

PRE-FILED DIRECT 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 is 1930 Abbott Street, Suite 402, Charlotte, NC 28203.

**Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.**

A. I have a B.S. in Math, Physics, and Mechanical Engineering and a Masters’ degree in Business Administration. From May 1990 to September 2012, I worked for Duke Energy and its predecessors in various capacities. Between 1990 and 1997, I was the lead mechanical project engineer for various capital projects in power plants, including a new combustion turbine plant. From 1997 to 2010, I developed, managed, and provided strategic direction for district energy, cogeneration, renewable energy, and carbon offset projects in the non-regulated division of the company, currently identified as Duke Energy Renewables. In my last two and a half years at Duke Energy, I led Duke Energy Carolinas LLC’s development and ownership of renewable energy projects, administration of other third party renewable power purchase agreements, and management of the interconnection queue.

After leaving Duke I established my own consulting firm, QF Solutions LLC, later renamed QF Holding Corp. (“QF Holding”). QF Holding has been under contract to provide consulting services to Geenex since 2013.

1           **Q.     PLEASE DESCRIBE YOUR RELATIONSHIP WITH THE APPLICANT IN**  
2 **THIS DOCKET AND YOUR EMPLOYMENT RESPONSIBILITIES.**

3           A.     Geenex Solar is the owner and developer of applicant Sumac Solar LLC (“Sumac  
4 Solar” or “Applicant”). Since 2013, I have been advising Geenex in a consulting role on their  
5 growth strategy, including where to build solar plants, size of solar plants and what markets/states  
6 to enter. This work began with Geenex’s first distribution-interconnected Qualifying Facility (QF)  
7 projects in the Dominion service territory, and later included larger merchant transmission  
8 interconnected projects throughout PJM and in other investor owned utility service territories. My  
9 primary duties for Geenex include administering the PJM interconnection process for Geenex  
10 projects, and conducting contingency analyses. Other duties include providing public policy  
11 support, PJM policy advocacy, interconnection contingency analysis, and related regulatory work.

12           **Q.     HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

13           A.     I have previously offered testimony by affidavit before the North Carolina Utilities  
14 Commission on behalf of Fresh Air Energy – X, LLC and Fresh Air Energy – II, LLC in NCUC  
15 Docket No. E-22, Sub 150.

16           **Q.     WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

17           A.     To respond to the Commission’s April 28, 2020, *Order Requiring Filing of*  
18 *Testimony, Establishing Procedural Guidelines, and Requiring Public Notice*, which directed the  
19 Applicant to file additional testimony addressing the amount of network upgrades on Dominion  
20 Energy North Carolina’s (“DENC’s”) or any affected system’s transmission system, if any,  
21 required to accommodate the operation of the Applicant’s proposed facility.

22           **Q.     HAS THE PROJECT BEEN ASSESSED NETWORK UPGRADES, AND IF**  
23 **SO WHAT IS THE APPROXIMATE COST OF THE PROPOSED UPGRADES?**

1           A.     Yes. In December 2017, Sumac Solar LLC received a Generation Interconnection  
2 System Impact Study Report (“SIS Report”) from PJM for the Project (Attachment A). The SIS  
3 Report identified a number of upgrades to DENC’s transmission system to facilitate the  
4 interconnection of the Project. Some of these upgrades are absolutely required for Sumac to  
5 interconnect to DENC’s system. Other upgrades are potentially required, in order remedy  
6 “contingent overloads,” i.e. overload conditions that would only exist under certain contingency  
7 conditions, such as a line outage on another part of DENC’s system. The Project could physically  
8 connect without completing the upgrades required for contingent overloads, but may not be able  
9 to inject power into DENC’s grid unless confirmed by PJM with a Deliverability Study. Because  
10 PJM (unlike Duke Energy Progress or Duke Energy Carolinas) does not conduct interconnection  
11 studies in a strict serial order, any of several projects might trigger the need for the same contingent  
12 upgrade and receive a cost allocation for such upgrade. So the actual upgrades and contribution  
13 amount for those upgrades required for contingent overloads are not confirmed until PJM issues  
14 an Interconnection Service Agreement (ISA). Before an ISA is issued, PJM updates their analysis  
15 to include such changes as approved Baseline Upgrades, previously queued projects that are  
16 withdrawn or downsized, and generating plant retirements.

17           The SIS report also discusses “Baseline Upgrades” potentially needed before the Project  
18 can go online. The need for these transmission reliability upgrades has already been identified in  
19 PJM’s planning process for the reliable performance, operation, and expansion of the Bulk Electric  
20 System, and is not triggered by the Project. PJM ensures compliance with the North American  
21 Reliability Corporation (NERC) standards and criteria, FERC Form No. 715 or economic criteria.<sup>1</sup>  
22 Cost allocation for these upgrades are assigned to various load zones as described under Schedule

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<sup>1</sup> PJM Manual 14B: PJM Regional Transmission Planning Process, Revision 46, Effective Date 08/28/2019.

1 6 of the PJM Operating Agreement and Schedule 12 of the PJM Open Access Transmission Tariff  
2 (OATT). While Sumac is not allocated costs for these Baseline Upgrades, Sumac may need these  
3 upgrades to be completed prior to delivering power to the grid.

4 A summary of the upgrades from the SIS Report is below:  
5

<b>Upgrade Number</b>	<b>Description</b>	<b>Upgrade Cost</b>	<b>Sumac Allocation</b>
<b>Interconnection Upgrades (Cashie – Trowbridge 230 k three ring bus)</b>			
	Attachment Facilities: Metering, associated protection equipment and generation tie-line	\$1,800,000	\$1,800,000
	Direct Connection Network Upgrades: Switching Substation	\$6,300,000	\$6,300,000
	Non-Direct Connection Network Upgrades: Transmission structure in-line with transmission line to allow interconnection with Switching Substation	\$1,000,000	\$1,000,000
<b>Interconnection Costs allocated to Sumac Solar</b>			<b>\$9,100,000</b>
<b>Network Upgrades</b>			
n6144	Rebuild 20.5 miles of Dominion 230 kV line #218 Everetts-Greenville	\$30,750,000	\$30,750,000
n6141	Replace relays at Everetts substation on the Poplar Chapel-Everetts 115 kV line #25	\$500,000	\$99,275
n5464	Replace wave trap at Chickahominy substation on the Chickahominy-Elmont 500 kV #557	\$500,000	\$0
n6127	Replace the Elmont 500/230 kV transformer #1	\$22,000,000	\$3,568,565
n5483	Replace wave traps at both Ladysmith and Elmont substations for the Ladysmith – Elmont 500 kV #574	\$700,000	\$0
<b>Network Upgrade Costs allocated to Sumac Solar</b>			<b>\$34,417,840</b>
<b>Baseline Upgrades</b>			
b3122	Rebuild the 4.3 miles of Dominion 230 kV Line #2058 Rocky Mt. - Hathaway	\$13,000,000	\$0
b2990	Reconductor 0.14 miles of the Chesterfield to Basin 230 kV line	\$250,000	\$0
b3020	Rebuild 26.2 miles of the Ladysmith to Elmont 500 kV line#574	\$65,500,000	\$0
<b>Baseline Upgrade Costs allocated to Sumac Solar</b>			<b>\$0</b>
<b>TOTAL COST</b>			<b>\$43,517,840</b>

6 When the SIS Report was issued in December 2019, the total cost for Sumac to interconnect  
7 was projected to be \$43,517,840. The majority of the cost (\$30,750,000) was the result of  
8 rebuilding DENC’s Everetts-Greenville 230 kV line. However, due to the retirement of the  
9 Edgecomb coal-fired Non-Utility Generator (“NUG”) plant on April 22, 2019, Sumac expects that

1 this Network Upgrade will no longer be required for interconnection. (PJM does not incorporate  
2 retirements into their studies until a year after the actual retirement date.) Removing the Everetts  
3 – Greenville upgrade reduces the total interconnection cost to \$12,767,840. Costs for the other  
4 Network Upgrades could also be reduced or eliminated when PJM retools their studies or  
5 subsequent projects receive a cost allocation for the Network Upgrades.

6 **Q. IF NETWORK UPGRADES ARE REQUIRED FOR THE PROJECT, WILL**  
7 **THE PROJECT BE REIMBURSED FOR THE COST OF THOSE UPGRADES?**

8 A. No. Under the PJM Open Access Transmission Tariff (OATT), potential Network  
9 Upgrades identified as a result of Interconnection Customers are funded by one or more  
10 Interconnection Customers. Costs for these upgrades are not refunded through contribution by  
11 ratepayers.

12 Section 217.3 of the OATT sets forth the cost allocation for Network Upgrades which are  
13 funded by one or more Interconnection Customers. A summary is as follows:

- 14 • Interconnection Upgrades: These are upgrades required to connect the project to the  
15 transmission grid. An Interconnection Customer is required to pay 100% of the cost.  
16 These costs are not allocated to ratepayers.
- 17 • Network Upgrades: These upgrades are necessary to accommodate an Interconnection  
18 Customer's project and are not part of upgrades approved in the Regional Transmission  
19 Expansion Plan. The entire cost of these upgrades is allocated to new Interconnection  
20 Customers. The first new Interconnection Customer in a cluster that trips an overload  
21 on a facility, and subsequent new Interconnection Customers in the same cluster that  
22 exceed a certain threshold and contribute to an overload, are allocated upgrade costs  
23 based on each Interconnection Customer's proportionate contribution to the overload

1 on the facility. Interconnection Customers in the subsequent cluster that use the same  
2 facility are also allocated costs based on their proportional impact on the facility. These  
3 costs are not allocated to ratepayers.

4 • Baseline Upgrades: As discussed previously, Baseline Upgrades are those that have  
5 already been identified as necessary through PJM’s planning process. Sumac is not  
6 required to make any payments related to these upgrades. Baseline Upgrades may need  
7 to be completed prior to Sumac delivering power to the grid.

8 **Q. DOES THE PROJECT TRIGGER THE NEED FOR UPGRADES ON ANY**  
9 **AFFECTED SYSTEM THAT MIGHT RESULT IN COSTS BEING ALLOCATED TO**  
10 **RATEPAYERS?**

11 A. No. The SIS Report identifies potential constraints on the following Dominion –  
12 Duke Energy/Progress (DEP) tie lines caused by the project and/or other Interconnection  
13 Customers in the same cluster:

- 14 • Battleboro – Rocky Mt. 115 kV line
- 15 • Everetts – Greenville 230 kV line
- 16 • Rocky Mt. – Hathaway 230 kV line

17 If real-time system reliability issues occur on these tie lines, the Project may be subject to  
18 operational restrictions, *i.e.*, curtailment. However, the SIS Report does not identify any upgrades  
19 to resolve the DEP portions of these overloads.

20 **Q. COULD THERE BE ANY “NOT YET IDENTIFIED” NETWORK**  
21 **UPGRADES REQUIRED FOR SUMAC TO CONNECT TO THE GRID?**

1           A.     Based on the information currently available, that appears very unlikely. However,  
2 while PJM performs very robust studies, there is no guarantee that future revisions to their studies  
3 will not uncover other necessary upgrades.

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

5           A.     Yes.