



**NORTH CAROLINA  
PUBLIC STAFF  
UTILITIES COMMISSION**

February 25, 2022

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

Re: Docket No. EMP-117, Sub 0 – Shawboro East Ridge Solar, LLC  
CPCN to Construct a 150-MW Solar Facility in Currituck County,  
North Carolina.

Dear Ms. Dunston:

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

By copy of this letter, I am forwarding a copy to all parties of record by electronic delivery.

Sincerely,

Electronically submitted  
s/ Nadia L. Luhr  
Staff Attorney  
[nadia.luhr@psncuc.nc.gov](mailto:nadia.luhr@psncuc.nc.gov)

Attachment

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BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. EMP-117, SUB 0

In the Matter of	)	
Application of Shawboro East Ridge	)	SUPPLEMENTAL
Solar, LLC, for a Certificate of Public	)	TESTIMONY OF
Convenience and Necessity to	)	JAY B. LUCAS
Construct a 150-MW Solar Facility in	)	PUBLIC STAFF – NORTH
Currituck County, North Carolina	)	CAROLINA UTILITIES
	)	COMMISSION

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. EMP-117, SUB 0

**Supplemental Testimony of Jay B. Lucas**

**On Behalf of the Public Staff**

**North Carolina Utilities Commission**

**February 25, 2022**

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.    PLEASE PROVIDE A BRIEF HISTORY OF THIS PROCEEDING.**

11   A.    On June 22, 2021, Shawboro East Ridge Solar, LLC (Shawboro)  
12        filed an application for a certificate of public convenience and  
13        necessity (CPCN) to construct a solar photovoltaic generating facility

1 near Shawboro in Currituck County, North Carolina (the Facility). The  
2 application included the direct testimony and exhibits of Shawboro  
3 witness Linda Nwadike.

4 As proposed, the Facility will have a capacity of 150-megawatt AC  
5 (MW<sub>AC</sub>) and will interconnect to the Shawboro-Sligo 230 kilovolt (kV)  
6 transmission line owned by Virginia Electric and Power Company,  
7 d/b/a Dominion Energy North Carolina (DENC). Because DENC is  
8 part of PJM Interconnection (PJM), Shawboro is required to enter  
9 into an interconnection service agreement with both entities. The  
10 Facility was assigned PJM queue number AE1-072.

11 On September 9, 2021, Duke Energy Progress, LLC (DEP)  
12 completed an affected system study to determine the necessary  
13 upgrades in order to accommodate the entire PJM cluster AE1. The  
14 upgrades identified by DEP would be necessary to maintain system  
15 reliability.

16 I filed direct testimony and exhibits on this matter on October 19,  
17 2021, and witness Nwadike filed reply testimony and one exhibit on  
18 November 4, 2021. A hearing was held by the Commission on  
19 November 23, 2021.

20 In January 2022, PJM issued Revision 1 of the System Impact Study  
21 (SIS) Report for the Facility. PJM had issued the first SIS in August

1 2019, but is in the process of retooling its analysis of PJM cluster  
2 AE1. Revision 1 of the SIS for the Facility is only part of this retooling  
3 process, as I explain below.

4 On February 3, 2022, Shawboro filed a Motion for Leave to Submit  
5 Additional Supplemental Testimony, which included the testimony  
6 and exhibits of witness Nwadike. On February 11, 2022, the  
7 Commission issued its Order Granting Motion for Leave to Submit  
8 Supplemental Testimony and Providing Public Staff an Opportunity  
9 to File Testimony in Response.

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

12 A. My supplemental testimony responds to the additional supplemental  
13 testimony of witness Nwadike filed on February 3, 2022, and includes  
14 revised recommendations of the Public Staff.

15 **Q. PLEASE SUMMARIZE THE ADDITIONAL SUPPLEMENTAL**  
16 **TESTIMONY OF WITNESS NWADIKE.**

17 A. In her additional supplemental testimony, witness Nwadike stated  
18 that the estimated cost of the PJM network upgrades to  
19 accommodate the Facility has “decreased tremendously” with a  
20 corresponding decrease in the levelized cost of transmission (LCOT)  
21 in dollars per megawatt-hour. Witness Nwadike stated that  
22 Shawboro does not believe this docket should remain open pending

1 a revised affected system study by DEP, because the timeline for  
2 DEP's study is unknown and such a study might not be necessary in  
3 light of PJM's revision to the SIS. She recommended that the  
4 Commission review and rule on Shawboro's application for a CPCN.  
5 Exhibit A to her testimony is PJM's revised SIS. Exhibit B to her  
6 testimony is her revised LCOT calculation.

7 **Q. WHAT ACTION HAS THE PUBLIC STAFF TAKEN AFTER**  
8 **REVIEWING WITNESS NWADIKE'S ADDITIONAL**  
9 **SUPPLEMENTAL TESTIMONY?**

10 A. After reviewing witness Nwadike's additional supplemental  
11 testimony, the Public Staff sent DEP a data request regarding PJM's  
12 revision to the SIS, DEP's affected system study, and the AE1  
13 cluster. DEP's responses to this data request are attached as **Lucas**  
14 **Exhibit 1.**

15 **Q. WHAT IS THE PUBLIC STAFF'S RESPONSE TO THE**  
16 **ADDITIONAL SUPPLEMENTAL TESTIMONY OF WITNESS**  
17 **NWADIKE?**

18 A. The Public Staff does not dispute the reduction of the PJM allocation  
19 of network upgrade costs from \$30,812,444 to \$2,328,614 for  
20 improvements to the DENC portion of the Everetts-Greenville line.  
21 This amount would be paid by Shawboro and is listed on page 13 of  
22 PJM's revised SIS (Exhibit A to the Additional Supplemental

1       Testimony of Witness Nwadike). However, the Public Staff is not  
2       concerned about network upgrades on DENC's portion of the  
3       Everetts-Greenville line, the costs of which Shawboro will pay.  
4       Rather, the Public Staff is concerned about the affected system  
5       upgrades on DEP's portion of this line that could ultimately be paid  
6       for by DEP's customers. As of the date of filing of this testimony, PJM  
7       has estimated DEP's upgrade costs to be \$8.5 million (page 24 of  
8       the revised SIS), and DEP has estimated its upgrade costs to be \$10  
9       million (Lucas Exhibit 1 at 3). As explained in my direct testimony,  
10      DEP's customers would be paying for those upgrades without  
11      receiving the energy from the Facility.

12      As also discussed in my direct testimony, DEP may need to replace  
13      network upgrades built to accommodate one PJM cluster with  
14      transmission assets of an even higher capacity in order to  
15      accommodate a later PJM cluster. The generating capacity entering  
16      PJM's North Carolina queue continues to grow,<sup>1</sup> and the Public Staff  
17      is concerned that the large amount of future capacity after PJM  
18      cluster AE1 could force DEP to prematurely replace upgrades to the  
19      Everetts-Greenville line that are necessary to accommodate the  
20      Facility.

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<sup>1</sup> See Lucas Figure 1, page 8 of Supplemental Testimony of Jay B. Lucas, Docket No. EMP-115, Sub 0 (filed December 17, 2021).

1 My concerns are discussed in more detail on pages 8 through 15 of  
2 my direct testimony filed in this docket on October 19, 2021.

3 **Q. HAS PJM FINISHED ITS RETOOLING OF PJM CLUSTER AE1?**

4 A. No. As shown in Lucas Exhibit 1, page 1, PJM is still retooling  
5 clusters AE1 and AE2, and expects to be finished in April 2022,  
6 which is a delay from the expected timeframe of November or  
7 December 2021 referenced in my direct testimony. After the retooling  
8 is complete, DEP must develop an affected system study for the  
9 entire AE1 cluster, not the just for the Facility. The affected system  
10 study will take an additional one to two months to complete.

11 **Q. WHAT IS THE PUBLIC STAFF'S RECOMMENDATION ON**  
12 **SHAWBORO'S APPLICATION FOR A CPCN?**

13 A. The Public Staff recommends that the Commission hold the record  
14 in this docket open until after the following:

- 15 i. PJM releases its retooling of PJM cluster AE1, which is  
16 currently scheduled for April 2022;
- 17 ii. DEP completes its study of the retooling and develops a  
18 revised affected system study if necessary; and
- 19 iii. PJM's retooling of PJM cluster AE1 and DEP's revised  
20 affected system study, if any, based on that retooling, are filed  
21 with the Commission.



1 The Public Staff respectfully requests that, upon the completion of  
2 the three items above, the Commission issue an order requiring  
3 Shawboro to file supplemental testimony addressing PJM's retooling  
4 and DEP's revised affected system study, if any, and allowing the  
5 Public Staff to file supplemental testimony in reply.

6 In the alternative, the Public Staff recommends that the Commission  
7 deny Shawboro's application due to the unknown cost to DEP's  
8 customers for affected system upgrades and the risks discussed on  
9 pages 9-10 of my direct testimony filed on October 19, 2021.

10 If the Commission decides to approve the application at this time, the  
11 Public Staff recommends that the CPCN be subject to the following  
12 conditions:

- 13 i. That Shawboro shall notify the Commission of any significant  
14 change to the cost estimates for the construction of the  
15 Facility, interconnection facilities, network upgrades, or  
16 affected system costs within 30 days of becoming aware of  
17 such revisions.
- 18 ii. That Shawboro shall file a copy of any executed Affected  
19 System Operating Agreement with the Commission at the  
20 same time such filing is made at FERC (at least 61 days prior  
21 to commencing construction on the upgrades).

1           iii.    If at any time Shawboro seeks to be reimbursed for any  
2                   interconnection facilities, network upgrade costs, affected  
3                   system costs, or other costs required to allow energization  
4                   and operation of the Facility, Shawboro shall notify the  
5                   Commission.

6           iv.    That the three conditions above shall cease after commercial  
7                   operation if no reimbursement of costs to Shawboro have  
8                   been paid or agreed to via a legal binding agreement or  
9                   contract. If reimbursement does occur, the conditions shall  
10                  cease upon the completion of full reimbursement of costs to  
11                  Shawboro. Shawboro shall file in this docket the total amount  
12                  reimbursed by DEP and the end date of the agreement or  
13                  contract.

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

15   A.       Yes, it does.

## APPENDIX A

**QUALIFICATIONS AND EXPERIENCE**

JAY B. LUCAS

I graduated from the Virginia Military Institute in 1985, earning a Bachelor of Science Degree in Civil Engineering. Afterwards, I served for four years as an engineer in the U. S. Air Force performing many civil and environmental engineering tasks. I left the Air Force in 1989 and attended the Virginia Polytechnic Institute and State University (Virginia Tech), earning a Master of Science degree in Environmental Engineering. After completing my graduate degree, I worked for an engineering consulting firm and worked for the North Carolina Department of Environmental Quality in its water quality programs. Since joining the Public Staff in January 2000, I have worked on utility cost recovery, renewable energy program management, customer complaints, and other aspects of utility regulation. Since September 2020, I have been the Manager of the Electric Section – Operations and Planning in the Public Staff’s Energy Division. I am a licensed Professional Engineer in North Carolina.

NC Public Staff  
Docket No. EMP-117, Sub 0  
Shawboro East Ridge Solar, LLC  
NC Public Staff Data Request No. 2  
Item No. 2-1  
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OFFICIAL COPY

Feb 25 2022

**DUKE ENERGY PROGRESS, LLC**

**Request:**

Please provide an update on the status of the PJM AE1 affected system study resulting from PJM's retooling of interconnection studies, including an estimate of when the study will be complete.

**Response:**

The quarterly DEP – PJM coordination meeting was held on February 7, 2022. PJM informed DEP they are currently working on AE1/AE2 retools with estimated completion in April 2022. PJM will send all retool files to DEP for DEP to restudy and reissue the affected system studies for AE1/AE2. DEP estimates 1 – 2 months for completion once the retool files are received from PJM.

Response Providers: Kristina Straple, Transmission Contracts Manager, Tariff Administration Business Practices; Bill Quaintance, Principal Engineer, DEP Transmission Planning

NC Public Staff  
Docket No. EMP-117, Sub 0  
Shawboro East Ridge Solar, LLC  
NC Public Staff Data Request No. 2  
Item No. 2-2  
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**DUKE ENERGY PROGRESS, LLC**

**Request:**

Please list what upgrades the AE1 cluster is contingent upon from previous cluster studies and describe the upgrades that have been completed.

- Provide a list of upgrades on a per project basis along with a description of the upgrades, time to complete, as well upgrade costs.
- To the extent possible, for each upgrade, please provide the incremental of MVA/MW that will be able to interconnect.

**Table 2: Upgrades and Contributing Requests**

Overloaded Transmission Facility	Contributing Requests	Upgrade Description	Upgrade Cost	Time to Complete
Greenville – Everetts (DVP) 230kV line	AE1-072	Reconductor 1.87 miles of one side of double circuit 230kV line plus terminal equipment (assigned to AD1-023)	\$10 M*	24 months*
Henderson-Kerr Dam (DVP) 115kV line	AE1-056 AE1-148	Reconductor 20.18 miles plus terminal equipment (assigned to AD2-033)	\$60 M*	48 months*
Person – AC2-100 (Sedge Hill DVP) 230kV line	AE1-056 AE1-148	Reconductor 4.85 miles plus terminal equipment	\$21 M*	36 months*

\* Transmission Planning level estimates

**Response:**

The table above can be found in the [current affected system study for PJM AE1 projects](#) posted on DEP's OASIS. This is subject to change after the PJM retool analysis and the DEP affected system restudy. No upgrades have been completed at this time.

Response Providers: Kristina Straple, Transmission Contracts Manager, Tariff Administration Business Practices; Bill Quaintance, Principal Engineer, DEP Transmission Planning