



**NORTH CAROLINA  
PUBLIC STAFF  
UTILITIES COMMISSION**

July 29, 2022

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

Re: Docket No. EMP-111, Sub 0 – Application for Certificate of Public Convenience and Necessity to Construct a 94-MW Solar Facility in Halifax 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 second 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,

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

Attachments

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BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. EMP-111, SUB 0

In the Matter of	)	
Application of Sweetleaf Solar LLC	)	SECOND SUPPLEMENTAL
for a Certificate of Public Convenience	)	TESTIMONY OF
and Necessity to Construct a 94-MW	)	JAY B. LUCAS
Solar Facility in Halifax County, North	)	PUBLIC STAFF –
Carolina	)	NORTH CAROLINA
	)	UTILITIES COMMISSION

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION  
DOCKET NO. EMP-111, SUB 0

SECOND SUPPLEMENTAL TESTIMONY OF JAY B. LUCAS  
ON BEHALF OF THE PUBLIC STAFF  
NORTH CAROLINA UTILITIES COMMISSION

July 29, 2022

1    **Q.    PLEASE STATE YOUR NAME AND ADDRESS.**

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

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

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

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

7    A.    I am the Manager of the Electric Section – Operations and Planning  
8           in the Public Staff's Energy Division.

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

11   A.    The purpose of my second supplemental testimony is to make  
12       recommendations to the North Carolina Utilities Commission  
13       (Commission) on the application filed by Sweetleaf Solar LLC

1 (Sweetleaf or Applicant) for a certificate of public convenience and  
2 necessity (CPCN) to construct a 94-megawatt AC (MW<sub>AC</sub>) solar  
3 photovoltaic generating facility (the Facility) in Halifax County, North  
4 Carolina.

5 More specifically, my second supplemental testimony responds to  
6 the testimony filed on June 24, 2022, by the Applicant's witnesses  
7 Donna Robichaud and Amanda Mack.

8 **Background**

9 **Q. PLEASE PROVIDE A BRIEF HISTORY OF THE APPLICATION**  
10 **FOR THE FACILITY.**

11 A. On June 2, 2020, Sweetleaf filed its initial application and the direct  
12 testimony of witnesses Robichaud and Kara Price. The Facility will  
13 interconnect to the Hornertown-Hathaway 230 kilovolt (kV)  
14 transmission line owned by Virginia Electric and Power Company,  
15 d/b/a Dominion Energy North Carolina (DENC). Because DENC is  
16 part of PJM Interconnection, LLC (PJM), the Applicant is required to  
17 enter into an interconnection service agreement with both DENC and  
18 PJM. The Facility has PJM queue number AD1-056/AD1-057. AD1-  
19 056 represents 60 MW of capacity, and AD1-057 represents 34 MW  
20 of capacity.

1 On June 15, 2020, the Public Staff filed a Notice of Completeness,  
2 requesting that the Commission consider the application to be  
3 complete and issue a procedural order.

4 On July 8, 2020, the Commission issued its Order Requiring Filing of  
5 Testimony, Establishing Procedural Guidelines, and Requiring  
6 Public Notice. The Order required the Applicant to respond to  
7 questions regarding system upgrades and related costs,  
8 interconnection studies, and the Applicant's plans for selling energy  
9 and capacity from the Facility.

10 On August 11, 2020, the Applicant filed the supplemental testimony  
11 of witness Robichaud that responded to the Commission's  
12 questions.

13 On September 18, 2020, I filed testimony recommending that the  
14 Commission hold the application in abeyance until the Commission  
15 and the Public Staff could review the affected system study costs for  
16 PJM cluster AD1, as well as the additional information provided in  
17 Docket No. E-100, Sub 170, regarding affected systems.

18 On October 15, 2020, the Applicant filed a letter informing the  
19 Commission of the sale of the Facility to EDF Renewables  
20 Development, Inc. (EDF Renewables), and indicating that the  
21 Applicant would provide supplemental testimony regarding the sale.

1 On November 12, 2020, the Applicant filed a supplemental  
2 application and the direct testimony of witness Emily Dalager, Project  
3 Development Manager with EDF Renewables.

4 On November 13, 2020, I filed supplemental testimony stating that  
5 the Public Staff had reviewed the supplemental application and  
6 testimony of witness Dalager and did not take issue with either filing.  
7 I recommended that the Commission approve Sweetleaf's application  
8 with the understanding that the Applicant would not be reimbursed for  
9 interconnection facilities, network upgrade costs, and affected system  
10 costs.

11 On June 24, 2022, the Applicant filed the second supplemental  
12 testimony of witness Robichaud and the supplemental testimony of  
13 witness Mack.

14 **Q. PLEASE PROVIDE A BRIEF SUMMARY OF THE APPLICANT'S**  
15 **TESTIMONY FILED ON JUNE 24, 2022.**

16 A. Witness Robichaud provided a summary of PJM's System Impact  
17 Studies for the Facility, with the latest version released in June 2022,  
18 and Duke Energy Progress, LLC's (DEP) affected system studies for  
19 PJM cluster AD1. In her testimony, witness Robichaud stated that  
20 Macadamia Solar LLC (Macadamia) "is seeking to negotiate an  
21 Affected System Operating Agreement [ASOA] with DEP to fund the

1 DEP Upgrade, **without** reimbursement from DEP ratepayers”  
2 (emphasis in original). Macadamia is also in PJM cluster AD1.

3 **AFFECTED SYSTEM UPGRADES**

4 **Q. WHAT INFORMATION HAS DEP PROVIDED REGARDING THE**  
5 **EFFECT OF PJM CLUSTER AD1 ON ITS SYSTEM?**

6 A. In 2021, DEP released two versions of its Affected System Study  
7 Report for PJM cluster AD1. However, because of PJM’s queue  
8 reform and PJM’s issuance of a revised System Impact Study in May  
9 2022, DEP released a revised affected system study report for PJM  
10 cluster AD1 on June 8, 2022.

11 **Q. PLEASE DESCRIBE DEP’S AFFECTED SYSTEM STUDY**  
12 **REPORT RELEASED ON JUNE 8, 2022.**

13 A. This report is the second revision of the AD1 affected system study.  
14 It is included in witness Robichaud’s second supplemental testimony  
15 as Attachment E. Page 4 of the report contains the following table:

Table 2: Upgrades and Contributing Requests				
Overloaded Transmission Facility	Contributing Requests	Upgrade Description	Upgrade Cost	Time to Complete (months)
Rocky Mount – Battleboro (DVP) 115kV line	AD1-022 AD1-056/057	Reconductor 8.54 miles	\$31 M	30
Rocky Mount – Battleboro (DVP) 115kV line	AD1-022 AD1-056/057	PJM project to reconfigure 115kV lines	-	-
Greenville – Everetts (DVP) 230kV line	AD1-022 AD1-056/057 AD1-074/075/076	Rebuild 1.87 miles of aging double circuit 230kV towers, ISD 6/1/2027	\$19 M*	36*
Greenville – Everetts (DVP) 230kV line	AD1-022 AD1-056/057 AD1-074/075/076	Reconductor 1.87 miles of one side of double circuit 230kV line plus terminal equipment	\$0.35 M*	36*

1 \* Transmission Planning or Class 5 estimates

2 The Rocky Mount-Battleboro line upgrade listed above is planned for  
3 PJM cluster AC1, and DEP does not attribute this upgrade to PJM  
4 cluster AD1. The first revision to the study was released on  
5 September 9, 2021, and is included as Attachment D to witness  
6 Robichaud's June 24, 2022 testimony. In this first revision the  
7 requirement to reconductor 1.87 miles of the Greenville-Everetts  
8 230kV line was included, but at an estimated cost of \$10 million for  
9 the Applicant. Between the release of revision 1 and revision 2 of the  
10 affected system studies, DEP determined that this section of line  
11 needed to be replaced due to aging components nearing the end of  
12 their useful life.

13 The incremental cost of reconductoring of this line is \$350,000, which  
14 was assigned to Macadamia, Sumac Solar LLC, and Sweetleaf.



1     **Q.     HOW MUCH OF THE AFFECTED SYSTEMS UPGRADE COST**  
2     **WILL THE APPLICANT PAY?**

3     A.     At this time, the Applicant's portion of the affected system upgrade  
4           cost is unknown. Witness Robichaud states that Macadamia is  
5           negotiating an ASOA with DEP to fund the affected system upgrade.  
6           Witness Robichaud goes on to state, however, that Sweetleaf may  
7           enter into a side agreement with Macadamia to fund a proportional  
8           share of costs incurred under the ASOA.

9                   **ADDITIONAL PUBLIC STAFF CONCERNS**

10    **Q.     DOES THE PUBLIC STAFF HAVE ANY ADDITIONAL**  
11    **CONCERNS REGARDING THE SECOND SUPPLEMENTAL**  
12    **TESTIMONY OF WITNESS ROBICHAUD?**

13    A.     Yes. On pages 8 through 10 of her second supplemental testimony,  
14           witness Robichaud responds to the concerns that I raised in my  
15           supplemental testimony filed on November 13, 2020.<sup>1</sup> Specifically,  
16           witness Robichaud states:

17                   I would first note that Mr. Lucas's concerns, however  
18                   legitimate, relate to the overall volume of merchant  
19                   plant development [6,600 MW] in the region (including  
20                   in Virginia) and have little or nothing to do with the  
21                   question of whether the proposed Sweetleaf Solar  
22                   facility is consistent with the public convenience and  
23                   necessity. Although Mr. Lucas raises important  
24                   questions about the possible impacts of merchant plant

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<sup>1</sup>The question on the bottom of page 8 of witness Robichaud's testimony mistakenly identifies the filing date as September 18, 2020, which was the filing date of my direct testimony.

1 development on DEP ratepayers, Sweetleaf Solar  
2 does not trigger any Upgrade on PJM or DEP's system  
3 that will be reimbursed by North Carolina ratepayers.  
4 Mr. Lucas's general concerns are therefore not  
5 applicable here.

6 My calculation of 6,600 MW in the PJM queue was only for North  
7 Carolina and includes the Facility's capacity. If a merchant plant or  
8 group of merchant plants create undue costs or operational problems  
9 for consumers in North Carolina, then any or all of the plants may be  
10 inconsistent with the "public convenience and necessity."

11 Witness Robichaud then states:

12 I also believe that Mr. Lucas's concerns about DEP  
13 upgrades needing to be replaced are speculative. I  
14 have no reason to believe that DEP is planning  
15 upgrades that will soon need to be replaced, and there  
16 are several reasons to think that this will not occur in  
17 the foreseeable future. First, PJM's recently-  
18 announced queue reform proposal is likely to  
19 significantly reduce the number of projects in the PJM  
20 queue, by increasing readiness requirements and  
21 financial commitments for interconnection customers.

22 In 2017, DEP constructed affected system upgrades on the Rocky  
23 Mount-Battleboro line to accommodate PJM cluster AA2 at a cost of  
24 \$711,805. DEP's planned upgrade of this line to accommodate PJM  
25 cluster AC1 will scrap most, if not all, of these upgrades, which  
26 should have lasted at least 40 years, and not merely five years.  
27 DEP's customers paid for these upgrades. Additionally, PJM's queue  
28 reform has not reduced projects in North Carolina. The planned

1 generator capacity in PJM's North Carolina queue has grown to  
2 approximately 7,800 MW.

3 Witness Robichaud continues:

4 Second, even where new projects do cause impacts to  
5 DEP-Dominion tie lines, interconnection solutions may  
6 be developed to avoid adding load those lines, like the  
7 n6618 network upgrade listed above. Rather than  
8 increase the capacity of the tie-line to handle flow, this  
9 upgrade is intended to direct flow away from the tie-  
10 line, reducing the likelihood that additional upgrades  
11 will be needed to accommodate additional generation  
12 on the system.

13 It is true that PJM can make transmission upgrades that reduce the  
14 need for DEP to make affected system upgrades. However, the  
15 Commission and the Public Staff cannot be assured that PJM will  
16 always construct this type of upgrade, or that this type of upgrade will  
17 reduce affected system costs to a negligible level.

18 Lastly, Witness Robichaud states:

19 Third, the development of additional solar projects in  
20 DEP territory (which will likely be required to meet the  
21 decarbonization mandates of North Carolina H.B. 951)  
22 may result in additional power flows in DEP territory  
23 that will "push back" against flow from PJM, alleviating  
24 those tie-line constraints. In light of these factors I do  
25 not think it is reasonable to assume that additional  
26 merchant plant development in PJM's North Carolina  
27 territory will necessarily result in unreasonable impacts  
28 on North Carolina ratepayers.

1 Power generation in DENC and DEP will never be perfectly balanced  
2 so that tie-lines will not be constrained. Generator outages, differing  
3 generator capacities, and differing cloud cover can create large  
4 imbalances. Furthermore, merchant plant development in PJM's  
5 North Carolina territory will soon result in unreasonable impacts on  
6 North Carolina ratepayers. DEP's current estimate for affected  
7 system upgrades to accommodate PJM cluster AC1 will cost its  
8 ratepayers approximately \$31 million. These upgrades will provide  
9 little if any benefit to those ratepayers.

10 **RECOMMENDATIONS**

11 **Q. WHAT IS THE PUBLIC STAFF'S RECOMMENDATION ON**  
12 **SWEETLEAF'S APPLICATION FOR THE FACILITY?**

13 A. The Public Staff has reviewed the initial and supplemental  
14 applications, the testimony, and other evidence in the record and  
15 obtained through discovery. The Public Staff recommends that the  
16 Commission approve the application<sup>2</sup> subject to the following  
17 conditions:

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<sup>2</sup> The Public Staff's recommendations in this testimony are based on the many factors unique to this proceeding and the circumstances surrounding the AD1 cluster. The recommendations herein should not be considered representative of the Public Staff's position in any other EMP proceeding.

- 1        1. The Applicant shall construct and operate the Facility in strict  
2            accordance with applicable laws and regulations, including any local  
3            zoning and environmental permitting requirements.
- 4        2. The CPCN shall be subject to Commission Rule R8-63(e) and all  
5            orders, rules and regulations as are now or may hereafter be lawfully  
6            made by the Commission.
- 7        3. The Applicant shall file with the Commission in this docket any  
8            significant revisions in the cost estimates for the construction of the  
9            Facility itself, interconnection facilities, network upgrades, or affected  
10          system upgrades, or any other significant change in costs, within 30  
11          days of becoming aware of such revisions.
- 12       4. The Applicant shall file a copy of its Affected System Operating  
13          Agreement, if any, with the Commission at the same time such filing  
14          is made at the Federal Energy Regulatory Commission (at least 61  
15          days prior to commencing construction on the upgrades).
- 16       5. If at any time the Applicant seeks reimbursement for any  
17          interconnection facilities, network upgrade costs, affected system  
18          costs, or other costs required to allow energization and operation of  
19          the Facility, the Applicant shall notify the Commission no later than  
20          60 days before seeking reimbursement.

1        6. The Applicant shall file with the Commission a copy of any  
2                agreement in which it is required to provide to fund all or a portion of  
3                any affected system upgrade.

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

5    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.