Generation Interconnection
Facility Study Report

For

PJM Generation Interconnection Request
Queue Position AD1-025

Hopewell-Surry 230 kV
94.2 MW Capacity / 150 MW Energy

June, 2022

General

This Facilities Study has been prepared in accordance with the PJM Open Access Transmission Tariff §207, as well as the Facilities Study Agreement between Spring Grove Solar II, LLC, the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is Virginia Electric and Power Company (VEPCO).

Point of Interconnection

AD1-025 will interconnect with the ITO transmission system via a new ring bus position in the AB2-134 switching station that connects on the Hopewell-Surry 230kV line #212.

Cost Summary

The AD1-025 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	$871,196
Direct Connection Network Upgrades	$557,494
Non Direct Connection Network Upgrades	$0
Allocation for New System Upgrades	$0
Contribution for Previously Identified Upgrades	$0
Total Costs	**$1,428,690**

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A. Transmission Owner Facilities Study Summary

1. Description of Project

Queue AD1-025 is a request to interconnect a 150 MW new solar generating facility to be located in Spring Grove, VA (Surry County). AD1-025 will interconnect with the ITO transmission system via a new ring bus position in the AB2-134 switching station that connects on the Hopewell-Surry 230kV line #212 Attachment Facility and Network Upgrade construction is estimated to be 18-24 months.

2. Amendments to the System Impact Study data or System Impact Study Results

None

3. Interconnection Customer's Milestone Schedule

- Plan to break ground March 31, 2024
- Permits – state level Permit By Rule and county level final site plan approval complete June 30, 2023
- Substantial site work completed May 31, 2024
- Delivery of major electrical equipment July 31, 2024
- Back Feed Power September 30, 2024
- Commercial Operation December 31, 2024

4. Scope of Customer's Work

Generator Interconnection Request AD1-025 is for a 150 MW Maximum Facility Output (MFO) solar generation plant.

5. Description of Facilities Included in the Facilities Study

The Colonial Trail Substation was built with four 230 kV circuit breakers in a ring breaker configuration with an ability to expand to a six breaker ring configuration. The previous projects (AB2-134 and AC1-216) have connected two solar generation to this substation. This project (AD1-025) will install a fifth 230kV circuit breaker to accommodate a third generator interconnection point.

Site plan (Attachment 2) was developed by the ITO during PJM's generation queue process. The single line is shown in Attachment 1.

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6. Total Costs of Transmission Owner Facilities included in Facilities Study

Work Description	Direct		Indirect		Total Cost
	Labor	Material	Labor	Material	
Attachment Facilities	$495,497	$267,437	$78,088	$30,174	$871,196
Total Attachment Facilities Cost	$495,497	$267,437	$78,088	$30,174	$871,196
New Switching Station (n8082)	$282,092	$211,098	$45,646	$18,658	$557,494
Total Remote Changes	$0	$0	$0	$0	$0
Total Network Upgrades	$282,092	$211,098	$45,646	$18,658	$557,494
Total Project Costs	$777,589	$478,535	$123,734	$48,832	$1,428,690

7. Summary of Milestone Schedules for Completion of Work Included in Facilities Study:

Facilities are estimated to take 18-24 months from ISA execution and is based on the ability to obtain outages to construct and test the proposed facilities.

Proposed Schedule

- Detailed design: 8-12 months
- Permitting: 6-12 months (timeline runs concurrent with design)
- Construction 10-12 months

ITO requires the site to be fully graded and permitted site so they can start construction by March 31, 2024.

B. Transmission Owner Facilities Study Results

1. Attachment Facilities

The Attachment Facilities include the portion of the project which is associated solely with the feeds to the generating facility. The equipment associated with the Attachment Facilities include the metering accuracy CCVT's, metering accuracy CT's, disconnect switch, conductors and connectors.

Purchase and install substation material:

1. One (1), 230kV, 3000A Center break switch
2. Three (3), 230kV, Metering accuracy CCVT's
3. Three (3), 230kV,500:5 Metering accuracy CT's
4. Three (3), 180kV, 144kV MCOV surge arresters.
5. Install any conductor, connectors, conduit, control cable, structural steel, foundations and grounding material as necessary per Dominion Substation Engineering Standards

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Purchase and install relay material:

1. One (1), 1109 – 28" Dual SEL-587Z transmission bus panel
2. One (1), 4200 – Bus Differential C.T. make-up (M.U.) Box
3. One (1), 1425 – 28" Dual SEL-735 transmission & generator interconnect metering panel
4. One (1), 4524 – Revenue metering C.T. make-up (M.U.) box
5. One (1), 4506 – CCVT potential make-up (M.U.) box
6. One (1), 1323 – 28" SEL-487E/735 PMU & PQ monitoring panel
7. Three (3), 4541 - Control cable make-up (M.U.) boxes

2. Transmission Line – Upgrades

1. N/A

3. New Substation/Switchyard Facilities

PJM Network Upgrade #n8082 – Add 230kV breaker to Colonial Trail Substation

The Colonial Trail substation was built with four 230 kV circuit breakers in a ring breaker configuration with an ability to expand to a six breaker ring configuration. The previous projects (AB2-134 and AC1-216) have connected two solar generation to this substation. This project (AD1-025) will install a fifth 230kV circuit breaker to accommodate a third generator interconnection point.

The work required is as follows:

Purchase and install substation material – Direct Network Upgrade:

1. One (1), 230 kV, 3000A, 63kAIC, SF-6 circuit breaker
2. One (1), 230 kV, 3000A, Center break switch.
3. Install any conductor, connectors, conduits, control cables, structural steel, foundations, and grounding material as necessary per Dominion Substation Engineering Standards.
4. Removal- Bus sections on the ring to install the breaker

Purchase and install relay material – Direct Network Upgrade:

1. One (1), 1510 – 28" Dual SEL-351-7 transmission breaker with reclosing panel
2. One (1), 4510 - SEL-2411 Breaker annunciator
3. One (1), 4526_A – Circuit breaker fiber optic make-up (M.U.) box

4. Upgrades to Substation / Switchyard Facilities

1. N/A

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5. Metering & Communications

PJM Requirements

The IC will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Section 8 of Attachment O Appendix 2.

ITO Requirements

Metering and SCADA/Communication equipment must meet the requirements outlined in section 3.1.6 Metering and Telecommunications of ITO's Facility Interconnection Connection Requirement NERC Standard FAC-001 which is publicly available at www.dom.com.

At the IC's expense, the ITO will supply and own at the Point of Interconnection bi-directional revenue metering equipment that will provide the following data:

a. Hourly compensated MWh received from the Customer Facility to the ITO;
b. Hourly compensated MVARh received from the Customer Facility to the ITO;
c. Hourly compensated MWh delivered from the ITO to the Customer Facility; and
d. Hourly compensated MVARh delivered from the ITO to the Customer Facility.

The IC will supply and own metering equipment that will provide Instantaneous net MW and MVar per unit values in accordance with PJM Manuals M-01 and M-14D, and Sections 8.1 through 8.5 of Appendix 2 to the ISA.

The IC will access revenue meter via wireless transceivers or fiber cabling to meter with RS-485 or Ethernet communication port for dial-up reads. IC must provide revenue and real time data to PJM from Interconnection Customer Market Operations Center per "PJM Telemetry Data Exchange Summary" document available at PJM.com.

6. Environmental, Real Estate and Permitting Issues

The IC would be responsible for the following expectations in the area of Environmental, Real Estate and Permitting:

- Suitable Access Road from Substation to a Virginia State Maintained Roadway.
- Any additional land needed for Storm Water Management, Landscaping, and Wetlands/Wetlands Mitigation.
- Conditional Use Permit for Substation.
- Any other Land/Permitting requirements required by the Substation.

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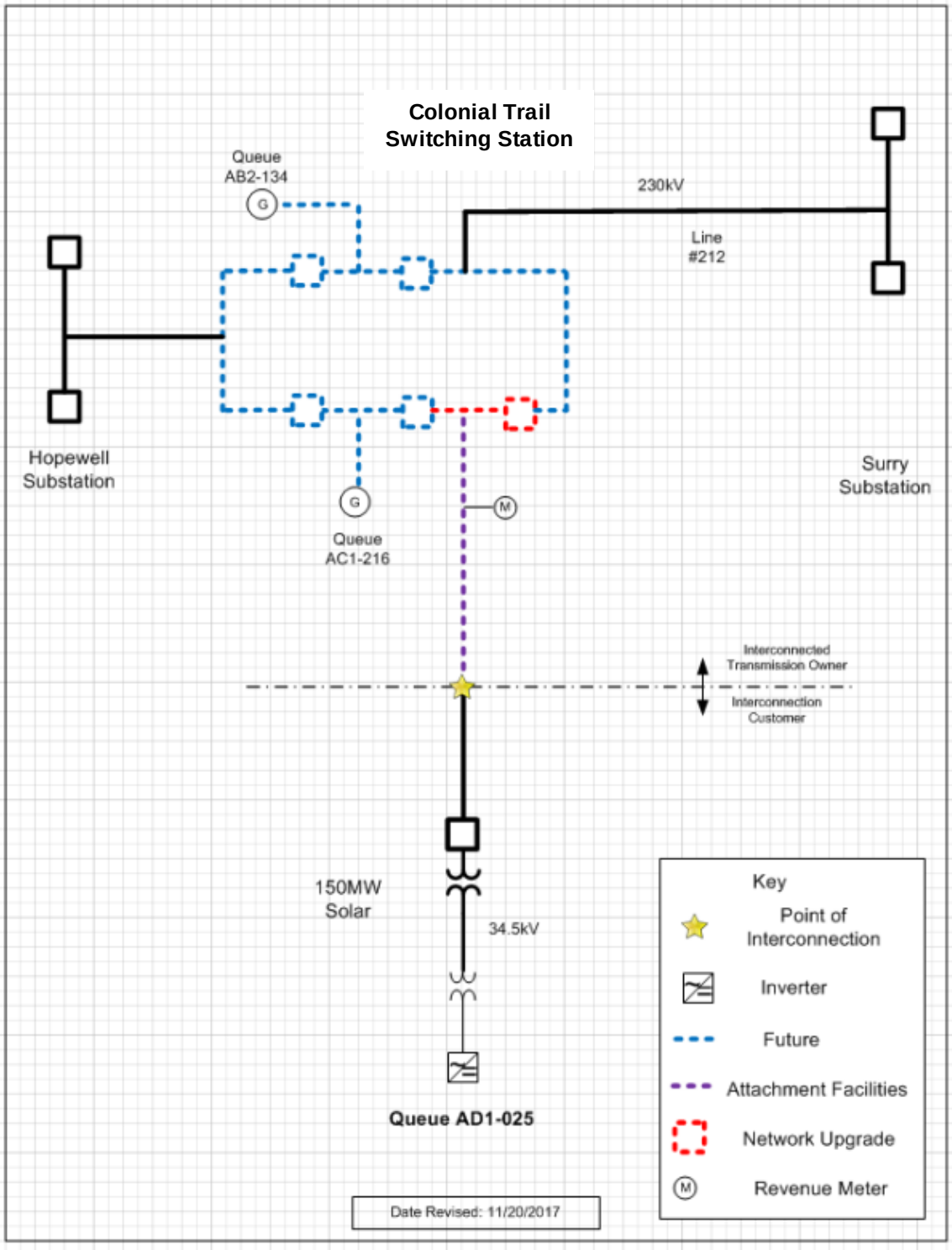
Attachment 1.
Single Line



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Attachment 2.

Colonial Trail Switching Station General Arrangement