

**PREFILED SUPPLEMENTAL TESTIMONY OF
DONNA ROBICHAUD
ON BEHALF OF SWEETLEAF SOLAR LLC**

NCUC DOCKET NO. EMP-111, 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 is 1930 Abbott Street, Suite 402, Charlotte, NC 28203.

Q. ARE YOU THE SAME DONNA ROBICHAUD WHO CAUSED TO BE FILED PREFILED DIRECT TESTIMONY IN THIS MATTER ON JUNE 2, 2020?

A. I am.

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

A. My testimony is intended to provide additional information in response to the Commission’s July 8, 2020, *Order Requiring Filing of Testimony, Establishing Procedural Guidelines, and Requiring Public Notice*, which directed the Applicant to file additional testimony addressing issues related to interconnection costs and the Applicant’s plans to sell the energy and capacity generated by the Project.

Q. PLEASE DESCRIBE ALL INTERCONNECTION STUDIES RECEIVED FOR THE PROPOSED FACILITY.

A. Sweetleaf Solar has received the following studies:

- o Generation Interconnection Feasibility Study Report For PJM Generation Interconnection Request Queue Position AD1-056/AD1-057 (Feb. 2018)

1 (Attachment A)

- 2 ○ Generation Interconnection System Impact Study Report For PJM Generation
3 Interconnection Request Queue Position AD1-056/AD1-057 (Dec. 2019)

4 (Attachment B)

5 Sweetleaf Solar has two positions in the PJM queue, with a total installed capacity of 94
6 MW (the capacity of the generating facility for which a CPCN is sought in this proceeding). Queue
7 No. AD1-056 represents a total installed capacity of 60 MW, and AD1-057 represents 34 MW of
8 capacity. Both queue positions are behind the same point of interconnection and are being studied
9 by PJM as a single combined project. Submitting simultaneous interconnection applications at the
10 same POI is permissible under PJM procedures, though it requires the Interconnection Customer
11 to pay additional application and study fees. Geenex has filed applications in this way in order to
12 provide additional flexibility in adjusting the size of the project to avoid triggering significant
13 Network Upgrades.

14 PJM uses a cluster study process which allocates cost responsibility for Network Upgrades
15 among the projects that, taken together, trigger the Network Upgrade. As projects withdraw from
16 the queue, or as other conditions change, that cost allocation changes and some Network Upgrades
17 may no longer be necessary. Consequently, the results of a System Impact Study (“SIS”) for a
18 particular project, both in terms of required Network Upgrades and in terms of the allocation of
19 costs for those Network Upgrades, may not be indicative of the project’s actual Network Upgrade
20 costs. This is discussed further on pages 5-8 of my Direct Pre-filed Testimony.

21 Although PJM does not generally update the results of SIS Reports until a final
22 Interconnection Service Agreement (“ISA”) is issued and only does so if necessary, the results of
23 SIS Reports prepared for later-queued projects may provide insight into the status of Network

Upgrades as conditions change. For example, while the SIS Report for Sweetleaf allocates approximately \$29,882,913 in Network Upgrade costs to the Project, the most recently-issued SIS Report for a North Carolina PJM project (AE2-147) that shares Dominion's side of the Everetts-Greenville 230 kv Network Upgrade indicates that additional projects in the AD1, AD2, AE1 and AE2 clusters will share cost allocation for that Network Upgrades.¹ Based on this more recent information, the total cost of Sweetleaf's Network Upgrades would be \$11,180,700. Both of these SIS Reports may be updated when PJM retools its studies prior to issuing ISAs for these project, but this represents a "snapshot" of the current allocation.

Note that in any case, as discussed on pages 6-7 of my Pre-Filed Direct Testimony, costs for these Network Upgrades would not be reimbursed by ratepayers.

Q. DO YOU EXPECT TO RECEIVE ANY FURTHER INTERCONNECTION STUDIES?

A. Yes. The Project anticipates receiving a Facilities Study Report, updated System Impact Study Report (if necessary), and Interconnection Service Agreement on April 30, 2021. Duke Energy Progress ("DEP") has also indicated that it expects to release an Affected System Study for an Upgrade to the Everetts-Greenville 230 kV transmission line (discussed below) in September or October 2020.

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

¹ This Study is available from PJM at https://www.pjm.com/pub/planning/project-queues/impact_studies/ae2147_imp.pdf.

1 A. Because (as discussed above) it is not yet clear what Network Upgrade costs will
2 be allocated to Sweetleaf, it is not possible to prepare a definitive LCOT analysis for the Project
3 at this time. Instead, the Applicant has prepared alternative LCOT calculations based on: (1) the
4 allocated cost of Network Upgrades provided in Sweetleaf's System Impact Study; and (2) the
5 allocated cost of Network Upgrades for Sweetleaf based on the updated information provided in
6 the SIS Report for AE2-147 and further refined for withdrawn projects, as discussed above.
7 Scenario (1) yields an LCOT of \$6.28/MWh. Scenario (2) results in an LCOT of \$2.35/MWh.
8 The Applicant's LCOT analysis is detailed in Confidential Attachment C. Neither of these figures
9 is likely to reflect the actual LCOT for Sweetleaf's Network Upgrades, although the latter figure
10 is likely much closer. In either scenario, the Project would bear the cost of these Network
11 Upgrades, which would not be passed on to ratepayers.

12 The Applicant has also prepared LCOT calculations for Affected System Upgrades on
13 DEP's system that might need to be completed before the Project can be fully deliverable. These
14 are discussed below.

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

18 A. Yes. As discussed on page 7 of my Pre-Filed Direct Testimony, the SIS Report for
19 Sweetleaf identifies potential constraints on the following Dominion-Duke Energy Progress
20 ("DEP") tie lines:

- 21 • Battleboro – Rocky Mt. 115 kV line
- 22 • Everetts - Greenville 230 kV line
- 23 • Rocky Mt. – Hathaway 230 kV line

1 System Impact Study Report at 21. However, this does not necessarily mean that the Project will
2 impact each of these components of DEP's system, for at least two reasons. First, as discussed
3 above, these results presume that all projects currently in queue, both in the AD1 cluster and also
4 in previous clusters, will go into operation, and that no other system or planning assumption
5 changes occur. It is almost certain that some projects will withdraw from the queue and/or other
6 system and planning changes will occur, which may resolve the constraints.

7 Second, the results reported above represent the results of PJM's modeling of its own
8 system and DEP's, not Duke's. When an SIS Report determines that a project may impact another
9 system, it is PJM's responsibility to notify the Affected System, which will conduct further studies
10 to determine whether there are any impacts and if so what Upgrades are needed to resolve such
11 impacts. At a high level, the requirements for PJM's coordination with Affected Systems are set
12 forth in PJM Manual 14A.² However, to the best of Applicant's knowledge PJM does not have
13 specified procedures for coordinating Affected System studies with DEP.³

14 Prior to the spring of 2020, DEP relied upon results from PJM planning assumptions and
15 models to determine the projects that affected DEP's system. DEP simply determined the work,
16 schedule, and cost estimates for the Upgrades. However, PJM has informed the Applicant that
17 going forward, DEP will use its own planning assumptions and models (which are likely to differ

² Manual 14A is available online at <https://www.pjm.com/-/media/documents/manuals/m14a.ashx>.

³ In an Order issued last year, FERC required PJM, MISO, and SPP to revise their tariffs and Joint Operating Agreements ("JOAs") to clarify their procedures for coordinating Affected System Studies with other RTO/ISOs, finding that a lack of clarity regarding those procedures rendered the tariffs and JOAs unjust and unreasonable. *EDF Renewable Energy, Inc. v. Midcontinent Independent System Operator, Inc., Southwest Power Pool, Inc., and PJM Interconnection, L.L.C., Order on Complaint and Technical Conference*, 168 FERC ¶ 61,173 (Sept. 19, 2019). However, the Order did not address coordination with traditionally regulated utilities such as DEP.

1 from PJM's) to determine what projects affect their system. Future DEP studies may draw
2 different conclusions about whether any particular Upgrades are required on its System.

3 It is important to note that when an SIS and Affected System Study identify impacts on an
4 Affected System, the need for an Affected System Upgrade is generally attributable to a project
5 and subsequent projects contribute to the overload. Where an Upgrade is constructed as a result
6 of impacts from one project, subsequent project in the interconnection queue benefit from the
7 Upgrade. For example, if the DEP Rocky Mount-Battleboro 115 kV line is constructed because
8 of impacts from the AC1 cluster, projects in the AC2, AD1, and later clusters will benefit from
9 that Upgrade.

10 With respect to the Battleboro – Rocky Mt. 115 kV Upgrade to DEP's system, the SIS
11 states that the need for an Affected System Upgrade to the DEP portion of that line was identified
12 prior to the AD1 cluster. SIS Report at 15-16. The Applicant is aware that DEP has conducted
13 two Affected System Studies for the Battleboro-Rocky Mt. 115 kV line, one for the AB2 cluster
14 in December 2016 and one for the AC1 cluster in May 2020. Although the Affected System
15 Studies provide estimates for the cost of the Upgrade, to the best of the Applicant's knowledge
16 there are no funding commitments made to construct that Upgrade. In any event, Sweetleaf's
17 System Impact Study indicates that neither Sweetleaf in particular, nor the AD1 cluster more
18 generally, "trigger" the need for a Upgrade. Rather, the interconnection of these projects would
19 contribute to an existing overload initially caused by prior Queue positions. SIS Report at 15-16.
20 Even though projects in the AD1 cluster are not expected to initially fund the Rocky Mt.-Battleboro
21 115 kV Upgrade, they would benefit from the upgraded line.

22 To the best of Applicant's knowledge, no Affected System Studies have been conducted
23 for the potential overloads on the DEP portion of the Everetts-Greenville 230 kV line or the DEP

1 portion of the Rocky Mt.-Hathaway 230 kV line. DEP has indicated that it expects to release an
2 Affected System Study for the Upgrade to the Everetts-Greenville 230 kV transmission line
3 (discussed below) in September or October 2020, although it is not clear which PJM cluster DEP
4 intends to study. Presumably DEP will eventually conduct an Affected System Study for the
5 Rocky Mt.-Hathaway 230 kV line when appropriate to do so.

6 The Applicant has found additional information about DEP's potential Everetts-Greenville
7 230 kV line Upgrade by reviewing interconnection studies for later queued projects. The System
8 Impact Study Report for AE1-088, a project in the AE1 cluster,⁴ states that this Upgrade will
9 include replacing the Greenville substation disconnect switches and reconductoring/rebuilding
10 1.87 miles of the Everetts-Greenville 230 kV line, at an estimated cost of \$8,500,000. This study
11 is dated August 2019 and so this cost estimate is relatively recent.

12 Applicant was also able to find additional information on the potential overload on DEP's
13 Rocky Mt.-Hathaway 230 kV line. The SIS for AE1-024 (dated June 2020)⁵ indicates that
14 Dominion has a baseline project, b3121, which will upgrade the Dominion-owned portion of the
15 Hathaway to Rocky Mount 230 kV line. The current line has a 374 mega volt ampere ("MVA")
16 rating, while the DEP line is rated at 542 MVA and has a significantly higher capacity. Since AE1
17 is later in the queue than Sweetleaf and does not cause an overload on the DEP line, the Applicant
18 surmises that Sweetleaf does not cause an overload on DEP's transmission lines connecting to
19 Hathaway substation.

20 **Q. HAVE YOU PREPARED LCOT CALCULATIONS FOR THESE**

⁴ https://www.pjm.com/pub/planning/project-queues/impact_studies/ae1088_imp.pdf

⁵ https://www.pjm.com/pub/planning/project-queues/impact_studies/ae1024_imp.pdf

1 **AFFECTED SYSTEM UPGRADES?**

2 A. Yes, I have prepared LCOT calculations using the most complete information I
3 have available at this time. Although I have prepared these LCOT calculations, it is important to
4 note that: (1) neither the Sweetleaf project nor the AD1 cluster (in which Sweetleaf is being
5 studied) has been deemed “first to cause” any of these Upgrades, or allocated any cost
6 responsibility for them; and (2) with regard to the Everetts-Greenville 230 kV line Upgrade and
7 the Rocky Mount-Hathaway 230 kV line Upgrade, there is no affected system study and it is not
8 clear when (or if) those Upgrades will be needed.

9 According to the May 2020 Affected System Study, the estimated cost of the Rocky
10 Mount-Battleboro 230 kV Upgrade is \$23,204,593. In my view the following projects currently
11 in the PJM interconnection queue (starting in the AC1 cluster) will rely on this Upgrade, and it is
12 appropriate to include them in an LCOT calculation for this Upgrade: AC1-034, AC1-086, AC1-
13 089, AC1-098/99, AC1-189, AC1-208, AC2-083/84, AD1-022/33 and AD1-056/57. Based on
14 this assumption I have calculated an LCOT of \$0.57 / MWh for a total of 789 MW of projects. I
15 note that in connection with a pending CPCN application in another docket (EMP-108 Sub 0), the
16 Public Staff calculated an LCOT of \$.90 / MWh this Upgrade, assuming that only the 495 MW of
17 projects in the AC1 cluster (which does not include Sweetleaf) would rely on the Upgrade.

18 I have also calculated an LCOT for the potential Upgrade to DEP’s Everetts-Greenville
19 230 kV line, based on the \$8,500,000 cost estimate for this Affected System Upgrade detailed in
20 the System Impact Study Report for AE1-088. Again, it should be emphasized that DEP has **not**
21 concluded that the Sweetleaf project (or the AD1 cluster) will require this Upgrade, and has not
22 assigned responsibility for this Upgrade to any project or cluster.

23 But based on a hypothetical scenario in which a retooled SIS or Affected System Study

1 later indicates that Applicant is responsible for funding this Upgrade on DEP's system, an LCOT
2 was calculated. Geenex Solar is also developing the Sumac Solar Project, which is also being
3 studied in the AD1 cluster (queue position AD1-022/23) and is seeking a CPCN from the
4 Commission in docket no. EMP-110 Sub 0. Sumac Solar is on a similar development schedule to
5 Sweetleaf and has been found by PJM to have similar impacts on the grid to Sweetleaf. If the
6 Sweetleaf and Sumac Solar projects were to initially fund this Upgrade to DEP's system on their
7 own, the LCOT would be \$0.77 / MWh. In a second scenario, where projects in the AD1 through
8 AE2-147 (with a total output of 1372.9 MW) initially fund the Upgrade, I have calculated an LCOT
9 of \$0.12/MWh.

10 These LCOT values are comparable to (if not considerably lower than) the benchmark
11 LCOT values presented by the Public Staff and relied on by the Commission in the Friesian CPCN
12 docket (EMP-105 Sub 0).

13 Because there are no publicly-available cost estimates for a potential Rocky Mt.-Hathaway
14 230 kV line Upgrade, an LCOT cannot be calculated for this Upgrade.

15 **Q. CAN SWEETLEAF SOLAR ACHIEVE COMMERCIAL OPERATION**
16 **WITHOUT THE COMPLETION OF THESE UPGRADES TO DEP'S SYSTEM?**

17 A. Potentially. As discussed on pages 5 and 8 of my Pre-Filed Direct Testimony, the
18 Project could physically connect without completing the Upgrades required for contingent
19 overloads (as described in the SIS Report), but may not be able to inject power into Dominion's
20 grid unless confirmed by PJM with a Deliverability Study. The same holds true of this Upgrade
21 to DEP's system; a PJM Deliverability Study will also assess whether the output of the Project
22 would be fully or partially deliverable prior to the construction of the DEP Upgrade, and whether
23 the Project might be subject to operational restrictions such as curtailment if it goes online before

1 the Upgrade is completed.

2 **Q. DOES THE FACILITY PROPOSE TO SELL ITS ENERGY AND**
3 **CAPACITY TO A DISTRIBUTION UTILITY REGULATED BY THE COMMISSION?**

4 A. No.

5 **Q. DOES THE FACILITY PROPOSE TO SELL ITS ENERGY AND**
6 **CAPACITY TO A DISTRIBUTION UTILITY NOT REGULATED BY THE**
7 **COMMISSION BUT SERVING RETAIL CUSTOMERS IN NORTH CAROLINA?**

8 A. No.

9 **Q. DOES THE FACILITY PROPOSE TO SELL ITS ENERGY AND**
10 **CAPACITY TO A PURCHASER WHO IS SUBJECT TO A STATUTORY OR**
11 **REGULATORY MANDATE WITH RESPECT TO ITS ENERGY SOURCING?**

12 A. No.

13 **Q. ARE THERE ANY PPA AGREEMENTS, REC SALE CONTRACTS, OR**
14 **CONTRACTS FOR COMPENSATION FOR ENVIRONMENTAL ATTRIBUTES FOR**
15 **THE OUTPUT OF THIS FACILITY?**

16 A. No.

17 **Q. WHAT ARE GEENEX'S PLANS FOR OFFTAKE FROM THE FACILITY?**

18 A. As stated in the Prefiled Direct Testimony of Kara Price submitted in support of the
19 Application, Geenex Solar's business model is conduct all early-stage development activities on
20 its projects, and then to sell those solar projects to collaborating partners for further development,
21 construction, and operation of the facilities. Generally speaking the development partner to whom
22 the project is sold will arrange for offtake from the Project. Some development partners may have
23 a specific offtake opportunity (e.g. an RFP by a corporate offtaker) in mind when they purchase

1 the project. Geenex has had considerable success with this model in North Carolina; there are
2 currently three (3) Geenex developed projects totaling 230 MW in operation in the state, and five
3 (5) additional projects totaling 340 MW under construction, one of which is in North Carolina.

4 Attachment D is a letter from CustomerFirst Renewables (“CustomerFirst”), an energy
5 advisory consultant that assists commercial and industrial (“C&I”), higher education, and
6 government clients in procuring renewable power to meet their corporate or other clean energy
7 goals. As discussed in the letter, CustomerFirst confirms that there is substantial demand among
8 the large C&I clients that they serve for utility-scale solar projects located in PJM. Because the
9 North Carolina solar resource is the best available in PJM, there is high demand for cost-
10 competitive solar projects in the PJM portion of northeastern North Carolina.

11 Geenex negotiated with a range of potential acquirers for the Project. In July 2020, Geenex
12 selected an exclusive partner to perform final due diligence and complete negotiations. The sale
13 of the Project is expected to be completed by October. Geenex expects to continue partnering with
14 the acquirer to complete development of the Project. The selected partner has a rich history of
15 negotiating power purchase agreements and wants to acquire the Project due to the demand they
16 see for low-cost solar energy in the marketplace.

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

18 **A. Yes.**

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ATTACHMENTS

A	Generation Interconnection Feasibility Study Report For PJM Generation Interconnection Request Queue Position AD1-056/AD1-057 (Feb. 2018)
B	Generation Interconnection System Impact Study Report For PJM Generation Interconnection Request Queue Position AD1-056/AD1-057 (Dec. 2019)
C	LCOT Analysis for Network Upgrades potentially required for Sweetleaf Solar Project and for Potential DEP Affected System Upgrades **CONFIDENTIAL**
D	Letter from CustomerFirst Renewables

CERTIFICATE OF SERVICE

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

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This the 10th day of August, 2020.

/s/ _____

Benjamin L. Snowden