ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.

1 Copies of the confidential portion.

Signature: _____

(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE 4-18-17

DOCKET #: E-100 Sub 148

NAME OF ATTORNEY Bernard L. McNamee

TITLE Sr. Counsel

FIRM NAME McGuire Woods LLP

ADDRESS 800 E. Canal St

CITY Richmond, VA

ZIP 23219

APPEARING FOR: Dominion North Carolina Power

APPLICANT ✓ COMPLAINANT _____ INTERVENOR _____

PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☐ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.

___ Copies of transcript.

Signature: _____

(Required for transcript distribution)

Email:

☐ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.

___ Copies of the confidential portion.

Signature: _____

(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE April 18, 2012
DOCKET #: E-100, Sub 148
NAME OF ATTORNEY Adam Olis
TITLE
FIRM NAME Bailey & Dixon, LLP
ADDRESS 434 Fayetteville Street, Suite 2500
CITY Raleigh
ZIP 27601

APPEARING FOR: Carolina Industrial Group for Fair Utility Rates I, II & III

APPLICANT _____ COMPLAINANT _____ INTERVENOR _____
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☐ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
___ Copies of transcript.

Signature: _____
(Required for transcript distribution)

Email:

☐ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
___ Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/18/17
DOCKET #: E-100 Sub 148
NAME OF ATTORNEY Peter Stern
TITLE Attorney
FIRM NAME Southern Environmental Law Center
ADDRESS 601 W Rosemary St.
CITY Chapel Hill
ZIP 27516

APPEARING FOR: Southern Alliance for Clean Energy

APPLICANT _____ COMPLAINANT _____ INTERVENOR ✓
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

__ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
___ Copies of transcript.

Signature: _____
(Required for transcript distribution)

Email:

__ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
___ Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE April 18, 2017
DOCKET #: E-100 Sub 148
NAME OF ATTORNEY Lauren J. Bowen
TITLE Staff Attorney
FIRM NAME Southern Environmental Law Center
ADDRESS 601 W. Rosemary St #220
CITY Chapel Hill, NC
ZIP 27516

APPEARING FOR: Southern Alliance for Clean Energy

APPLICANT _____ COMPLAINANT _____ INTERVENOR ✓
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☑ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
1 Copies of transcript.

Signature: _____
(Required for transcript distribution)

Email.

☑ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
1 Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/18/17
DOCKET #: E-100, Sub 148
NAME OF ATTORNEY Michael D. Youth
TITLE Associate Gen Counsel
FIRM NAME NCEMC
ADDRESS
CITY
ZIP

APPEARING FOR: NCEMC

APPLICANT _____ COMPLAINANT _____ INTERVENO R X
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docks rch.html under the respective docket number.

☐ Please check box for an e lectronic copy of the transcript. There will be a charge of $5.00 for each emailed copy .
___ Copies of transcript.

Signature: _____
(Required for transcript distribution)

☐ Please check box for c onfidential portion of regular transcript, only if a confidentiality agreement has been signe d.
___ Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/18/17
DOCKET #: E 100 Sub 148
NAME OF ATTORNEY Kurt Olson
TITLE
FIRM NAME Law Office of Kurt Olson
ADDRESS 3737 Glenwood Ave. Suite 100
CITY Raleigh NC
ZIP 27612

APPEARING FOR: North Carolina Pork Council

APPLICANT ____ COMPLAINANT ____ INTERVENOR ✓
PROTESTANT ____ RESPONDENT ____ DEFENDANT ____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☐ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
___ Copies of transcript.

Signature: _____
(Required for transcript distribution)

Email:

☐ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
___ Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/18/17
DOCKET #: E-100 Sub 148
NAME OF ATTORNEY Thad Culley
TITLE Partner
FIRM NAME Ceres and Fox LLP
ADDRESS 401 Harrison Oaks Blvd, Suite 100
CITY Cary, NC
ZIP 27513

APPEARING FOR: Cypress Creek Renewables

APPLICANT _____ COMPLAINANT _____ INTERVENOR ✓
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☑ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
___ Copies of transcript

Signature: Thaden B Culley
(Required for transcript distribution)

Email

☑ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
___ Copies of the confidential portion.

Signature: Thaden B Culley
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/18/2017
DOCKET #: E-100 Sub 148
NAME OF ATTORNEY Peter Ledford
TITLE General Counsel
FIRM NAME North Carolina Sustainable Energy Association
ADDRESS 4800 Six Forks Road Suite 300
CITY Raleigh, NC
ZIP 27609

APPEARING FOR: North Carolina Sustainable Energy Association

APPLICANT _____ COMPLAINANT _____ INTERVENOR X
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☒ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
1 Copies of transcript.

Signature: _____
(Required for transcript distribution)

Email:

☒ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
1 Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/10/17
DOCKET #: E-100 SUB 148
NAME OF ATTORNEY CHARLOTTE MITCHELL
TITLE
FIRM NAME LAW OFFICE OF CHARLOTTE MITCHELL
ADDRESS PO BOX 26212
CITY RALEIGH NC
ZIP 27611

APPEARING FOR: NCSEA

APPLICANT _____ COMPLAINANT _____ INTERVENOR ✓
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☐ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
___ Copies of transcript.

Signature: _____
(Required for transcript distribution)

Email:
☑ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
1 Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE 04/18/17 DOCKET #: E-100, Sub 148

NAME AND TITLE OF ATTORNEY Robert F. Page

FIRM NAME Crisp & Page, PLLC

ADDRESS 4010 Barrett Dr., Suite 205

CITY Raleigh ZIP 27609

APPEARING FOR: Carolina Utility Customers Association, Inc.

APPLICANT _____ COMPLAINANT _____ INTERVENER ✓

PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

_____ Number of Electronic Copies for regular transcript. There will be a charge of $5.00 for each emailed copy. Please indicate your name, phone number and email below.

_____ Number of copies of Confidential portion of regular transcript (assuming a confidentiality agreement has been signed). This will be mailed.

Name: _____

Phone #: _____

Email: _____

Signature: _____

PLEASE SIGN BELOW IF YOU HAVE SIGNED A CONFIDENTIALITY AGREEMENT. CONFIDENTIAL PORTIONS OF TRANSCRIPT WILL ONLY BE PROVIDED UPON SIGNATURE!

Signature: _____

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE April 18, 2017
DOCKET #: E-100, Sub 148
NAME OF ATTORNEY Gray Styers
TITLE
FIRM NAME Smith Moore Leatherwood
ADDRESS 434 Fayetteville Street, Suite 2800
CITY Raleigh, NC
ZIP 27601

APPEARING FOR: NTE Solar, LLC

APPLICANT _____ COMPLAINANT _____ INTERVENOR ✓
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

none

☐ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
___ Copies of transcript.

Signature: _____
(Required for transcript distribution)

Email:

none

☐ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
___ Copies of the confidential portion.

Signature: _____
(Required for confidential information)

NORTH CAROLINA UTILITIES COMMISSION
PUBLIC STAFF - APPEARANCE SLIP

DATE 04/18/17 DOCKET #: E-100, Sub 148

PUBLIC STAFF MEMBER Tim R. Dodge, Heather Fennell, Lucy Edmondson, Robert Josey

ORDER FOR TRANSCRIPT OF TESTIMONY TO BE **EMAILED** TO THE PUBLIC STAFF - PLEASE INDICATE YOUR DIVISION AS WELL AS YOUR EMAIL ADDRESS BELOW:

ACCOUNTING _____
WATER _____
COMMUNICATIONS _____
ELECTRIC _____
GAS _____
TRANSPORTATION _____
ECONOMICS _____
LEGAL tim.dodge@psncuc.nc.gov,
heather.fennell@psncuc.nc.gov,
lucy.edmondson@psncuc.nc.gov,
robert.josey@psncuc.nc.gov

CONSUMER SERVICES _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

__1__ Number of copies of Confidential portion of regular transcript (assuming a confidentiality agreement has been signed). Confidential pages will still be received in paper copies.

***PLEASE INDICATE BELOW WHO HAS SIGNED A CONFIDENTIALITY AGREEMENT. IF YOU DO NOT SIGN, YOU WILL NOT RECEIVE THE CONFIDENTIAL PORTIONS!!!!

All Public Staff personnel working on case.

Signature of Public Staff Member

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 4/18/2017
DOCKET #: E-100, Sub 148
NAME OF ATTORNEY Jennifer Harrod
TITLE Special Deputy Attorney General
FIRM NAME Office of NC Attorney General
ADDRESS 114 West Edenton St
CITY Raleigh NC
ZIP 27602-0629

APPEARING FOR: NC Attorney General, Josh Stein

APPLICANT _____ COMPLAINANT _____ INTERVENOR ✓
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at HTTP://NCUC.commerce.state.nc.us/docksrch.html under the respective docket number.

☑ Please check box for an electronic copy of the transcript. There will be a charge of $5.00 for each emailed copy.
1 Copies of transcript

Signature: _____
(Required for transcript distribution)

Email:

☑ Please check box for confidential portion of regular transcript, only if a confidentiality agreement has been signed.
1 Copies of the confidential portion.

Signature: _____
(Required for confidential information)

I/A
v1.8

OFFICIAL COPY

Mar 28 2017

Public Staff Witness Metz **CONFIDENTIAL** Exhibit 1

DEP Responses to Public Staff Data Requests

Public Staff Question 3-1(a)(e):

In regards to each of the 20 days of over-generation events being reported (pg. 24 of the Company's Avoided Cost filing) please answer the following questions:

a) How many of these 20 events did the Company have to sell excess generation?

   i. Quantity of energy sold
   ii. Duration
   iii. Sell price
   iv. Purchaser.

Company Response:

[BEGIN CONFIDENTIAL]

[redacted]

OFFICIAL COPY

Mar 28 2017

[END CONFIDENTIAL]

I/A
Vol. 8

OFFICIAL COPY

Mar 28 2017

Public Staff Question 3-2:

What steps has the Company taken or is planning to take to prevent future over-generation events?

Company Response:

Over-generation events are occurring as a result of operationally excessive solar capacity being installed on the system. See the Companies' Joint Initial Statement, filed in this docket on November 15, 2017, at pages 26-36 for a discussion of the Company's proposals to more effectively address growing system operational challenges. In addition to those proposals, the Company is working on curtailment technologies, capabilities, and protocols to attempt to avoid NERC standard compliance violations and/or system emergencies.

Public Staff Question 3-5:

Please answer the following set of questions with regard to the Company's distribution circuits and substations.

a. How many substations does the Company have?
b. How many substations are considered to have distributed generation connected to it?
c. Out of the connected substations within distributed generation, how many have a positive power flow (are not back flowing into the transmission system)?

Company Response:

(a) 340

(b) 183

(c) The Company does not track or have this information readily available.

IIA vol. 8

OFFICIAL COPY

Mar 28 2017

Public Staff Question 3-9:

Please answer the following set of questions with regard to the Company's distribution circuits and substations.

a. How many substations does the Company have?
b. How many substations are considered to have distributed generation connected to it?
c. Out of the connected substations within distributed generation, how many have a positive power flow (are not back flowing into the transmission system)?

Company Response:

(a) 741 substations

(b) 201 substations

(c) Out of the 201 substations with distributed generation, at least 26 back flow into the Transmission system. This data is only being captured at roughly 90% of the 201 stations with distributed generation. Therefore, up to 175 are positive power flow only.

DEC/DEP Public Staff Panel
Cross Exhibit No. 1

I/A
vol. 8

Public Staff Response
DEC and DEP Data Request No. 1
Docket No. E-100, Sub 148
Data Request No. 6

The following response was prepared by Tim Dodge, Staff Attorney.

REQUEST 6:

Please provide copies of all correspondence, reports, memoranda, documents, analysis, or communications (in electronic, paper, or any other format) prepared by any person identified in Request 3 regarding matters relating to Docket No. E-100, Sub 148.

RESPONSE

Given the very broad definition of "documents" provided in the data request, the Public Staff objects to this request on the grounds that it is overly broad and unduly burdensome, and it seeks information protected from disclosure by the attorney work product doctrine. Without waiving these objections and without providing information previously provided by or to DEC and/or DEP, the Public Staff provides the following:

See Attached:

e-mails with Jamie Barber at the Ga. Commission.txt

e-mails with RE Avoided costs in Ga..txt

Follow-up e-mails with Amparo Nieto of NERA on the peaker method and optimality.txt

Fw peaker method optimality.txt

levelized fuel price forecasts.txt

more e-mails with Jamie Barber on bidding in Ga..txt

3-21-17 emails with Amparo Nieto on the peaker method and optimality.txt

From: Jamie Barber <JAMIEB@psc.state.ga.us>
Sent: Thursday, January 12, 2017 11:35 AM
To: Hinton, Bob; Robert Trokey
Cc: Dodge, Tim R; Fennell, Heather D; Edmondson, Lucy; Josey, Robert B; Mclawhorn, James; Floyd, Jack; Metz, Dustin; Maness, Mike; Williams, Eric L
Subject: RE: Avoided costs in Ga.

Bob,

I have correct Rob's email address and provided responses below. Please let me know if you have any further questions.

Jamie Barber
Energy Efficiency and Renewable Energy Manager
Internal Consultants/Georgia Public Service Commission
404-651-5958

From: Hinton, Bob [mailto:bob.hinton@psncuc.nc.gov]
Sent: Thursday, January 12, 2017 11:20 AM
To: robtrokey@psc.state.ga.us; Jamie Barber
Cc: Dodge, Tim R; Fennell, Heather D; Edmondson, Lucy; Josey, Robert B; Mclawhorn, James; Floyd, Jack; Metz, Dustin; Maness, Mike; Williams, Eric L
Subject: Avoided costs in Ga.

Rob and Jamie,

Given my questionable ability to accurately recall previous conversations, I would appreciate if you would confirm my understanding of avoided cost rate making in Ga with regard to PURPA and all.

1. For small QFs under 100 KW Ga. publishes its avoided costs for two years. I have attached their rates as of 2015 and 2016. The attached projected rates are for the current year and one year into the future. My understanding is that these rates are fixed for a total of 2-years and after the 2-year term, the avoided energy cost rates are refreshed. Alongside of the annual rates is a block of data comprised of avoided energy and avoided capacity rates over the next 10-years. My understanding is that this information is provide the solar generator with a reasonable expectation of avoided cost rates in the future. The avoided cost rates are refreshed each year. Projects that sell back to the grid, must be 100kW or less, can receive the Solar Avoided Cost Rate. Projects larger than 100kw must sell back as a Qualifying Facility and get paid the actual hourly avoided cost. You are correct, the 10 year projections are just that. It provides developers a projection of what the avoided energy and capacity rates are at that point in time.

2. Assume there are no Legislature mandates for solar generation and there is a 50 MW solar generator with a battery back-up system that allowed for comparable operations like a combined cycle unit. My understanding is that in order for this solar QF to obtain a capacity payment, they would have to submit a bid in Georgia Power next RFP for capacity. Please explain what other

options exist for large solar QF to obtain fixed avoided energy and fixed avoided capacity payments from Ga. Power? That is the option available for QFs. There must be a capacity need identified in the IRP (to receive a capacity payment) or the developer must submit a bid into an RFP. In this instance, the not to exceed bid price would still not have a value for capacity until the year of need.

Thanks,

Bob Hinton

Director of Economic Research Division
NC Public Staff
Office: 919-733-0896
Cell: 919-368-3072

Email correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties by an authorized state official.

DEC/DEP Public Staff Panel
Cross Exhibit No. 2

I/A
vol. 8

Public Staff Response
DEC and DEP Data Request No. 1
Docket No. E-100, Sub 148
Data Request No. 5

The following response was prepared by John R. Hinton, Director, Economic Research Division, and Tim Dodge, Staff Attorney.

REQUEST 5:

Please identify and provide copies of all documents and work papers (including all related Excel files with working formulas and links intact) supporting and/or underlying the testimony and exhibits to be filed by the Public Staff on March 24, 2017, in Docket No. E-100, Sub 148.

REVISED RESPONSE:

Given the very broad definition of "documents" provided in the data request, the Public Staff objects to this request on the grounds that it is overly broad and unduly burdensome, and it seeks information protected from disclosure by the attorney work product doctrine. Without waiving these objections and without providing information previously provided by or to DEC and/or DEP, the Public Staff will provide the following:

- **Hinton:** An Excel spreadsheet witness Hinton developed to replicate DEC's calculation of its avoided capacity rates;

  Avoided Rate Comparisons-appro

  See also the following spreadsheets accompanying this email labeled as follows:
  - DR1-5 CONF - DEC's on and off peak energy rates using 2016 day-ahead lambdas.xls
  - DR1-5 CONF - Levelized projected fuel costs over previous AC proceedings.xls
  - Estimated revenues using DEC's on-peak and off-peak energy rates.xls

- **Metz:** Public Staff Witness Metz has included his work papers on weighted Availability and Capacity Factor for the utilities spanning the years of 2011 thru 2016A calculation of annualized rates and comparisons; and

- Additional documents are provided below.

Cover Letter - 2016 Georgia Power Avoi
Duke Energy Florida's avoided co
Order in Competitive Bidding
NARUC Competitive Procurement Final.p
LS Power Willick's testimony.pdf
Levelized projected fuel costs over previ
Fl. PSC Rules -100 kw cap for standard
Factors with an Effective Bidding Pr
Va. Competitive Bidding Group 1.pd
2015 GPC Avoided Cost Projections.xlsx
2016 GPC Avoided Cost Projections.xls

Documents that are being withheld are emails, meeting notes, and the like involving the Public Staff attorneys assigned to this proceeding and/or related to developing its legal strategy.

AC_2011 thru 2016 AF and CF.xlsx
DEP_Fuel_2011_.xlsx
DEP_Fuel_2012_.xlsx
DEP_Fuel_2013_.xlsx
DEP_Fuel_2014_.xlsx
DEP_Fuel_2015_.xlsx
DEP_Fuel_2016_.xlsx
DNCP End of YTD Base Load 2011-201
Fuel 2011_DEC_.xlsx
Fuel 2012_DEC_.xlsx
Fuel 2013_DEC_.xlsx
Fuel 2014_DEC_.xlsx
Fuel 2015_DEC_.xlsx
Fuel 2016_DEC_.xlsx

Avoided Cost Projections

Energy Budget 2016

Georgia Power Company

Year	Avoided Capacity Cost	Avoided Energy Cost			Fixed Plate System	
		Peak Season: Peak Hours	Peak Season: Off-Peak Hours	Annual All Hours	Solar Avoided Capacity Cost	Solar Avoided Energy Cost
	$/KW-yr	$/MWh	$/MWh	$/MWh	$/KW-yr	$/MWh
2016	0.00	40.38	28.30	30.90	0.00	34.69
2017	0.00	40.08	29.10	31.39	0.00	34.67
2018	0.00	44.95	32.22	34.14	0.00	37.55
2019	0.00	49.13	35.51	36.81	0.00	40.39
2020	0.00	53.01	38.14	39.80	0.00	43.55
2021	0.00	57.92	41.07	42.23	0.00	46.58
2022	0.00	60.18	42.74	43.86	0.00	48.24
2023	0.00	67.32	47.02	46.81	0.00	51.96
2024	68.93	70.60	48.81	49.23	21.37	54.60
2025	70.48	74.64	50.55	51.21	21.85	57.25
2026	72.07	78.61	52.95	54.24	22.34	60.62

YEAR: 2016 $/MWh	System Territorial Spot Fuel Lambda	Marginal Cost Multiplier	Fuel Cost Multiplier	Variable O & M Component Adder	Emissions Component Adder (SO2, Nox & HG)	Start-up & Commitment Component Adder	Total $/MWh For QF Block
Peak Season: Peak Hours	31.16	1.0	1.0962	4.65	0.26	1.31	40.38
Peak Season: Off-Peak Hours	22.07	1.0	1.0962	3.59	0.19	0.33	28.30
Annual All Hours	23.45	1.0	1.0962	3.59	0.16	1.44	30.90

YEAR: 2017 $/MWh	System Territorial Spot Fuel Lambda	Marginal Cost Multiplier	Fuel Cost Multiplier	Variable O & M Component Adder	Emissions Component Adder (SO2, Nox & HG)	Start-up & Commitment Component Adder	Total $/MWh For QF Block
Peak Season: Peak Hours	31.24	1.0	1.0793	5.20	0.26	0.90	40.08
Peak Season: Off-Peak Hours	22.86	1.0	1.0793	4.03	0.16	0.24	29.10
Annual All Hours	24.20	1.0	1.0793	3.91	0.13	1.23	31.39

Notes:
1. Peak season consists of the months June through September.
2. Peak hours consist of weekday hours 9am through 10pm eastern daylight time (EDT).
3. Transmission losses are not included.
4. The start-up and commitment component adders for capacity that avoids a combustion turbine unit are equal to zero.
5. Except for payments specified in the RNR tariff, these estimates are for informational purposes and actual payments will differ.

DEC/DEP Public Staff Panel
Cross Exhibit No. 3
I/A
Vol. 8

SOLAR MAXIMUM DEPENDABLE CAPACITY
[CPCNs Issued October 2016]

Name	Docket No.	Date of Application	Date of Order Issuing CPCN	Nameplate Capacity (MW AC)	Maximum Dependable Capacity (MW)
Saw Solar, LLC	SP-8431, Sub 0	9/2/16	10/31/16	4.999	0
ESA Solar Farm, LLC	SP-8469, Sub 0	9/13/16	10/31/16	3	0
Badger Farm, LLC	SP-8230, Sub 0	8/2/16	10/31/16	5	0
Apple Pie Solar, LLC	SP-8263, Sub 0	8/9/16	10/31/16	5	0
Camel Solar, LLC	SP-8323, Sub 0	8/13/16	10/31/16	5	0
Norris Solar Farm, LLC	SP-7785, Sub 0	9/12/16	10/31/16	5	0
Ray Wilson Solar Farm, LLC	SP-7799, Sub 0	8/16/16	10/31/16	5	0
Lexington 64 Farm, LLC	SP-7885, Sub 0	5/12/16	10/31/16	5	0
Yadkin Solar Farm, LLC	SP-7950, Sub 0	7/18/16	10/31/16	5	0
Black Bear Solar, LLC	SP-7817, Sub 0	8/16/16	10/31/16	5	0
Solar Lee, LLC	SP-8200, Sub 0	8/1/16	10/31/16	5	0
C&C Solar, LLC	SP-8203, Sub 0	8/1/16	10/31/16	5	0
Stallion Solar, LLC	SP-8271, Sub 0	8/12/16	10/31/16	4.998	0
Pitt County Solar, LLC	SP-8278, Sub 0	8/18/16	10/31/16	5	0
Buchanan Farm, LLC	SP-8325, Sub 0	8/18/16	10/31/16	5	0
Pecan Grove Solar, LLC	SP-8341, Sub 0	8/22/16	10/31/16	5	0
Swansboro Solar, LLC	SP-8342, Sub 0	8/22/16	10/31/16	5	0
ESA Buies Creek, LLC	SP-8394, Sub 0	8/31/16	10/31/16	3	0
Tanager Holdings, LLC	SP-8398, Sub 0	9/9/16	10/31/16	5	0
Quincy Farm, LLC	SP-8222, Sub 0	8/1/16	10/25/16	5	0
Orchid Solar, LLC	SP-7819, Sub 0	8/15/16	10/25/16	5	0
Wadesboro Solar, LLC	SP-7830, Sub 0	5/3/16	10/25/16	20	0
Tamworth Holdings, LLC	SP-8025, Sub 0	6/14/16	10/25/16	5	0
Eisenhower Farm, LLC	SP-8223, Sub 0	8/1/16	10/25/16	5	0
River Forks Farm, LLC	SP-8225, Sub 0	8/2/16	10/25/16	5	0
Truman Farm, LLC	SP-8226, Sub 0	8/2/16	10/25/16	5	0

Name	Docket No.	Date of Application	Date of Order Issuing CPCN	Nameplate Capacity (MW AC)	Maximum Dependable Capacity (MW)
Peake Road Farm, LLC	SP-8229, Sub 0	8/2/16	10/25/16	5	0
ESA Boston Solar, LLC	SP-8242, Sub 0	8/9/16	10/25/16	5	0
Buttercup Solar, LLC	SP-8257, Sub 0	8/9/16	10/25/16	5	0
Williams Solar, LLC	SP-8274, Sub 0	8/16/16	10/25/16	5	0
Acme Solar, LLC	SP-8275, Sub 0	8/15/16	10/25/16	5	0
Grays Mill Solar, LLC	SP-8276, Sub 0	8/16/16	10/25/16	5	0
Scotch Bonnet Solar, LLC	SP-8282, Sub 0	8/16/16	10/25/16	5	0
Burgaw Solar, LLC	SP-8283, Sub 0	8/15/16	10/25/16	5	0
Eisenhower Solar, LLC	SP-8285, Sub 0	8/12/16	10/25/16	5	0
Marigold Solar, LLC	SP-8288, Sub 0	8/12/16	10/25/16	4.166	0
Garfield Solar, LLC	SP-8294, Sub 0	8/12/16	10/25/16	5	0
Deer Solar, LLC	SP-8300, Sub 0	8/16/16	10/25/16	5	0
Mink Solar, LLC	SP-8303, Sub 0	8/16/16	10/25/16	4.693	0
Hoover Farm, LLC	SP-8317, Sub 0	8/17/16	10/25/16	5	0
Polk Farm, LLC	SP-8318, Sub 0	8/16/16	10/25/16	5	0
Narwhal Solar, LLC	SP-8319, Sub 0	8/16/16	10/25/16	5	0
Little Mountain Solar, LLC	SP-8125, Sub 0	7/12/16	10/18/16	5	0
Longleaf Pine Solar, LLC	SP-8216, Sub 0	8/3/16	10/18/16	5	0
Carolina Lily Solar, LLC	SP-8217, Sub 0	8/3/16	10/18/16	5	0
Fresh Air Energy XI, LLC	SP-3557, Sub 1	12/29/14	10/18/16	5	0
Starr Farm, LLC	SP-5816, Sub 0	8/3/16	10/18/16	5	0
Sybac Solar, LLC	SP-8199, Sub 1	8/11/16	10/18/16	5	0
Ennis Solar, LLC	SP-8202, Sub 0	8/1/16	10/18/16	5	0
Brewington Solar, LLC	SP-8205, Sub 0	8/1/16	10/18/16	5	0
Sykes Solar, LLC	SP-8207, Sub 0	8/1/16	10/18/16	5	0
Union Chapel Solar, LLC	SP-8208, Sub 0	8/15/16	10/18/16	5	0
CL Solar, LLC	SP-8209, Sub 0	8/1/16	10/18/16	5	0
Plott Hound Solar, LLC	SP-8218, Sub 0	8/1/16	10/18/16	5	0
Old North State Solar, LLC	SP-8219, Sub 0	7/29/16	10/18/16	5	0

Name	Docket No.	Date of Application	Date of Order Issuing CPCN	Nameplate Capacity (MW AC)	Maximum Dependable Capacity (MW)
Cottontail Solar, LLC	SP-8268, Sub 0	8/15/16	10/18/16	4.5	0
Badger Hill Solar, LLC	SP-8272, Sub 0	8/12/16	10/18/16	4.998	0
Osceola Solar, LLC	SP-7976, Sub 0	6/10/16	10/11/16	4.99	5
Tomlin Mill Solar, LLC	SP-8063, Sub 0	6/29/16	10/11/16	5	0
Armada Solar, LLC	SP-7922, Sub 0	6/27/16	10/11/16	5	0
Branch Solar, LLC	SP-8116, Sub 0	7/22/16	10/11/16	80	0
Suncaster, LLC	SP-8198, Sub 0	8/1/16	10/11/16	5	0
Fair Bluff Solar, LLC	SP-8210, Sub 0	8/1/16	10/11/16	75	0
Summit Solar, LLC	SP-8211, Sub 0	7/29/16	10/11/16	3	0
Ruff Solar, LLC	SP-5754, Sub 0	5/28/16	10/4/16	45.5	45.5
Longneck Solar, LLC	SP-8166, Sub 0	7/26/16	10/4/16	5	0
Gamble Solar LLC	SP-8191, Sub 0	7/29/16	10/4/16	3	0
Eros Solar, LLC	SP-8050, Sub 0	7/22/16	10/4/16	5	0
Trojan Solar, LLC	SP-8051, Sub 0	7/25/16	10/4/16	5	0
Crooked Run Solar, LLC	SP-8061, Sub 0	7/21/16	10/4/16	75	0
Woodington Solar, LLC	SP-8162, Sub 0	8/1/16	10/4/16	5	0
Brick City Solar, LLC	SP-8175, Sub 0	7/27/16	10/4/16	5	0
Verona Solar, LLC	SP-8182, Sub 0	7/27/16	10/4/16	5	0
TOTAL				625.835	50.5

DEC/DEP Public Staff Panel
Cross Exhibit No. 4
I/A
vr.8

CYPRESS CREEK
RENEWABLES

July 22, 2016

Via Electronic Filing

Chief Clerk
NC Utilities Commission
430 North Salisbury Street
Raleigh, NC 27603

RE: Docket No. SP-8116, Sub 0
Application for a Certificate of Public Convenience and Necessity for:
Slender Branch Solar, LLC

Dear Clerk Mount,

Please find enclosed for filing for **Slender Branch Solar, LLC** (80.0 MW AC):

- Application for a Certificate of Public Convenience and Necessity

Thank you for your assistance with this matter. If you should require additional information and/or have any questions regarding the enclosed materials, please feel free to contact me directly at regulatory@ccrenew.com.

Thank you,

Nikki Anas

Nikki Anas
Cypress Creek Renewables, LLC

CYPRESS CREEK
RENEWABLES

Enclosure

Application for a Certificate of Public Convenience and Necessity

Application for Certificate of Public Convenience and Necessity ("CPCN") Pursuant to Rule R8-64

EXHIBIT 1

1. **The full and correct name, business address, business telephone number, and electronic mailing address of facility owner is:**

   Slender Branch Solar, LLC
   3250 Ocean Park Boulevard
   Suite 355
   Santa Monica, CA 90405
   (310) 581-6299
   regulatory@ccrenew.com

2. **Slender Branch Solar, LLC is a domestic North Carolina limited liability company. The company was duly formed by the filing of Articles of Organization with the Secretary of State of the State of North Carolina on December 11, 2014. An Articles of Amendment was subsequently filed with the Secretary of State of the State of North Carolina, effective as of June 8, 2016, changing the name of the company to Slender Branch Solar, LLC. Evan Riley is duly authorized to act as corporate agent for the purpose of this application.**

Evan Riley 3250 Ocean Park Boulevard Suite 355 Santa Monica, CA 90405 (310) 581-6299 regulatory@ccrenew.com	with copies to :	Nikki Anas 3250 Ocean Park Boulevard Suite 355 Santa Monica, CA 90405 (213) 347-9387 regulatory@ccrenew.com

3. **The owner of the facility is Slender Branch Solar, LLC ("Slender Branch").**

4. **The site on which the facility will be constructed (the "Site") is owned by George F. Darden, Jr., a married man (the "Landowner").**

5. **Slender Branch has a leasehold interest in the Site, pursuant to a Ground Lease Agreement (the "Lease") with the Landowner. Per the terms of the Lease, Slender Branch is permitted to construct and operate a solar photovoltaic power array on the Site for the generation of electric power.**

EXHIBIT 2

1. **An E911 address has not yet been assigned to the facility. However, the generating facility will be located along NC 131 Hwy, east of Faith Lane, west of Twisted Hickory Road, and approximately 3.4 miles north of the intersection of NC 131 Hwy and Silver Spoon Road. The facility will be located in Bladenboro, Bladen County, North Carolina.**

2. **The GPS coordinates of the approximate center of the Site are 34.489 N, 78.770 W.**

3. **A color map showing the location of the generating facility in relation to local highways, streets, and other generally known local landmarks (with the proposed location of major equipment indicated on the map) is attached.**

EXHIBIT 3

1. **The generating facility will be an 80.000 MW AC photovoltaic (PV) array. The source of its power will be solar energy. The facility will utilize solar energy to produce electricity.**

2. **The list of the facility equipment is marked as Exhibit 3(i), and is filed in the docket under seal.**

3. **The nameplate (gross generating) capacity of the facility will be 100.000 MW AC. Given that solar energy is an intermittent resource, the dependable capacity of the facility is 0.**

4. **The date on which the facility is projected to come on line is 07/01/2018.**

5. **The facility owner plans to sell the electricity to Duke Energy Progress pursuant to a power purchase agreement.**

6. **There are no provisions for wheeling of the electricity.**

7. **There are currently no arrangements for firm, non-firm or emergency generation.**

8. **The service life of the project is expected to be approximately thirty-five (35) years.**

9. **The projected annual sales of the facility are expected to be approximately one hundred seventy-eight million six hundred sixty thousand kilowatt-hours (178,660,000 kWh).**

10. **The facility owner intends to produce renewable energy certificates that are eligible for compliance with North Carolina's renewable energy and energy efficiency portfolio standard.**

EXHIBIT 4

1. **The following is a list of the federal and state approvals that are required to build and/or operate this facility:**

   (1) FERC Form 556, Self-Certification of Qualifying Facility
   (2) EIA-860 and EIA-923
   (3) NC DENR Stormwater Permit
   (4) NC DOT Driveway Permit
   (5) FAA clearance

EXHIBIT 5

1. **The expected cost of the proposed facility is approximately one hundred fifty-seven million nine hundred fifty thousand dollars ($157,950,000.00).**

EXHIBIT 6

1. **Attached to this application is a statement detailing the experience and expertise of the persons who will develop, design, construct, and operate the facility.**

2. **No regulated utility will be involved in the actual operation of the facility.**

3. **A statement of the impact of the purchased power from the facility (issued by Duke Energy Progress) is attached to this application.**

CYPRESS CREEK
RENEWABLES

MANAGEMENT TEAM

Matthew McGovern – Chief Executive Officer

- As CEO of Cypress Creek Renewables, Matt oversees all business operations and investor relations for the company. Matt has 15 years of industry, finance, and operational executive experience.
- Prior to forming Cypress, Matt served as the CFO of Paramount Solar - a position he held from December 2012 through April 2014. As CFO of Paramount, Matt launched the firm's first tax equity fund with US Bank in March 2013.
- Before joining Paramount, Matt served as the CFO of Gehrlicher Solar America Corporation from 2010 to 2012, during which time he developed and financed over 40MW of utility-scale and commercial solar projects.
- Matt holds a Master's degree in Organizational Behavior, as well as a Doctorate in Organizational Development from the College of Organizational Studies at CSPP. Matt received his Bachelor's degree from Miami University in Oxford, Ohio.

Michael Cohen – President

- As President at Cypress, Mike is instrumental in business development, as well as all financing and strategic initiatives. Mike has 10 years of industry, development, legal, and operational executive experience.
- Prior to Cypress, Mike led business development and project finance for Strata Solar, which had a 350MW operating solar portfolio and 1GW of development pipeline.
- Before building Strata's development and finance model, Mike was an attorney with Kirkland & Ellis (from 2008 through 2011), where he focused on the development, financing, and purchase/sale of renewable energy projects – both domestically and abroad.
- Mike received his BA and MA in Accounting from the University of Florida, and his JD from Georgetown University.

Patrick McConnell – Managing Director

- Patrick is responsible for managing project investment at Cypress.
- Prior to Cypress, Patrick led renewable energy finance and solar development for Stonehenge Capital Company and its sister development company, Heelstone Energy.
- Prior to his time at Stonehenge/Heelstone, Patrick was a managing director at Carrboro Capital, a lower middle-market private equity firm focused on buyouts in the Southeast. Before Carrboro, Patrick was the lead analyst in the structured finance group of RBS Greenwich Capital, where he focused on CMBS, mezzanine, and credit-tenant financings.
- Patrick received his BA in Economics from the University of Virginia and his MBA (with a concentration in finance) from the University of North Carolina at Chapel Hill.

CYPRESS CREEK
RENEWABLES

Jerome O'Brien – Chief Administrative Officer and General Counsel

- As General Counsel, Jerome manages and leads Cypress Creek's in-house legal team and, as CAO, is responsible for managing many of the company's administrative functions.
- Prior to joining Cypress Creek Renewables, Jerome was an attorney in the New York office of Jones Day, a leading international firm, from 2008 to 2014.
- Jerome received his JD from Georgetown University Law Center, where he was a member of the Georgetown Law Journal. He completed his undergraduate studies at Duke University, where he graduated cum laude.

David Bunge – Vice President of Strategic Development

- David coordinates many of Cypress Creek's development partnerships and initiatives. David has been active in solar project development since 2007.
- Prior to joining Cypress Creek Renewables, David founded Solexus Development where he was responsible for the development and execution of Missouri's largest solar facility, located in Springfield, MI.
- David received his MBA (with a concentration in High Technology Entrepreneurship) from North Carolina State University's Jenkin's School of Management in Raleigh, North Carolina. He completed his undergraduate studies at Davidson College in Davidson, NC.

Evan Riley – Vice President of Development Operations

- Evan manages and leads the development team at Cypress Creek and oversees the development of Cypress Creek's pipeline of projects.
- Evan previously led the PV Performance Services Group at Black & Veatch, where he provided independent engineering and/or development support for over 6,000MW of utility, commercial, and residential scale photovoltaic projects in various stages of development, construction, and operation.
- Evan has a Master of Science degree in Mechanical Engineering (with an emphasis on solar engineering) from European Solar Engineering School. He received his BS in both Mathematics and Physics from Indiana University Bloomington.

Peter Farlekas – Executive Vice President of Engineering, Procurement, and Construction

- As Cypress Creek's EVP of EPC, Peter oversees and manages the entire EPC team, as well as all aspects of the company's solar EPC process.
- Prior to joining Cypress, Peter served as the EVP of EPC/Operations and Director of EPC Commercial Projects for Gehrlicher Solar America Corporation. Before joining Gehrlicher, Peter served as the East Coast Director of Engineering and Construction for Gloria Solar, as well as Project Manager at EPV Solar, Inc.
- Peter received his Bachelor of Science in Mechanical Engineering from West Virginia University.

CYPRESS CREEK
RENEWABLES

Fred Robinson – Vice President of New Markets Development

- Fred oversees Cypress Creek's development efforts in new markets, specifically focusing on market analysis, as well as deal origination and structuring.
- Prior to joining Cypress, Fred was a Manager of Mergers and Acquisitions at NextEra Energy Resources, LLC. There, he led the acquisition of over 500MW of development assets to be operational by 2016. Fred was also a member of the team that led the initial vetting of NextEra's YieldCo, NextEra Energy Partners, LLC. His specific role focused on competitor analysis and asset optimization.
- Fred received a Bachelor of Science in Mechanical Engineering from Villanova University, and a Master of Environmental Management and a Master of Business Administration from Duke University.

Brian Matthay – Managing Director of Strategic Initiatives

- As Managing Director of Strategic Initiatives, Brian focuses on strategic growth initiatives that span the development and finance teams at Cypress Creek. Brian has over 10 years of finance and executive management experience.
- Prior to Cypress, Brian was a Senior Vice President in the Environmental Finance Group at Wells Fargo, where he originated and structured tax equity investments for the bank's own account (2008 to 2014).
- Brian received his Bachelor's degree in Environmental Science and Public Policy from Harvard University, and his Master's degree in Agricultural and Resource Economics from the University of California, Davis.

Jonathan Buttles – Chief Financial Officer

- As CFO, Jon is responsible for guiding and evaluating Cypress Creek's immediate and long-range financial planning, budgets, and performance.
- Jon has a background in investment banking, private equity, and venture capital. He has worked for companies such as Core Equity Group, Monument Capital Partners, and Merriman Capital, Inc.
- Previously, Jon served as CFO of PodNod and Managing Partner of Core Equity Group.
- Jon has 17 years of investment banking, financial executive, and operational executive experience.

Anders Dahl – Executive Vice President of Sales and Marketing

- As EVP of Sales and Marketing, Anders oversees all marketing and sales activities for Cypress Creek's local solar initiatives across the country.
- Prior to Cypress, Anders served as the CEO of Verengo Solar, where he increased cost efficiency in all parts of the business. He also established a platform for profitable growth and diversification by expanding into new markets, like B2B and EPC business.
- Before joining Verengo, Anders spent 20 years in the Direct-to-Consumer business on three different continents, holdings CEO, President, and CMO positions.

CYPRESS CREEK
RENEWABLES

Brad Bauer – Executive Vice President of Tax and Structuring

- As EVP of Tax and Structuring, Brad is responsible of the optimization of Cypress Creek's structure and investments.
- Brad has experience in the renewable energy industry that includes work as an investor, executive, and attorney.
- Prior to joining Cypress, Brad served as President of MP2 Capital, where he financed solar projects. Brad also previously served as a tax lawyer and KPMG partner, specializing in project and structured finance.

From: Tharp, Scott E
To: Nikki Anas
Cc: Dunn, Kathy; Canipe, Jennifer A
Subject: CPCN Statements
Date: Wednesday, June 22, 2016 11:30:16 AM
Attachments: Crooked Run Solar CPCN Statement.docx
Slender Branch Solar CPCN Statement.docx

Nikki,

CPCN statements for Crooked Run and Slender Branch attached.

Thx
Scott

Scott Tharp
Duke Energy - Business Development Manager
1000 E Main Street
Plainfield, IN 46168
317.838.1968 (office)
317.459.7704 (cell)
317.838.2987 (fax)
scott.tharp@duke-energy.com

Slender Branch Solar CPCN Statement

The proposed 80 MW Slender Branch Solar generation addition has been analyzed to determine the impact to DEP. It is prudent to analyze solar resources over a range of values for firm coincident capacity at the time of system peak. Assuming a 44% solar contribution to peak, the Slender Branch Solar facility will add approximately 1.2% of DEP's nominal reserves. DEP recognizes that the 44% coincident contribution to system peak for solar resources can vary. Therefore, should the peak contribution vary, for each 10% change to the coincident contribution of the solar resources, reserves vary approximately 0.3%.

In addition, this capacity impacts DEP's reserve margin by approximately 0.24%. Every 10% change in the coincident contribution to system peak equates to 0.06% of reserve margin.

For 2019, DEP's forecasted sales are 67,383 GWh. The collective generation impact of this solar facility would represent 0.24 % of the forecasted sales.

While alone, this facility does not have a significant impact on future DEP capacity needs, when combined with other QF facilities being submitted for CPCN, the impact to DEP's future capacity needs are substantial. DEP will continue to study the impacts of the aggregation of the QF facilities to the DEP system.

EXHIBIT 7

1. **The most current balance sheet for Cypress Creek Holdings, LLC, the upstream parent company of Slender Branch, is marked as Exhibit 7(i) and is filed in the docket under seal.**

2. **The most current income sheet for Cypress Creek Holdings, LLC, the upstream parent company of Slender Branch, is marked as Exhibit 7(ii) and is filed in the docket under seal.**

3. **A projected financial model is marked as Exhibit 7(iii) and is filed in the docket under seal.**

4. **There are no confirmed financial arrangements at this time. Slender Branch and its affiliates are in discussions with multiple potential sources of financing.**

EXHIBIT 8

1. **A detailed explanation of the anticipated kilowatt and kilowatt-hour outputs, on-peak and off-peak, for each month of the year, including a statement of the specific on-peak and off-peak hours underlying the applicant's quantification, is marked as Exhibit 8(i) and is filed in the docket under seal.**

2. **The facility is a solar photovoltaic array and the energy input is solar. The total output of electrical generation will be sold to Duke Energy Progress.**

3. **No fuel supply arrangements are required for the facility.**

[SEPARATE SIGNATURE PAGE IS ATTACHED]

[Signature Page to Application for a CPCN for Slender Branch Solar, LLC]

I, Evan Riley, verify that I am duly authorized to act on behalf of Slender Branch Solar, LLC. I also verify that the contents of this Application for a Certificate of Public Convenience and Necessity by Slender Branch Solar, LLC filed in this docket are true to the best of my knowledge.

SLENDER BRANCH SOLAR, LLC

Name: Evan Riley

Title: Authorized Person

State of California
County of Los Angeles

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

On July 20, 2016 before me, Karen R. Elmore, Notary Public personally appeared Evan Riley who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

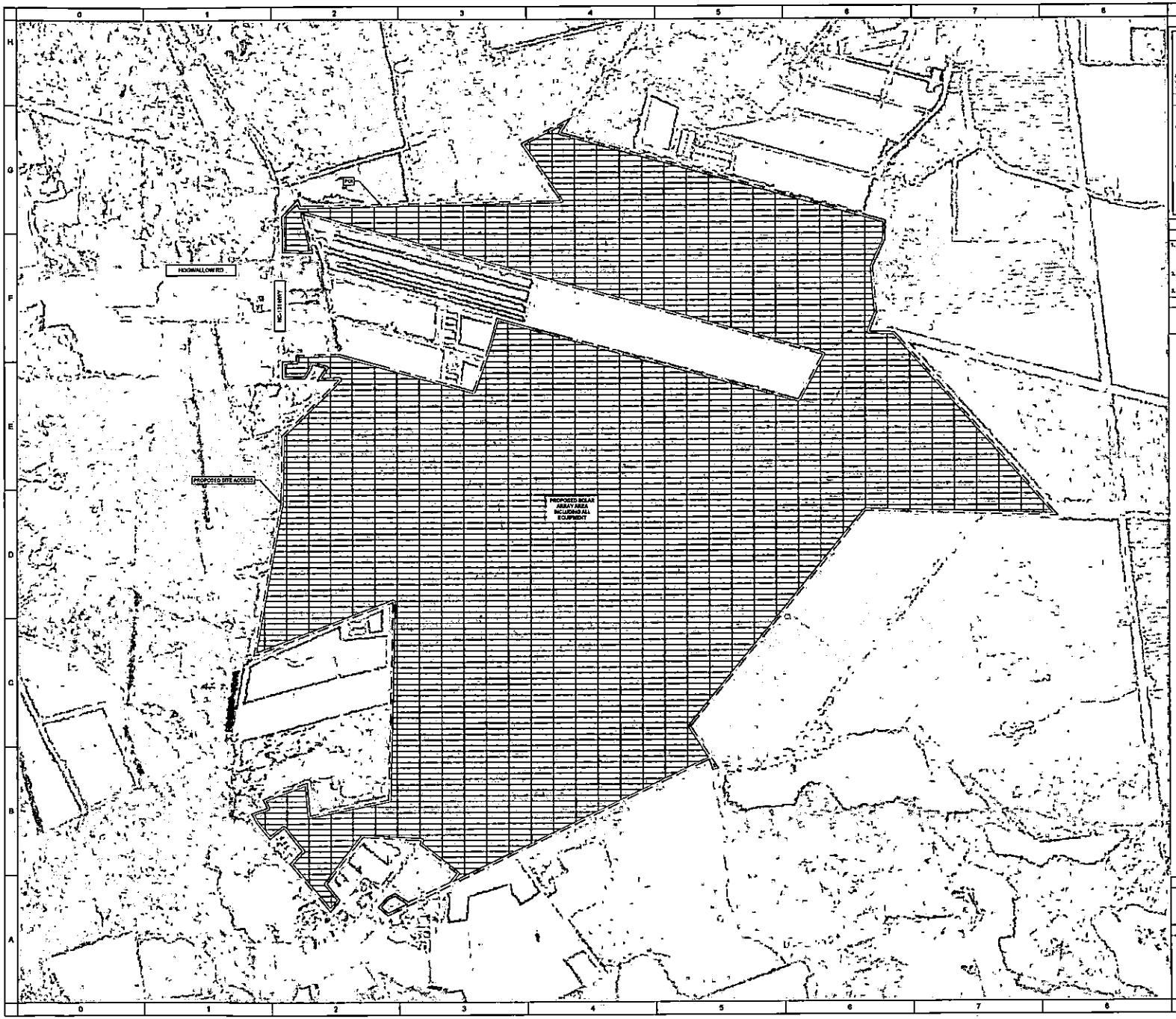
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

KAREN R. ELMORE
Commission # 2034658
Notary Public - California
Los Angeles County
My Comm. Expires Aug 22, 2017

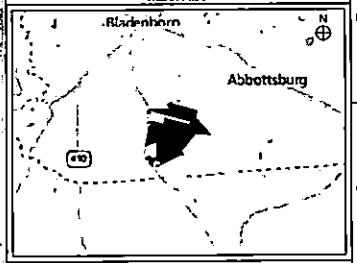
WITNESS my hand and official seal.

Signature

Signature of Notary Public



VICINITY MAP



SCALE 1" = 10,000'

GENERAL NOTES

1. THE LOCATION OF PROPOSED EQUIPMENT INCLUDING BUT NOT LIMITED TO: FENCING, SOLAR ARRAY RACKING, ELECTRICAL EQUIPMENT, OVERHEAD POLES AND LINES, ETC., SHOWN ARE APPROXIMATE AND MAY BE SUBJECT TO MODIFICATION DUE TO SITE CONDITIONS, ADDITIONAL PERMITTING REQUIREMENTS, EQUIPMENT SPECIFICATIONS AND/OR OTHER CONSTRAINTS.
2. PROPERTY BOUNDARIES, TOPOGRAPHIC DATA, AND EXISTING IMPROVEMENTS SHOWN ARE APPROXIMATE PER AERIAL PHOTOGRAPHY AND GIS MAPS.
3. THIS PLAN IS PRELIMINARY AND WILL NOT BE RELEASED FOR CONSTRUCTION.

PROJECT INFO

STREET ADDRESS: NC HWY 131
BLADENBORO, NC

COUNTY: BLADEN

LEGEND

PROJECT AREA

PROPOSED AREA FOR SOLAR ARRAY

GRAPHIC SCALE

1" = 600'

NORTH

N

CYPRESS CREEK RENEWABLES

3250 OCEAN PARK BLVD :: SUITE 355 :: SANTA MONICA, CA 90405
601-A WEST MAIN ST :: CARRBORO, NC 27510

PERMIT DRAWING - NOT RELEASED FOR CONSTRUCTION

CONSULTANT

NO	DATE	REVISIONS DESCRIPTION
1	4/28/2020	[illegible]

SLENDER BRANCH SOLAR, LLC

NC HWY 131
BLADENBORO, NC

NCUC SITE PLAN

P 1.0

DEC/DEP Public Staff
Cross Examination Exhibit 5
I/A
vol. 8

Public Staff Response
DEC and DEP Data Request No. 1
Docket No. E-100, Sub 148
Data Request No. 6

The following response was prepared by Tim Dodge, Staff Attorney.

REQUEST 6:

Please provide copies of all correspondence, reports, memoranda, documents, analysis, or communications (in electronic, paper, or any other format) prepared by any person identified in Request 3 regarding matters relating to Docket No. E-100, Sub 148.

RESPONSE

Given the very broad definition of "documents" provided in the data request, the Public Staff objects to this request on the grounds that it is overly broad and unduly burdensome, and it seeks information protected from disclosure by the attorney work product doctrine. Without waiving these objections and without providing information previously provided by or to DEC and/or DEP, the Public Staff provides the following:

See Attached:

e-mails with Jamie Barber at the Ga. Commission.txt

e-mails with RE Avoided costs in Ga..txt

Follow-up e-mails with Amparo Nieto of NERA on the peaker method and optimality.txt

Fw peaker method optimality.txt

levelized fuel price forecasts.txt

more e-mails with Jamie Barber on bidding in Ga..txt

3-21-17 emails with Amparo Nieto on the peaker method and optimality.txt

e-mail from Harry Judd on Bid Fees.txt

e-mail with Harry Judd on Bidding process discussion.txt

EIA Cost and Performance of new

2013_RFP_Bidders_Conference-13AUG2

Accion Group Bid Fee Presentation 01:

Final Order 32697.pdf

Aug. 20 20150 Idaho FINAL_ORDER

Idaho PUC Order on Reconsideration.

From: Nieto, Amparo <Amparo.Nieto@NERA.com>
Sent: Tuesday, March 21, 2017 1:40 AM
To: Hinton, Bob
Cc: Dodge, Tim R; Williams, Eric L
Subject: RE: peaker method & optimality

Hi Bob,

Thanks for your note. I got your voice message but I was traveling today and did not have an opportunity to respond yet. I will reply briefly to your email now but I can expand it on the phone when we talk.

I understand that a situation of excess of capacity is taking place in NC, and it seems that for the most part the new capacity is renewables-based (solar and wind). These resources are not generally considered firm, and so they have little capacity value. Could you tell me how is wind capacity contribution taken into account in NC resource adequacy studies? (e.g., in PJM, only a small percentage of wind nameplate capacity is considered for capacity valuations).

Generally speaking, I believe that using a zero capacity value in years where the utility system has substantial surplus of generation capacity is correct, it is a clear case of suboptimal system. This occurs when the system reserve margin (capacity over peak demand) is well over the target planning reserve margin. In that case, the Peaker method is not applicable because there is clearly no positive value to the utility system from adding more capacity resources (annual LOLH is already low). If there was a market, the capacity market price would be very low unless it was a forward capacity market. What is the current system reserve margin?

Note that there are two places in my Affidavit where I refer to reserve margins: On page 6, I stated "..that neither the Peaker Method nor a short-run marginal cost approach supports the argument of using a zero capacity payment to a dispatchable QF facility when planning capacity exceeds the target, particularly by a small margin" (e.g, if the planning reserve margin is typically 15% of the system peak and resources are at 117% this is not a situation of sub-optimality). And on page 15 of the Affidavit I noted the following: "... chronic substantial imbalances of capacity are not likely to be the case with PEC. If PEC's capacity levels in the early years of the contract are reasonably close to the target range of reserve margins that PEC and the Commission believe is necessary to maintain reliability, the peaker cost is likely to be closer to the incremental capacity value"

Again, a key factor here is to what extent the existing and upcoming wind and solar generation can be considered a capacity resource that actually generates at peak and reduces system on-peak capacity needs. Renewables are generally not dispatchable and I assume this is the case in NC but I would need to understand the situation better with some more information. I would be happy to discuss more on a call, but I am going to be fully tied up in meetings tomorrow. Are you available to talk on Wednesday afternoon? I would also be happy to testify or submit an Affidavit in your proceeding it that would help.

Best regards,

Amparo

Amparo Nieto
Associate Director
NERA Economic Consulting
Office: (213) 346 3041
Cell: (310) 383 8695

From: Hinton, Bob [mailto:bob.hinton@psncuc.nc.gov]
Sent: Monday, March 20, 2017 4:21 PM
To: Nieto, Amparo
Cc: Dodge, Tim R; Williams, Eric L
Subject: FW: peaker method & optimality

Ms. Nieto,

I fear that I have left you a rather long-winded voice mail on your phone that would be better communicated by e-mail. I would appreciate it if we could have a brief discussion of the typical exceptions due to severe deviations as it relates to the concept of optimality and the peaker method. On page 5 of the Affidavit you note that no utility system is ever precisely optimal. In the real world, utilities planners have to deal with problems when there are unexpected changes in load, unexpected changes in the cost of fuel, and other costs of generation. I am preparing testimony on the avoided costs and the peaker method. In numerous prior proceedings, we have in recommended a traditional application of the peaker method that largely followed the Grey series, Topics 4 and 1.3. In addition, I took your marginal cost class in May 2014 and the other connection we have is with your attached Affidavit that was filed in an EPCOR Arbitration case in 2010. Again, the issue that I would like to discuss relates to your last point that this equality should be roughly achieved except in cases of severe deviation from optimality.

Here in NC we already have over 2,000 MW of solar generation and another 4,000 MW are in the interconnection que. At this point, Duke Energy Progress (DEP) is troubled by the possibility of dumping more and more power during low load periods and having to ramp nuclear units. From my perspective, I see a growing likihood of continued severe and persistent deviations that is a challenge to the theory of optimality. I am thinking that the additional uncertainty from solar generation being "put" to DEP via PURPA is so large that we are justified to change our traditional method of paying capacity payments at day-1; rater, we should wait until capacity is needed.

For many years the Public Staff has recommended that a capacity payments be paid from day-1 of QF generation. However, the QF situation with solar in NC may challenge what Idaho has seen with wind and solar. While I believe the regulatory response in Idaho was too extreme, I am open to the use of zero capacity values for years where there is not a stated need for additional capacity. As you recall in the EPCOR case, you, I, and Ben Johnson argued against the use of zero capacity value in PEC early years of its expansion plan.

In closing, either through conversation or my e-mail, I would appreciate any assistance of reasons you have agreed to reflect zero capacity values and depart from the traditional use of the peaker method with respect to capacity costs paid in ever year.

Thanks,

Bob Hinton

Director of the Economic Research Division
NC Public Staff
(Office) 919-733-0896
(Cell) 919-368-3072

Email correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties by an authorized state official.

Email correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties by an authorized state official.

This e-mail and any attachments may be confidential or legally privileged. If you received this message in error or are not the intended recipient, you should destroy the e-mail message and any attachments or copies, and you are prohibited from retaining, distributing, disclosing or using any information contained herein. Please inform us of the erroneous delivery by return e-mail. Thank you for your cooperation.

DEC / DEP McConnell Cross-Exam
Exh. No. 4
I/
m.4

http://colemanreport.com/wp-content/uploads/2016/ | colemanreport.com | colemanreport.com | colemanreport.com | colemanreport.com

File Edit Go to Favorites Help

PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

CYPRESS CREEK
RENEWABLES

Solar Overview and Lending Opportunities

7:42 PM
4/19/2017

http://colemanreport.com/wp-content/uploads/2016.
colemanreport.com
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

Speaker Background/Contact Info

CYPRESS CREEK

- David Thigpen: Director, Project Finance at Cypress Creek Renewables (CCR)
- Joined CCR in late 2015 with main focus on developing new lender relationships for both permeant and construction financing of solar assets.
- Prior to joining CCR worked at USDA RD in North Carolina for thirteen (13) years. This included eight (8) years of working on USDA B&I and REAP loan guarantee programs.
- Worked on ~150 loan guarantee transactions during tenure at USDA. This included ~65 energy loan guarantee projects for over $220 mm.

Contact Information:

Thigpen@ccrenew.com or 252-917-1540.

CONFIDENTIAL

7:51 PM 1/19/2017

http://colemanreport.com/wp-content/uploads/2016/ | colemanreport.com | colemanreport.com

File Edit Go to Favorites Help

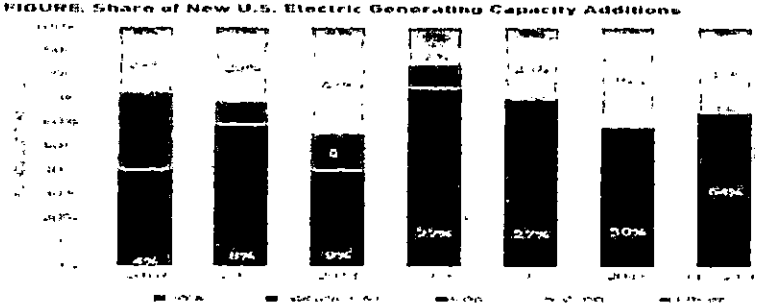
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

Solar Generation Rapidly Expanding

CYPRESS CREEK

- During Q1 of 2016 Solar accounted for 64% of the new electrical generation that came on line. As shown below Wind (39%), Solar (30%) and Natural Gas (29%) make up almost all new power generation brought on-line during 2015.
- Total build and development costs for utility scale projects have been decreasing sharply over the last several years. Solar provides a long term hedge against the potential for the rising fuel cost for natural gas generation facilities.

FIGURE. Share of New U.S. Electric Generating Capacity Additions



CONFIDENTIAL

http://colemanreport.com/wp-content/uploads/2016. colemanreport.com colemanreport.com
File Edit Go to Favorites Help
PS Questions - All Tasks Market Study - All Docum... Home - 2016 Avoided Costs Montana State Public Serv... Amazon Smile Rebuttal - All Documents Home - DEP North Caroli... NCUC Home Page

"Tracy Solar" 14 MW facility in N.C. ~65 acres

Site produces enough power on average to power 1,000 homes annually Zero long term fuel costs, Zero Emissions, and Zero Water usage to produce electricity for the next 40 to 45 years

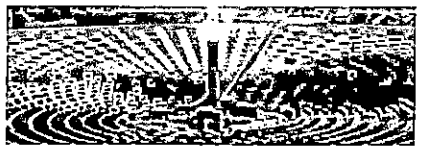
http colemanreport.com wp-content uploads 2016
colemanreport.com
colemanreport.com
colemanreport.com
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

Photovoltaic Technology

CYPRESS CREEK

Solar Power Generation – Solar Thermal vs. Solar Photovoltaics

Solar Thermal: Sunlight in, heat out →



Solar Photovoltaics: Sunlight in, electricity out →

CONFIDENTIAL

http://colemanreport.com/wp-content/uploads/2016/
colemanreport.com
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

Solar PV Power Plants

CYPRESS CREEK

System Design – Electrical Engineering Basics

- **Current** = Rate of moving electrons (flow)
- **Voltage** = Potential energy of circuit (pressure)

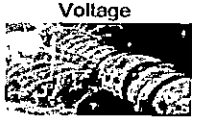
Current x Voltage = Power

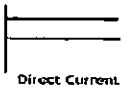
- **DC** = Direct current electricity
- **AC** = Alternating current electricity

PV modules produce low-voltage DC electricity

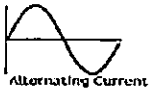
Current

Voltage





Direct Current



Alternating Current

The solar PV power plant takes low-voltage, DC electricity from the PV modules and converts it to high voltage AC electricity to be fed into the grid.

CONFIDENTIAL

Solar PV Power Plants

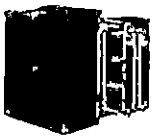
CYPRESS CREEK

System Design - Equipment

PV Module

Combiner Box

Inverter



Medium Voltage Transformer

High Voltage Substation

Racking (Fixed Tilt)

Racking (Single-Axis Tracker)

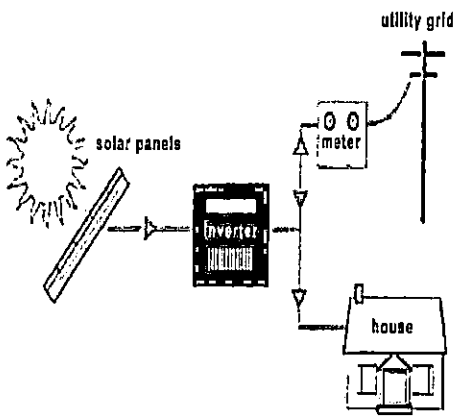
Meteorological Station

Photovoltaic Technology

CYPRESS CREEK

Solar Photovoltaics

- **Minimal Moving Parts**
  - Inverter cooling fan
  - Tracking systems
- **Inexpensive**
  - Costs have plummeted since 2009



CONFIDENTIAL

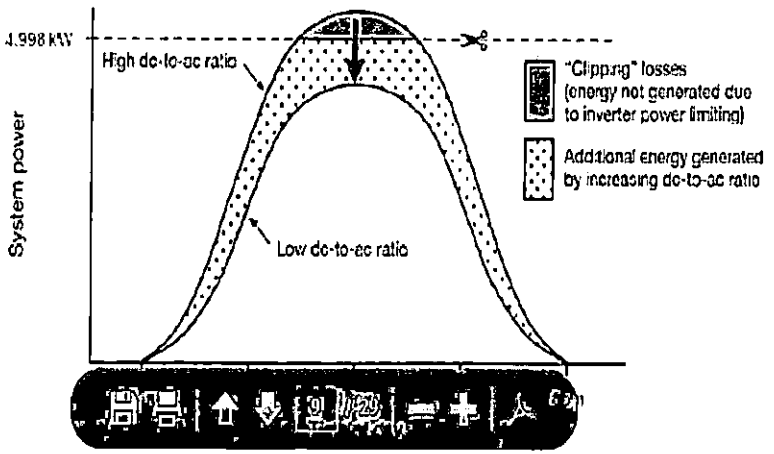
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

Solar PV Power Plants

CYPRESS CREEK

System Design – DC to AC ratio

- DC Nameplate capacity = Total power rating of the PV modules (varies depending on sunlight!)
- AC Nameplate capacity = Total power rating of the inverters (set by Interconnection Agreement!)
- Optimal Design = 1.4 DC/AC ratio (determined by economics!)



CONFIDENTIAL

http://colemanreport.com wp-content/uploads/2016
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

General Information/Example Ground Mounted System

CYPRESS CREEK

Example: A NC utility scale facility 7 MW (dc)

- For the purposes of the presentation we are going to use a seven (7) Mega-Watt (MW) Direct Current (DC) facility as our example. The example is based in the NC solar market, but many of the costs/concepts are transferrable to other markets.
- Size of system in acres: Approximately 30 to 35 acres depending on topography and other land features.
- Build Cost: $10.5 mm
- Soft Cost (Development/Financing/Professional Fees): ~$1.0 mm
- Fair Market Value (FMV) on day 1: $15.4 mm. This number takes into account value of discounted cash flows and federal tax benefits.
- Typical Loan Sizing: ~$5 to $6 mm depending on contracted power rate.

CONFIDENTIAL

10

http://colemanreport.com/wp-content/uploads/2016.
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

Capital Stack for Example Project

CYPRESS CREEK

7 MW (DC) NC Project

Sources	($$)	Uses	($$)
Perm Debt	$5,000,000	EPC Turn key	$10,000,000
TE Investor Equity	$5,000,000	Dev. Fees/Misc.	$650,000
Sponsor Equity	$1,000,000	Reserve Accounts	$200,000
		Closing/Prof. Fees	$150,000
TOTAL	$11,000,000	TOTAL	$11,000,000

- Perm Debt: Typically 50% or less overall cost. Sized at 1.35 DSCR or higher. 25 year amortization on land lease development. Facility useful life is 35 to 45 years.
- TE Equity: Funded at time of permanent financial close. This is a cash investment.
- Sponsor Equity: Rounds out balance of capital stack

CONFIDENTIAL

(2:03) 8:46 PM 4/19/2017

http://colemanreport.com/wp-content/uploads/2016/
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

P&L Metrics

CYPRESS CREEK

Income Calculation and Op Ex

Income:

Total production each year in kilowatt hours multiplied by contracted power purchase price (PPA). Also, some projects are able to sell renewable energy credits (REC's) though these are typically a smaller number in total revenue.

Op Ex

- Operations and Maintenance: Priced on a per KW basis. ~$50K for this project.
- Land Lease: Can vary from state to state. Anywhere from $500 to $1,000/acre
- Insurance: Full package including business interruption would be $14K at this site
- Property Taxes: Varies greatly from state to state. NC has statewide abatement. $11k for this site.
- Misc.: Parasitic Power, Interconnect Fee, PPA or seller's tax, fiber fee. These are typically less than 2% of gross revenue.

CONFIDENTIAL

3:48 PM
4/19/2017

http://colemanreport.com/wp-content/uploads/2016/
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

Example P&L

Project Economics	
Generation	
Annual Production (kWh)	9,981,415
PPA ($/kWh)	$67.025
REC ($/kWh)	$0.500
Project Revenue	$ 673,996
OpEx	
O&M Fee	49,022
Insurance Fee	14,006
Rent/Lease Expense	40,000
Personal Property Taxes	10,492
Interconnect Fee	3,364
PPA Seller Fee/Sales Tax	3,336
Parasitic Power Consumption	941
Inverter Replacement	-
Expenses	$ 121,162
EBITDA	$ 552,834
Gross Margin	*82%*
Principal and Interest Payments	$ 345,926
Annual DSCR on EBITDA	1.60

Loan Discussion/High-Lights

CYPRESS CREEK

- Large amount of cash equity invested in each project, ~$50%.
- Predictable revenue streams that are not impacted by the business cycle or adverse economic conditions in the general economy. Production models use historical weather data for the specific area, are tested thru numerous simulation models, and validated by 3rd Party engineers.
- In regulated markets the borrower is usually selling to rated-off-takers. Typically large corporates with massive balance sheets serving as a de facto credit tenant. These entities generally have a monopoly on electric power markets in certain areas and are regulated based on state and federal laws. Protections for independent power producers are provided under both federal and state regulatory frameworks.
- In deregulated or community solar markets the power can be sold on the open market or via contracts directly with consumers (business and residential). Often this can yield higher prices for the seller and with solar pricing the consumer typically has economic incentive that lowers their cost of electricity or fixes their expense for a longer term.

CONFIDENTIAL

http colemanreport.com wp-content uploads 2016
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

Loan Discussion Continued

CYPRESS CREEK

- USDA Rural Development loan guarantee's are available at the project finance level for each individual system. Guarantee percentage dependent on size.
- USDA RD has "Zero" losses on utility scale solar and "Zero" delinquencies on utility scale solar. Loans date back to 2011 within the USDA's portfolio. The portfolio is in excess of $200 mm and will likely double in the next six (6) months.
- The tax credit investor do intense environmental, technical and financial diligence for each project. Much of the DD fits nicely with the application requirements for lenders and USDA.
- Borrowers typically offer six (6) month debt service reserve accounts for each loan as a standard. Borrowers also enter into cash management agreements with the lender. These agreements allow the lender to house accounts at their bank. All payments for utilities or customers are deposited into operating accounts a the bank. In the event of a monetary default the bank per the cash management agreement the lender can stop any distributions from the operating accounts.
- LTV is 50% or less on almost every project.
- Chance to scale loan volume. Projects are sometimes bundled together in groups of $10 mm, $20 mm and larger. All projects in bundles have similar metrics and allow lender to create volume without significant marketing or cost.

CONFIDENTIAL

8:51 PM
4/19/2017

http://colemanreport.com/wp-content/uploads/2016
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

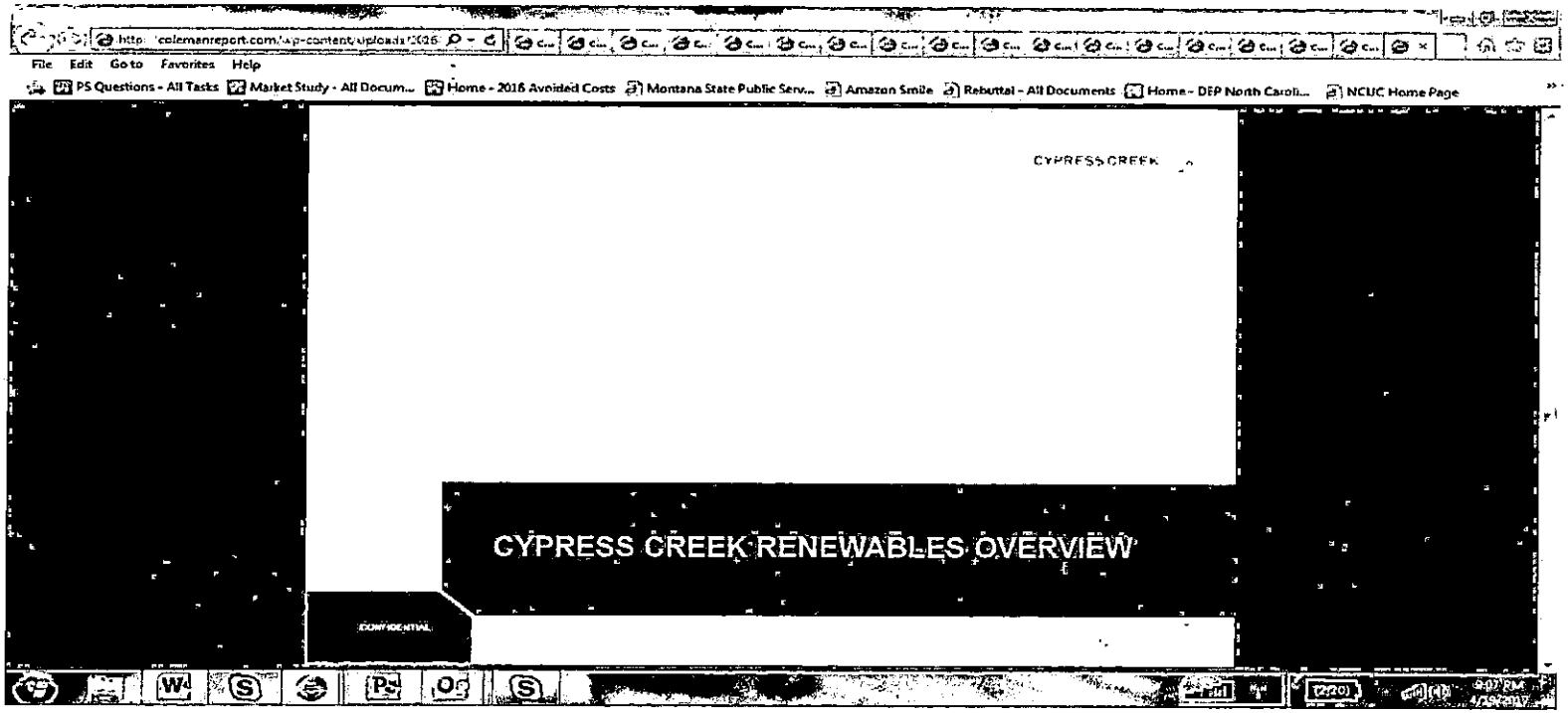
FINANCING OVERVIEW

CYPRESS CREEK

Cypress has raised more than $1.5B of committed project and corporate financing

- Cypress has raised $180mm in committed corporate equity, project sales and development capital financing and more than $1.34B in long-term project debt and tax equity
- Cypress finances each of its solar projects with non-recourse construction debt, permanent debt, and tax equity
- Cypress sponsor equity positions are funded through development fees or cash generated from the sale of projects
- **Corporate financing strategy:** as both a project developer and long-term owner operator of solar projects, Cypress raises capital against the recurring cash flows of its operating assets, as well as the saleable value of its development pipeline. That capital is then reinvested into development activities and long-term sponsor equity positions.

CONFIDENTIAL


File Edit Go to Favorites Help
PS Questions - All Tasks
Market Study - All Docum...
Home - 2016 Avoided Costs
Montana State Public Serv...
Amazon Smile
Rebuttal - All Documents
Home - DEP North Caroli...
NCUC Home Page
CYPRESS CREEK
CYPRESS CREEK RENEWABLES OVERVIEW
CONFIDENTIAL

http://colemanreport.com/wp-content/uploads/2016/
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

CYPRESS CREEK RENEWABLES

CYPRESS CREEK

High growth development and project financing platform, diversified across the U.S.

- Today: More than 600 MWdc completed: 350 MWdc retained & operating, and 347 MWdc sold at NTP
- Projected for 12/31/16: 745 MWdc retained & operating targeted, and 421 MWdc sold at NTP
- 395 MWdc currently under construction
- 750 MW build plan for 2017; 3.6 GWdc additional 2017 and beyond pipeline

ABOUT

- Cypress Creek Renewables is a utility-scale solar developer and long-term owner and operator of solar projects.
- Cypress manages an operating portfolio of 250+ MW and has a pipeline in excess of 3 GW.

DEVELOPMENT STRATEGY

- Business model focuses on utility-scale ground mount projects primarily 2-80 MW in capacity in multiple U.S. states.
- Multi-pronged development strategy: QF standard offer PPAs, bilateral PPAs, retail markets, & community solar.

FINANCING STRATEGY

- Invest in sponsor equity using proceeds from sales of projects, back-leverage, and operating assets cash flows.
- Monetization of tax benefits, optimization of cash flows, and debt facilitate long-term ownership of assets.

EPC STRATEGY

- Team will complete 280 MWdc internally by end of 2016 and expects rapid growth for both internal builds and contracts with third parties next year

GROWTH TRAJECTORY

- Declining build costs, long-term extension of the ITC, and opening of new markets will all drive Cypress' growth.
- Multiple site origination channels, standardized approach to development, and our own customer acquisition platform offer the opportunity to achieve scale at a pace exceeding that of the market.

CONFIDENTIAL

10.00 x 7.50 in

CYPRESS ENTERPRISE VALUE

CYPRESS CREEK

Development pipeline and platform QF, retail market, community solar	3.6+ GW pipeline & 183 person dev. company
Distributable cash from operating projects over 35 year life	350 MW today 745 MW aggregate by 2016 year end
EPC and O&M Profit (contracted)	"Super-prime" EPC model enables low-costs & 800+ MW of O&M contracted by 2016 year-end

CONFIDENTIAL

Show next page (Right Arrow)

http://colemanreport.com/wp-content/uploads/2016.
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

OPERATING PORTFOLIO & DEVELOPMENT PIPELINE

CYPRESS CREEK

PORTFOLIO IN OPERATION

350 MWdc (+347 MWdc sold to third parties)

- 274 MWdc in North Carolina (+284 MWdc sold in NC)
- 21 MWdc in Indiana, 55 in Idaho
- 49 MWdc sold in Oregon
- 14 MWdc sold in South Carolina

PORTFOLIO IN CONSTRUCTION

395 MWdc (2016 COD)

- 259 MWdc in North Carolina
- 63 MWdc in Oregon
- 23 MWdc in Georgia
- 7 MWdc in Texas

ADDITIONAL 2016 COD

74 MWdc

- Includes 74 MWdc of NTP project sales and excludes projects under construction
- 745 MWdc retained & operating expected by end of year 2016

PIPELINE

3,600+ MWdc, with 900+ MWdc in NC, SC, OR, NY, TX, CO, and MT expected for 2017 (including sales)

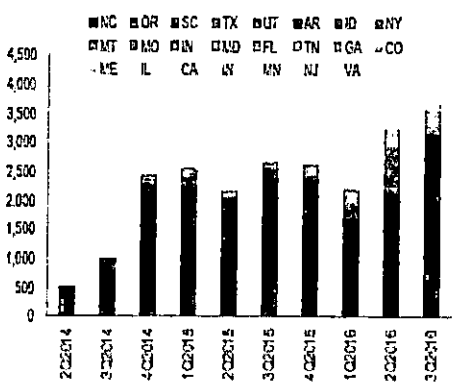
CONFIDENTIAL

10.00 x 7.50 in
20 / 29
1:57 8:55 PM 4/19/2017

http://colemanreport.com/wp-content/uploads/2016
colemanreport.com
File Edit Go to Favorites Help
PS Questions - All Tasks | Market Study - All Docum... | Home - 2016 Avoided Costs | Montana State Public Serv... | Amazon Smile | Rebuttal - All Documents | Home - DEP North Caroli... | NCUC Home Page

DIVERSIFIED PORTFOLIO & PIPELINE OF PROJECTS

CYPRESS CREEK



*Includes Early-Stage, Late-Stage, and Under Construction Projects

"VISIBLE" SOLAR PIPELINE*				
PORTFOLIO	STATE	SIZE (MWDC)	# OF PROJECTS	AVERAGE PROJECT SIZE (MWDC)
LATE-STAGE PIPELINE:				
North Carolina	NC	707.3	58	12.2
South Carolina	SC	331.9	21	14.4
Texas	TX	181.5	23	7.9
New York	NY	113.0	39	2.9
Montana	MT	56.4	9	4.0
Oregon	OR	4.7	2	2.3
TOTAL		1,344.6	152	9.1
EARLY-STAGE PIPELINE:				
North Carolina	NC	1,019.4	27	37.8
Illinois	IL	369.6	30	12.3
Oregon	OR	283.4	22	12.9
Texas	TX	262.3	28	9.4
Indiana	IN	155.7	13	12.0
Georgia	GA	105.0	1	105.0
Colorado	CO	42.0	3	14.0
South Carolina	SC	28.0	1	28.0
Virginia	VA	7.0	1	7.0
Montana	MT	6.7	2	3.4
New Jersey	NJ	3.4	1	3.4
California	CA	2.8	1	2.8
TOTAL		2,285.2	130	17.7
TOTAL VISIBLE PIPELINE		3,629.8	282	13.4

Late-Stage Pipeline = Phase I Completed; Site Plan Complete; Zoning in Process; Interconnection in Study

Early-Stage Pipeline = Executed Site Control; Phase I in Process; Stage I Engineering

CONFIDENTIAL

7:32 AM
7/20/2017

21