



**NORTH CAROLINA
PUBLIC STAFF
UTILITIES COMMISSION**

April 14, 2021

Ms. Kimberley A. Campbell, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

Re: Docket No. EMP-115, Sub 0 – CPCN and Registration Statement for
180MW Located at 922 Oak Grove Church Rd, Gaston, NC 27832
in Northhampton Co.

Dear Ms. Campbell:

In connection with the above-referenced docket, we transmit herewith for filing on behalf of the Public Staff the testimony and exhibits of Jay B. Lucas, Manager, Electric Section – Operations and Planning, Energy Division.

By copy of this letter, we are forwarding a copy of the redacted version to all parties of record by electronic delivery. The confidential version will be provided to those parties that have entered into a confidentiality agreement.

Sincerely,

/s/ Reita D. Coxton
Staff Attorney
reita.coxton@psncuc.nc.gov

Attachments

Executive Director
(919) 733-2435

Accounting
(919) 733-4279

Consumer Services
(919) 733-9277

Economic Research
(919) 733-2267

Energy
(919) 733-2267

Legal
(919) 733-6110

Transportation
(919) 733-7766

Water/Telephone
(919) 733-5610

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. EMP-115, SUB 0

In the Matter of
Application of Cherry Solar, LLC, for a)
Certificate of Public Convenience and)
Necessity to Construct an 180-MW)
Solar Facility in Northampton County,)
North Carolina)

TESTIMONY OF
JAY B. LUCAS
PUBLIC STAFF – NORTH
CAROLINA UTILITIES
COMMISSION

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. EMP-115, SUB 0

Testimony of Jay B. Lucas

On Behalf of the Public Staff

North Carolina Utilities Commission

April 15, 2021

1 **Q. PLEASE STATE YOUR NAME AND ADDRESS FOR THE**
2 **RECORD.**

3 A. My name is Jay B. Lucas. My business address is 430 North
4 Salisbury Street, Raleigh, North Carolina.

5 **Q. BRIEFLY STATE YOUR QUALIFICATIONS AND DUTIES.**

6 A. My qualifications and duties are included in Appendix A.

7 **Q. WHAT IS YOUR POSITION WITH THE PUBLIC STAFF?**

8 A. I am the manager of the Electric Section – Operations and Planning
9 in the Public Staff’s Energy Division.

10 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**
11 **PROCEEDING?**

12 A. The purpose of my testimony is to make recommendations to the
13 Commission on the application, testimony, and related filings

1 regarding a solar photovoltaic facility in Northampton County, North
2 Carolina that I describe more fully below.

3 **Q. PLEASE PROVIDE A BRIEF HISTORY OF THE APPLICATION.**

4 A. On July 15, 2020, Gaston Green Acres Solar, LLC, (Gaston Green
5 Acres) filed an application for a certificate of public convenience and
6 necessity (CPCN) to construct a 300-megawatt alternating current
7 (MW) solar photovoltaic (PV) generating facility in Docket No.
8 EMP-112, Sub 0. The application included the testimony of witness
9 Linda Nwadike. The facility planned by Gaston Green Acres would
10 be located in Dominion Energy North Carolina (DENC) territory,
11 which is part of PJM Interconnection, L.L.C. (PJM).

12 On July 29, 2020, the Public Staff filed a Notice of Completeness for
13 the Gaston Green Acres facility.

14 On September 28, 2020, the Commission issued its *Order*
15 *Scheduling Hearings, Requiring Filing of Testimony, Establishing*
16 *Procedural Guidelines, and Requiring Public Notice* which required
17 Gaston Green Acres to file supplemental testimony to answer
18 questions from the Commission.

19 On October 19, 2020, Gaston Green Acres filed the supplemental
20 testimony and exhibits of witness Nwadike that answered the
21 Commission's questions. Witness Nwadike explained that the
22 Gaston Green Acres facility will be divided into two facilities. Oak

1 Solar, LLC, owns the first facility with PJM interconnection queue
2 number AB1-132 and will have a capacity of 120 MW. The second
3 facility (the Facility) is owned by Cherry Solar, LLC (Cherry Solar or
4 the Applicant), with PJM interconnection queue number AC1-086
5 and will have a capacity of 180 MW.

6 On November 13, 2020, Cherry Solar filed an application for a CPCN
7 in Docket No. EMP-115, Sub 0, for the Facility.

8 On November 24, 2020, the Public Staff filed a Notice of
9 Completeness for Cherry Solar.

10 On December 18, 2020, the Commission issued its *Order*
11 *Scheduling Hearings, Requiring Filing of Testimony, Establishing*
12 *Procedural Guidelines, and Requiring Public Notice* (December 18
13 Order), which, in part, required Cherry Solar to file additional
14 testimony on or before March 11, 2021, and required the Public Staff
15 and other intervenors to file testimony on or before April 15, 2021.

16 On January 25, 2021, the State Clearinghouse filed comments
17 requesting that Cherry Solar file additional information. The
18 Department of Natural and Cultural Resources has recommended
19 that a comprehensive archaeological survey of the project area be
20 conducted by an experienced archaeologist.

1 I. **COMPLIANCE WITH THE DECEMBER 18 ORDER**

2 Q. **PLEASE DESCRIBE THE QUESTIONS THAT THE COMMISSION**
3 **INCLUDED IN ITS DECEMBER 18 ORDER.**

4 A. In its December 18 Order, the Commission noted the increase in
5 non-utility generation on the North Carolina system and recognized
6 its statutory duty to examine the long-range needs for the generation
7 of electricity in North Carolina. It directed Cherry Solar to file
8 additional testimony and exhibits addressing the following questions
9 regarding the Facility:

- 10 1. Provide the amount of network upgrades on
11 DENC's or any affected system's transmission
12 system, if any, required to accommodate the
13 operation of Cherry Solar's proposed facility.
- 14 2. Provide the Levelized Cost of Transmission
15 (LCOT) information for any required
16 transmission system upgrades or modifications.
- 17 3. Provide any interconnection study received for
18 the proposed facility. If Cherry Solar has not
19 received a study, provide a date by when the
20 study is expected to be completed.
- 21 4. If Cherry Solar is aware of any system other
22 than the studied system that is or will be affected
23 by the interconnection, explain the impact and
24 basis.
- 25 5. If Cherry Solar proposes to sell energy and
26 capacity from the facility to a distribution utility
27 regulated by the Commission, provide a
28 discussion of how the facility's output conforms
29 to or varies from the regulated utility's most
30 recent Integrated Resource Plan (IRP).
- 31 6. If Cherry Solar proposes to sell energy and
32 capacity from the facility to a distribution utility
33 not regulated by the Commission but serving

- 1 retail customers in North Carolina (e.g., a co-op
2 or muni), provide a discussion of how the
3 facility's output conforms to or varies from the
4 purchasing distribution utility's long-range
5 resource plan.
- 6 7. If Cherry Solar proposes to sell energy and
7 capacity from the facility to a purchaser who is
8 subject to a statutory or regulatory mandate with
9 respect to its energy sourcing (e.g., a
10 Renewable Energy Portfolio Standard (REPS)
11 requirement or Virginia's new statutory mandate
12 for renewables), explain how, if at all, the facility
13 will assist or enable compliance with that
14 mandate. Provide any contracts that support
15 that compliance.
- 16 8. Provide any Power Purchase Agreements
17 (PPA), Renewable Energy Certificate (REC)
18 sale contracts, or contracts for compensation for
19 environmental attributes for the output of the
20 facility.

21 On March 11, 2021, Cherry Solar filed the additional testimony and
22 exhibits of witness Nwadike. Her testimony provided answers to the
23 questions in the December 18 Order and provided the System
24 Impact Study, the Facilities Study, and the Feasibility Study for the
25 Facility.

26 **II. NETWORK UPGRADES AND AFFECTED SYSTEM UPGRADES**

27 **Q. WILL THE FACILITY REQUIRE ANY NETWORK UPGRADES?**

28 A. Yes. On pages 1 and 2 of her supplemental testimony, witness
29 Nwadike describes network upgrades for the Facility in PJM totaling
30 \$2,676,883. PJM will allocate the cost responsibility for these
31 upgrades to Cherry Solar.

1 Q. WILL THE FACILITY REQUIRE ANY AFFECTED SYSTEM
2 UPGRADES?

3 A. Yes. Interconnection of the generators in PJM cluster AC1 requires
4 Duke Energy Progress, LLC (DEP), to upgrade its portion of the
5 Rocky Mount-Battleboro 115 kilovolt transmission line at an
6 estimated cost of \$23,204,593. Exhibit 5 in witness Nwadike's
7 supplemental testimony provides DEP's affected system study
8 report.

9 Q. WHAT IS THE LCOT FOR THE NETWORK UPGRADES AND THE
10 AFFECTED SYSTEM UPGRADES?

11 A. In Exhibit 1 of her supplemental testimony, witness Nwadike
12 provided LCOT calculations in which she determined a combined
13 LCOT of [BEGIN CONFIDENTIAL] [REDACTED] [END
14 CONFIDENTIAL] for network upgrades in PJM and affected system
15 upgrades in DEP with an anticipated total cost of approximately
16 [BEGIN CONFIDENTIAL] [REDACTED]
17 [REDACTED] T
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]. [END CONFIDENTIAL]

21 Using the parameters in witness Nwadike supplemental Exhibit 1, I
22 calculated a DEP affected system LCOT of [BEGIN

1 **CONFIDENTIAL** [REDACTED] **[END CONFIDENTIAL]** as shown in
2 **Confidential Lucas Exhibit 1** for the combined five projects in the
3 original AC1 queue shown in Nwadike Supplemental Exhibit 5.

4 **Q. DOES THE PUBLIC STAFF HAVE ANY CONCERNS REGARDING**
5 **AFFECTED SYSTEM COSTS AND OTHER MERCHANT POWER**
6 **FACILITIES IN DENC TERRITORY?**

7 A. Yes. The LCOTs presented above are one way to evaluate the
8 Network Upgrade and affected system costs of a project or projects
9 in relation to the amount of energy they will produce. However, the
10 Public Staff has the following concerns:

11 1. Unneeded upgrades do not serve the using and consuming
12 public no matter how much energy they produce. This situation is of
13 particular concern if the cost of the upgrades could be borne by
14 customers who will not receive the energy produced.

15 2. DEP could build affected system upgrades that go unused for
16 extended periods of time if some interconnection projects withdraw
17 from the queue late in the review process; and

18 3. In order to accommodate future clusters, upgrades to
19 accommodate an earlier cluster may need to be replaced with even
20 greater transmission assets long before the end of their normal
21 service life of 40 to 60 years, thereby resulting in stranded costs that
22 would be borne by DEP's customers. For example, DEP finished

1 upgrading the Rocky Mount-Battleboro line in December 2017 to
2 accommodate PJM cluster AA2. Equipment for this upgrade could
3 be removed and replaced with additional upgrades to accommodate
4 PJM cluster AC1 or later clusters.

5 **Q. PLEASE DESCRIBE DEP'S OTHER AFFECTED SYSTEM**
6 **STUDIES.**

7 A. DEP is currently developing 30 other affected system studies for
8 generators in PJM with a combined capacity of 7,351 MW. As of the
9 filing of this testimony, DEP has not completed any of these studies.
10 The schedule for completing these studies is attached as **Lucas**
11 **Exhibit 2.**

12 **Q. PLEASE DESCRIBE DEP'S PREVIOUS PROCESS FOR**
13 **AFFECTED SYSTEM REVIEW AND COST RECOVERY.**

14 A. In the past, if one or more generator(s) caused affected system
15 costs, the generator(s) would be responsible for these network
16 upgrade costs, consistent with the Joint Open Access Transmission
17 Tariff of Duke Energy Carolinas, LLC (DEC), Duke Energy Florida,
18 LLC (DEF), and DEP (Duke OATT). However, pursuant to the
19 previous Duke OATT, upon commercial operation, the generator(s)
20 that paid for the network upgrades would be entitled to receive
21 repayment from DEP of the entire balance of the network upgrade
22 cost plus interest, even if the upgrade was not needed to serve

1 customer load. Following repayment, DEP would seek to recover
2 those costs from its wholesale and retail customers.

3 DEP and DEC have changed their affected system review and cost
4 recovery process as I discuss below.

5 **III. DOCKET NO. E-100, SUB 170**

6 **Q. PLEASE PROVIDE A BRIEF SUMMARY OF DOCKET NO. E-100,**
7 **SUB 170.**

8 A. On September 16, 2020, the Commission issued its *Order Requiring*
9 *Comments and Reply Comments Regarding Affected System Study*
10 *Process and Cost Allocation* in the Sub 170 Proceeding. On October
11 7, 2020, DENC filed comments and DEC and DEP (collectively,
12 Duke) filed joint comments in the Sub 170 Proceeding. Duke
13 provided as Attachment A to its comments the new Affected Systems
14 Process that became effective on October 1, 2020. On October 28,
15 2020, the Public Staff and Geenex Solar, LLC (Geenex), filed reply
16 comments. On that same date, the North Carolina Clean Energy
17 Business Alliance and the North Carolina Sustainable Energy
18 Association (collectively, NCCEBA-NCSEA) filed joint reply
19 comments. The information gathered in the Sub 170 Proceeding
20 could assist the Commission in determining whether proposed
21 merchant generating facilities triggering significant network upgrade

1 costs or affected system costs are in the public convenience and
2 necessity.

3 **Q. PLEASE SUMMARIZE THE COMMENTS OF DEP AND DEC IN**
4 **THE SUB 170 PROCEEDING.**

5 A. Duke stated on page 3 of its October 7, 2020, response that
6 merchant generators would be responsible for any affected systems
7 upgrade costs:

8 Historically, interconnection customers that were
9 assigned affected system network upgrades in
10 DEP/DEC/DEF were reimbursed after the applicable
11 projects achieved commercial operation pursuant to
12 the terms of the affected system operating agreement.
13 However, DEP and DEC (along with Duke Energy
14 Florida, LLC) implemented a change to its standard
15 affected system operating agreement effective October
16 1, 2020 that eliminated the reimbursement.

17 **Q. PLEASE SUMMARIZE THE COMMENTS OF DENC.**

18 A. DENC also confirmed that the generator would be responsible for
19 any affected systems upgrade costs, consistent with how it has
20 treated those costs historically.

21 **Q. PLEASE SUMMARIZE THE PUBLIC STAFF'S REPLY**
22 **COMMENTS IN THE SUB 170 PROCEEDING.**

23 A. As stated in the Public Staff's reply comments, the recent change to
24 Duke's affected systems studies process addresses a key concern
25 raised by the Public Staff in recent merchant generator CPCN
26 proceedings that affected system upgrade costs could be passed on

1 to a utility's customers who were not causing or contributing to the
2 need for the upgrade. Thus, the Public Staff is supportive of Duke's
3 revisions. This change also brings Duke's costs responsibility and
4 cost allocation procedures for affected systems in alignment with
5 those of DENC.

6 Also in its Sub 170 comments, the Public Staff recommended that,
7 going forward, the Commission should condition any CPCN approval
8 for a merchant facility that includes potential affected system costs
9 to require the Applicant to file a copy of an executed Affected
10 Systems Operating Agreement (ASOA) with the Commission.¹ The
11 Public Staff also recommended that the CPCN applicant file a
12 verified statement acknowledging that under Duke's Affected
13 Systems Business Procedure and PJM's OATT, the Interconnection
14 Customer is responsible for all affected system costs without
15 reimbursement.

16 **Q. DOES THE PUBLIC STAFF HAVE ANY COMMENTS ON THE**
17 **OTHER PARTIES' REPLY COMMENTS FILED IN THE SUB 170**
18 **PROCEEDING AS THEY APPLY TO THIS APPLICATION?**

19 A. Yes. In its joint reply comments, NCCEBA-NCSEA stated that Duke's
20 policy change to deny reimbursement for FERC-jurisdictional
21 network upgrade costs is a "sweeping policy change" and "it is far

¹ In its *Order Requesting Additional Information* issued on March 29, 2021, in Docket No. E-100, Sub 170, the Commission required Duke to file future ASOAs.

1 from clear that Duke may do so without FERC approval.” (NCCEBA-
2 NCSEA Reply Comments, p. 5.)

3 Geenex similarly stated in its reply comments that “Duke’s
4 elimination of cost reimbursement for Affected System Upgrades is
5 a substantial change in policy.” (Geenex Reply Comments, p 19.)

6 Geenex further stated that, because the policy is new, it has not had
7 the opportunity to assess whether it must be approved by FERC or
8 whether it is consistent with FERC requirements. (Id. at 3, n.1.)

9 The Public Staff agrees that, if Duke’s new policy were challenged at
10 FERC and the challenging parties were successful in shifting cost
11 responsibility ultimately back to DEP’s retail and wholesale
12 ratepayers, it would be appropriate for the affected system costs to
13 be considered by the Commission as part of a determination of
14 whether a facility is in the public convenience and necessity. Given
15 the recent changes to Duke Energy’s Affected System process, the
16 continued interest in solar development in North Carolina, and the
17 current cost estimates or tools used to evaluate the reasonableness
18 of the costs be passed onto ratepayers such as the LCOT, if any path
19 remains open that would place undue costs on to ratepayers, the
20 Public Staff believes too much uncertainty exists regarding the
21 magnitude and responsibility of these costs. Therefore, I recommend
22 some conditions to the issuance of a CPCN below in order to address
23 this uncertainty.

1 **IV. COMMENTS BY THE STATE CLEARINGHOUSE**

2 **Q. HAS THE STATE CLEARINGHOUSE COMPLETED ITS**
3 **APPLICATION REVIEW?**

4 A. No. In response to the December 18 Order, the State Clearinghouse
5 filed comments on January 25, 2021, requesting that the Applicant
6 submit additional information. The Department of Natural and
7 Cultural Resources has recommended that a comprehensive
8 archaeological survey of the project area be conducted by an
9 experienced archaeologist.

10 **V. RECOMMENDATIONS**

11 **Q. WHAT ARE THE PUBLIC STAFF'S RECOMMENDATIONS ON**
12 **CHERRY SOLAR'S APPLICATION FOR A CPCN?**

13 A. The Public Staff has reviewed the application, the testimony of
14 witness Nwadike, and the other evidence in this docket. The Public
15 Staff has also reviewed the orders, comments and reply comments
16 in the Sub 170 Proceeding. Based on this information, and subject
17 to the Public Staff's understanding that DEP and DENC's current
18 interconnection procedures applicable to merchant generation do not
19 provide for reimbursement for interconnection facilities, network
20 upgrade costs, affected system costs, or other costs required to allow
21 energization and operation of the Facility, the Public Staff

1 recommends that the Commission issue the CPCN, subject to the
2 following conditions:

3 i. The Applicant shall file a verified statement acknowledging
4 that, under Duke's Affected Systems Business Procedure
5 and PJM's OATT, the Interconnection Customer is
6 responsible for all affected system costs assigned to the
7 Applicant's facility, if any, without reimbursement.

8 ii. The Applicant shall notify the Commission of any
9 significant change in the cost estimates for the
10 interconnection facilities, network upgrades, or affected
11 system costs within 30 days of becoming aware of such
12 change.

13 iii. If, at any time, the Applicant seeks reimbursement for any
14 interconnection facilities, network upgrade costs, affected
15 system costs, or other costs required to allow energization
16 and operation of the Facility, including as a result of any
17 change to the DEP/DEC/DEF OATT or any other
18 governing document(s), the Commission shall weigh the
19 costs to be borne by DEP's retail and wholesale customers
20 with the generation needs in the state or region consistent
21 with its ruling in its *Order Denying Application for a*
22 *Certificate of Public Convenience and Necessity for a*

1 *Merchant Generating Facility* requested by Friesian
2 Holdings, LLC, in Docket No. EMP-105, Sub 0.

3 iv. The Applicant shall resolve all concerns filed by the State
4 Clearinghouse.

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

6 A. Yes, it does.

QUALIFICATIONS AND EXPERIENCE

JAY B. LUCAS

1
2
3 I graduated from the Virginia Military Institute in 1985, earning a
4 Bachelor of Science Degree in Civil Engineering. Afterwards, I served for
5 four years as an engineer in the Air Force performing many civil and
6 environmental engineering tasks. I left the Air Force in 1989 and attended
7 the Virginia Polytechnic Institute and State University (Virginia Tech),
8 earning a Master of Science degree in Environmental Engineering. After
9 completing my graduate degree, I worked for an engineering consulting firm
10 and worked for the North Carolina Department of Environmental Quality in
11 its water quality programs. Since joining the Public Staff in January 2000, I
12 have worked on utility cost recovery, renewable energy program
13 management, customer complaints, and other aspects of utility regulation.
14 I am a licensed Professional Engineer in North Carolina.

Lucas Exhibit 1

CONFIDENTIAL

Lucas Exhibit 2

DEP's schedule for completing affected system studies as of March 5, 2021:

Neighboring Utility	Queue #	MW Capacity	Name and Voltage of Transmission Line	Estimated Study Date
PJM	AD1-023	40	Cashie-Trowbridge 230 kV	3/15/2021
PJM	AD1-057	34	Hornertown-Hathaway 230 kV	3/15/2021
PJM	AD1-076	109	Trowbridge 230 kV	3/15/2021
PJM	AD2-033	130	Chase City-Lunenburg 115 kV	3/15/2021
PJM	AD2-046	80	Boydton DP-Kerr Dam 115 kV	3/15/2021
PJM	AD2-051	74.9	Earleys – Northampton 230kV	3/15/2021
PJM	AD2-063	149.5	Central-Chase City 115kV	3/15/2021
PJM	AE1-026	80	Cashie 230 kV	
PJM	AE1-056	60	Red House-South Creek 115 kV	
PJM	AE1-072	150	Shawboro-Sligo 230 kV	
PJM	AE1-148	90	Kerr Dam-Ridge Rd 115 kV	
PJM	AE2-031	290	Carson-Rawlings 500 kV	
PJM	AE2-033	149	Clubhouse-Sappony 230 kV	
PJM	AE2-034	140	Mackeys 230 kV	
PJM	AE2-044	120	Anaconda-Dunbar 115 kV	
PJM	AE2-051	150	Carson-Septa 500 kV	
PJM	AE2-053	20	Kerr Dam-Ridge Road 115 kV	
PJM	AE2-094	300	Carson-Rogers Road 500 kV	
PJM	AE2-147	150	Swamp 230 kV	
PJM	AE2-258	14.1	Chase City 115 kV substation	
PJM	AE2-259	100	Curdsville-Willis Mtn 115 kV	
PJM	AE2-260	200	Clubhouse 230 kV	

PJM	AE2-291	102 MW Energy / 61.2 MW Capacity	POI coordinates: 37.049923°, -79.118396°	
PJM	AE2-292	127 MW Energy / 76.2 MW Capacity	POI coordinates: 37.049923°, -79.118396°	
PJM	AE2-313	314	Carson-Rawlings 500 Kv	
PJM	AF1-059	99.2	BRODNAX-SOUTH HILL 115 KV	
PJM	AF1- 123/124/125	2640	Fentress Substation 500 kV	
PJM	AF1-236	1210	MACKEYS 230 KV	
PJM	AF1-246	100	Clover Rawlings 500 kV	
PJM	AF1-293	127.86	Kidds Store - Fork Union 115 kV TL	
Santee Cooper	Q83	75	POI coordinates: 33.717511, -79.416569, Hemmingway	
Santee Cooper	Q99	100	Santee Cooper Camden – South Bethune 230 kV Line	