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June 1, 2022

Ms. A. Shonta Dunston
Chief Clerk
North Carolina Utilities Commission
430 N. Salisbury Street
Raleigh, NC 27603

**RE: *In the matter of the Applications of Sumac Solar, LLC
For Certificate of Public Convenience and Necessity to Construct
a 120-MW Solar Facility in Bertie County, NC
EMP-110, Sub 0
PREFILED SECOND SUPPLEMENTAL TESTIMONY
OF DONNA ROBICHAUD AND PUBLIC ATTACHMENTS***

Dear Ms. Dunston:

On behalf of Sumac Solar, LLC, in the above referenced matter and docket, I herewith provide the Prefiled Second Supplemental Testimony of Donna Robichaud and Public Attachments A, B, and C thereto. Confidential Attachment D will be filed under separate cover.

Thank you for your assistance with this application. Should you have any questions concerning this filing, please do not hesitate to contact me.

Sincerely,

/s/ Benjamin L. Snowden

Benjamin L. Snowden

pbb

Copy to: Parties and Counsel of Record

A Pennsylvania Limited Liability Partnership

California Colorado Delaware District of Columbia Florida Georgia Illinois Minnesota
Nevada New Jersey New York North Carolina Pennsylvania South Carolina Texas Washington

**PREFILED SECOND SUPPLEMENTAL TESTIMONY OF
DONNA ROBICHAUD
ON BEHALF OF SUMAC SOLAR LLC**

NCUC DOCKET NO. EMP-110, SUB 0

INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. My name is Donna Robichaud. I am senior vice president of development strategy for Geenex Solar LLC ("Geenex Solar") based in Charlotte, North Carolina. The company's address has changed to 1000 NC Music Factor Blvd, Suite – C3, Charlotte, NC 28206.

Q. ARE YOU THE SAME DONNA ROBICHAUD WHO CAUSED TO BE FILED PREFILED DIRECT TESTIMONY IN THIS MATTER ON MAY 12, 2020, AND SUPPLEMENTAL TESTIMONY ON AUGUST 12, 2020 ("2020 SUPPLEMENTAL TESTIMONY")?

A. I am.

Q. WHAT IS THE PURPOSE OF THIS SUPPLEMENTAL DIRECT TESTIMONY?

A. My testimony is intended to provide additional information related to updated interconnection studies received for the proposed Sumac Solar facility ("the Facility").

Q. PLEASE LIST ANY UPDATES ON THE PJM QUEUE POSITIONS FOR SUMAC SOLAR.

A. There were previously two PJM interconnection queue positions for Sumac Solar: (1) AD1-022, with a capacity of 80 MW ac; and (2) AD1-023, with a capacity of 40 MW ac, for a total of 120 MW ac. On April 21, 2022, the AD1-023 queue position was withdrawn. The reduced size of Sumac Solar to 80 MW ac and eliminated one of the network upgrades allocated to Sumac

1 Solar. Sumac Solar is now expected start construction in 2024 and reach commercial operation in
2 2025.

3 **Q. PLEASE LIST THE LATEST INTERCONNECTION STUDIES RECEIVED**
4 **FOR THE PROPOSED FACILITY.**

5 A. Sumac Solar has received the following studies:

- 6 ○ Generation Interconnection System Impact Study (“SIS”) Report for PJM
7 Generation Interconnection Request Queue Position AD1-022 (“May 2022 SIS
8 Report”) (**Attachment A**). Previous SIS reports were received in December
9 2019, December 2021, and March 2022. The December 2019 and December
10 2021 reports were filed with the Commission in this docket. Per the
11 Commission’s directives, the March 2022 report is included as **Attachment B**,
12 although the results are no longer valid. The May 2022 SIS Report supersedes
13 the previous retooled SIS reports.
- 14 ○ Affected System Study for Cluster AD1 by Duke Energy Progress LLC
15 (“DEP”) (Apr. 5, 2021), which was filed in this docket on May 27, 2021.
- 16 ○ Affected System Study for Cluster AD1 by Duke Energy Progress LLC (Sept.
17 9, 2021) (“September 2021 Affected System Study”), included as **Attachment**

18 **C.**

19 Sumac Solar is one of the earliest-queued active projects in the Dominion territory of PJM
20 without an executed Interconnection Service Agreement (“ISA”). As a result, Applicant does not
21 expect any further retools of the SIS due to previously queued projects withdrawing from the PJM
22 queue.

1 **Q. HAS SUMAC SOLAR BEEN ALLOCATED ANY COST FOR SHARED**
2 **NETWORK UPGRADES IN THE MAY 2022 SIS REPORT?**

3 A. Yes. There are two Network Upgrades identified in the report, although Sumac has
4 cost responsibility for only one of them. Sumac Solar is allocated a portion of the Upgrade
5 identified as n6618. Another upgrade on which Sumac relies, n6118, was funded by previously
6 queued projects. Both upgrades may need to be in-service prior to Sumac Solar reaching
7 commercial operation.

8 **Table 1: PJM Network Upgrades identified in May 2022 SIS Report**

Network Upgrade	Descriptions	Cost (\$M)
n6118	Replace Battleboro substation terminal equipment.	0.1
n6618	Split the 115 kV bus at Hathaway substation. Rebuild line #55 (Tarboro-Anaconda) and close the tie switch between Line 55 & 80. Line #1001 is open at Battleboro thus making Line #1001 radial from Chestnut Substation.	14.074

9 Compared to the Upgrade costs described in my 2020 Supplemental Testimony, the
10 allocated Network Upgrade costs for Sumac Solar decreased from \$135,990,000 to \$14,073,759.
11 Several previously identified Network Upgrades passed Sumac Solar due to the withdrawal of
12 other projects, Sumac Solar's downsizing to 80 MW, other transmission system changes, and/or
13 reliability Supplemental/Baseline Upgrades replacing the Network Upgrades.

14 N6618, the remaining Network Upgrade to which Sumac Solar contributes, is the second
15 step required to address an overload on the DEP side of the Rocky Mt.-Battleboro line (although
16 the upgrade is to Dominion's system, not DEP's). The first step involves upgrades to the DEP
17 system (specifically, DEP's Rocky Mt.-Battleboro 115 kV tie-line), which are the subject of an
18 Affected System Operating Agreement recently entered into by DEP and Edgecombe Solar in May

2022.¹ Unlike the rebuilding of the Rocky Mt.-Battleboro 115 kV tie-line, n6618 is on the PJM system and designed to route flow away from the Dominion-DEP tie-line, rather than increase the capacity of the line. Since it is part of the PJM system, there is no cost allocation to DEP's ratepayers.

Q. DO YOU KNOW OF ANY POTENTIAL CHANGES THAT COULD REDUCE SUMAC'S SOLAR'S NETWORK UPGRADE COST ALLOCATION?

A. Yes. It is possible that Network Upgrade n6618 will be incorporated in a Supplemental (also known as a Baseline) Upgrade, meaning the Upgrade is required for reliability purposes, whether or not Sumac interconnects. In a June 2021 presentation, Dominion identified a reliability need that could drive this upgrade.² If the solution for this reliability need incorporates the n6618 Upgrade and it is approved, the cost will be borne by a subset of PJM ratepayers pursuant to PJM's Open Access Transmission Tariff ("OATT").

Q. DOES THE PROPOSED PJM QUEUE REFORM IMPACT SUMAC SOLAR?

A. PJM's Queue Reform proposal will result in minimal impacts to Sumac Solar because projects such as Sumac Solar that are in AD2 and prior clusters are grandfathered into the current process. The only expected change is the limit to cost allocation of Network Upgrades above \$5 million to projects in AD2 and prior clusters. Projects in AE1 and later clusters and will no longer receive cost allocations for those upgrades.

¹ See Duke Energy Progress, LLC's Notice of Affected System Operating Agreement, Docket No. E-100, Sub 170 (May 6, 2022).

² PJM Transmission Expansion Advisory Committee, "Dominion Supplemental Projects" (presentation) (June 8, 2021) at 7, <https://www.pjm.com/-/media/committees-groups/committees/teac/2021/20210608/20210608-item-04-dominion-supplemental.ashx>

1 **Q. DO YOU EXPECT TO RECEIVE ANY FURTHER INTERCONNECTION**
2 **STUDIES OR AGREEMENTS?**

3 A. Yes. The Project anticipates receiving a Facilities Study Report, ISA, and
4 Construction Service Agreement in June 2022. The Facilities Report and these agreements will
5 identify with more precision the timing of the PJM Network Upgrades required for Sumac but will
6 not change the nature or estimated cost of those Network Upgrades.³ Sixty days after receiving
7 the ISA, Applicant will be required to provide security and execute the ISA to remain in the queue.
8 Sumac Solar will file these reports and agreements with the Commission upon receiving them
9 from PJM.

10 **Q. PLEASE CALCULATE THE LEVELIZED COST OF TRANSMISSION**
11 **(LCOT) FOR ANY REQUIRED TRANSMISSION SYSTEM UPGRADES OR**
12 **MODIFICATIONS FOR THE PROJECT.**

13 A. The Applicant has prepared LCOT calculations based on: (1) the allocated cost of
14 Network Upgrades provided in the May 2022 SIS Report. If Sumac Solar is the only project that
15 funds n6618, the LCOT for this Network Upgrade is \$3.72/ MWh.⁴ The Applicant's LCOT
16 analysis is detailed in Confidential Attachment D. Regardless of the LCOT, the Project would
17 bear the cost of these Network Upgrades, which would not be reimbursed by PJM or Duke and
18 would not be passed on to Duke ratepayers.

19 The Applicant has also prepared LCOT calculations for Affected System Upgrades on
20 DEP's system that may be triggered by Sumac Solar. These are discussed below.

³ PJM may update cost estimates for Attachment Facilities in the ISA.

⁴ Note that if later-queued projects also receive cost allocations for the n6618 Network Upgrade, the LCOT could decrease as low as \$1.20 / MWh.

1 **Q. ARE YOU AWARE OF ANY SYSTEM OTHER THAN THE STUDIED**
2 **SYSTEM THAT IS OR WILL BE AFFECTED BY THE INTERCONNECTION OF THE**
3 **PROJECT? IF SO, EXPLAIN THE IMPACT AND BASIS.**

4 A. Yes, Sumac Solar contributes to an overload on DEP portion of the Everetts-
5 Greenville 230 kV tie-line between Dominion and DEP (DEP0003) and has been assigned the full
6 cost of funding this Affected System Upgrade per the September 2021 Affected System Study
7 (Attachment C) and the May 2022 SIS Report (Attachment A).⁵ The DEP0003 Upgrade includes
8 reconductoring two miles of 230 kV Everetts-Greenville line, upgraded disconnect switches and
9 CT ratios for a total cost of \$10 million.

10 **Q. HAS PJM IDENTIFIED ANY OTHER PROJECTS THAT CAUSE**
11 **IMPACTS TO DEP’S PORTION OF THE EVERETTS-GREENVILLE 230 KV LINE, OR**
12 **THAT MAY BE ALLOCATED COSTS TO UPGRADE THAT LINE?**

13 A. Yes, PJM identified up to four projects that could impact DEP’s Everett’s-
14 Greenville 230 kV as indicated below. While PJM initially identifies which projects in their
15 interconnection queue potentially impact DEP’s system, DEP generally allocates the full cost of
16 an Affected System Upgrade to a single project through an Affected System Operating Agreement
17 (“ASOA”) in accordance with their procedures. DEP only works with one project to fund the
18 Affected System Upgrades and has allowed a project other than the first to cause to voluntarily
19 fund the Affected System Network Upgrade.

20 The Macadamia Solar project, which is also being developed by Geenex Solar, is

⁵ See page 10 of the May 2022 SIS Report.

1 negotiating with Duke regarding an ASOA to fund the DEP0003 Upgrade.⁶ Sumac Solar may
2 enter into a side agreement with Macadamia Solar under which it would agree to fund a
3 proportional share of costs incurred under the ASOA.

4 **Q. WILL DEP RATEPAYERS BEAR THE COST OF THOSE AFFECTED**
5 **SYSTEM UPGRADES?**

6 A. No. As detailed in my Second Supplemental Prefiled Testimony filed in
7 Macadamia Solar's CPCN docket (no. EMP-119, Sub 0) on May 25, 2022, Macadamia Solar is
8 seeking to negotiate an ASOA with DEP to fund that DEP Upgrade, **without** reimbursement from
9 DEP ratepayers. Macadamia Solar has also agreed to accept a condition on its CPCN barring it
10 from seeking reimbursement for costs incurred under that ASOA. Although it will have no rights
11 under any ASOA between Macadamia and DEP, Sumac Solar would nonetheless agree to a similar
12 condition.

13 **Q. HAVE YOU PREPARED LCOT CALCULATIONS FOR THIS AFFECTED**
14 **SYSTEM UPGRADE?**

15 A. Yes, I have prepared LCOT calculations for the Everetts-Greenville Affected
16 System Upgrade. According to the September 2021 Revised AD1 Affected System Study, the
17 estimated cost of the Everetts-Greenville 115 kV Upgrade is \$10,000,000. The total capacity of
18 the three projects in the AD1 cluster that contribute to the need for the upgrade (Sumac,
19 Macadamia, and Sweetleaf Solar) is 658 MW. Based on this capacity and the estimated cost of
20 the upgrade, I have calculated an LCOT of \$.32/MWh. If only the capacity of Sumac Solar were
21 considered, the LCOT would be \$2.65/MWh. Both of these LCOT figures are in line with

⁶ Macadamia Solar has applied for a CPCN in docket no. EMP-119, Sub 0.

1 benchmark LCOT figures based on a Lawrence Berkeley National Laboratory (LBNL) Study cited
2 by the Public Staff in prior testimony as indicative of reasonable upgrade costs, and previously
3 relied on by the Commission in ruling on other merchant CPCN applications.

4 **Q. DO YOU HAVE ANY RESPONSE TO THE CONCERNS RAISED BY**
5 **PUBLIC STAFF WITNESS LAWRENCE IN HIS NOVEMBER 16, 2020, TESTIMONY**
6 **REGARDING THE FACILITY AND OTHER MERCHANT POWER FACILITIES IN**
7 **DENC TERRITORY ON THEIR POTENTIAL EFFECTS ON DEP?**

8 **A.** I do. On pages 11-12 of his testimony, Mr. Lawrence articulated several concerns
9 about merchant plant development in PJM. He testified that:

10 Public Staff is concerned that (1) the large amount of solar capacity in PJM's North
11 Carolina queue (over 5,000 MW) could trigger millions of dollars of affected
12 system upgrades that DEP's customer would have to pay for but may not need for
13 reliable electric service; (2) the Virginia Clean Economy Act could lead to more
14 renewable energy facilities in Virginia near DENC territory, which would be above
15 those facilities in the PJM's North Carolina queue, increasing the risk for more
16 affected system upgrades for DEP; (3) DEP could build network upgrades that go
17 unused for extended periods of time if some interconnection projects withdraw
18 from the queue late in the review process; and (4) in order to accommodate future
19 clusters, upgrades to accommodate an earlier cluster may need to be replaced with
20 even greater transmission assets long before the end of their normal service life of
21 40 to 60 years, thereby resulting in stranded costs that would be borne by DEP's
22 customers.

23 I would first note that Mr. Lawrence's concerns, however legitimate, relate to the overall
24 volume of merchant plant development in the region (including in Virginia) and have little or
25 nothing to do with the question of whether the proposed Sumac Solar facility is consistent with the
26 public convenience and necessity.

27 Although Mr. Lawrence raises important questions about the possible impacts of merchant
28 plant development on DEP ratepayers, Sumac Solar does not trigger any Upgrade on PJM or DEP's

1 system that will be reimbursed by North Carolina ratepayers. Mr. Lawrence's general concerns
2 are therefore not applicable here.

3 I also believe that Mr. Lawrence's concerns about DEP upgrades needing to be replaced
4 are speculative. I have no reason to believe that DEP is planning upgrades that will soon need to
5 be replaced, and there are several reasons to think that this will not occur in the foreseeable future.
6 First, PJM's recently-announced queue reform proposal is likely to significantly reduce the number
7 of projects in the PJM queue, by increasing readiness requirements and financial commitments for
8 interconnection customers. Second, even where new projects do cause impacts to DEP-Dominion
9 tie lines, interconnection solutions may be developed to avoid adding load those lines, like the
10 n6618 network upgrade listed above. Rather than increase the capacity of the tie-line to handle
11 flow, this upgrade is intended to direct flow away from the tie-line, reducing the likelihood that
12 additional upgrades will be needed to accommodate additional generation on the system. Third,
13 the development of additional solar projects in DEP territory (which will likely be required to meet
14 the decarbonization mandates of North Carolina H.B. 951) may result in additional power flows
15 in DEP territory that will "push back" against flow from PJM, alleviating those tie-line constraints.
16 In light of these factors I do not think it is reasonable to assume that additional merchant plant
17 development in PJM's North Carolina territory will necessarily result in unreasonable impacts on
18 North Carolina ratepayers.

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

20 **A. Yes.**

CERTIFICATE OF SERVICE

This is to certify that the undersigned has this day served the foregoing **PREFILED SECOND SUPPLEMENTAL TESTIMONY OF DONNA ROBICHAUD** upon the following by electronic mail as follows:

Christopher Ayers, Esq.
Executive Director - NC Public Staff
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Robert Josey
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NC Public Staff - Legal Division
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This the 1st day of June, 2022.

/s/ Benjamin L. Snowden

Benjamin L. Snowden

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**PREFILED SECOND SUPPLEMENTAL TESTIMONY OF
DONNA ROBICHAUD
ON BEHALF OF SUMAC SOLAR LLC**

ATTACHMENTS

A	Generation Interconnection System Impact Report For PJM Generation Interconnection Request Queue Position AD1-022 (May 2022)
B	Generation Interconnection System Impact Report for PJM Generation Interconnection Request Queue Position AD1-022 / AD1 – 023 (March 2022)
C	Generation Interconnection Affected System Study Report for PJM Interconnection Cluster AD1 dated September 9, 2021 (September 2021 Affected System Study)
D	LCOT Analysis for Network Upgrades potentially required for Sumac Solar Project and for Potential DEP Affected System Upgrades **CONFIDENTIAL**

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PREFILED SECOND SUPPLEMENTAL TESTIMONY OF
DONNA ROBICHAUD
ON BEHALF OF SUMAC SOLAR LLC

ATTACHMENT A

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PREFILED SECOND SUPPLEMENTAL TESTIMONY OF
DONNA ROBICHAUD
ON BEHALF OF SUMAC SOLAR LLC

ATTACHMENT B

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**PREFILED SECOND SUPPLEMENTAL TESTIMONY OF
DONNA ROBICHAUD
ON BEHALF OF SUMAC SOLAR LLC**

ATTACHMENT C

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