Facilities Study Report

For

Physical Interconnection of

PJM Generation Interconnection Request

Project ID AG2-297

"AG2-297 Cumberland 230kV Substation"

Introduction

This Facilities Study has been prepared in accordance with the PJM Open Access Transmission Tariff, as well as the Application and Studies Agreement between the Project Developer and PJM Interconnection, LLC (PJM or Transmission Provider (TP)). The Transmission Owner (TO) is Atlantic City Electric.

This Facility Study was performed to satisfy the Phase 2 Facility Study requirement of the PJM Tariff. The Facility Study is intended to provide scope, cost and schedule estimates for the project as currently defined and approved for Phase 2 study. In the event project changes are made during DP2 that impact this report, updates will be provided as part of the Phase 3 report. Following execution of the project's final agreement, this report will not be updated to account for other changes made as part of the agreements modification clause and instead the scope change process will be followed.

A. Transmission Owner Facilities Study Summary

1. PROJECT DESCRIPTION

The Project Developer (PD) has proposed a Solar Generating Facility located in, Cumberland County, New Jersey with a designated PJM Project ID of AG2-297. The installed facilities will have a total Maximum Facility Output (MFO) of 19 MW with 11.4 MW of this output being recognized by PJM as Capacity.

2. POINT OF INTERCONNECTION (POI)

The Generating Facility will interconnect with the Atlantic City Electric transmission system via a direct connection into the Cumberland 230 kV substation.

The proposed generation interconnection is shown on the single line diagram in Attachment #1.

3. POINT OF CHANGE IN OWNERSHIP

The Point of Change in Ownership will be located at the first transmission line structure outside Cumberland Substation. This dead-end structure will be owned and installed by the Project Developer.

4. SCOPE OF PROJECT DEVELOPER INTERCONNECTION FACILITIES

Project Developer will design, build, own, operate and maintain the Project Developer Interconnection Facilities on Project Developer’s side of the Point of Change in Ownership (PCO). This includes, but is

- Circuit breakers and associated equipment located between the high side of the MPT(s) or GSU(s) and the Point of Change in Ownership
- Generator lead line from the Generating Facility to the Point of Change in Ownership

- Relay and protective equipment, telecommunications equipment, and Supervisory Control and Data Acquisition (SCADA) to comply with the TO's Applicable Technical Requirements and Standards

B. Transmission Owner Facilities Study Results

The following is a description of the planned Transmission Owner facilities for the physical interconnection of the proposed AG2-297 project to Atlantic City Electric transmission system. These facilities shall be designed according to Atlantic City Electric Applicable Technical Requirements and Standards. Once built, Atlantic City Electric will own, operate, and maintain these Facilities.

1. TRANSMISSION OWNER INTERCONNECTION FACILITIES:

A 230 kV take-off structure and foundation(s) will be installed within the fence of the Cumberland Substation, to terminate the Project Developer's generator lead line.

There will be a 230kV conductor line conductor span from the take-off structure to the bus position in the switchyard of the interconnection substation. The fiber communication will be run from this dead end structure underground into the new control house.

The 230kV line conductor up to the first transmission line dead end structure outside the substation fence will be owned by the TO. The first transmission line dead end structure outside the substation fence will be owned by the Project Developer, and shall serve as the Point of Change in Ownership.

2. STAND ALONE NETWORK UPGRADES

This generation project will not have any stand alone network upgrades.

3. NETWORK UPGRADES

Expanding existing TO substation:

Cumberland 230kV Substation Upgrade

The existing substation, Cumberland 230kV, will be expanded to interconnect the project with the Atlantic City Electric transmission system.

A new 230kV Line terminal will be added at existing Cumberland 230kV Substation Ring Bus to interconnect the project with Atlantic City Electric transmission system. This includes installation of new 230kV equipment at Cumberland substation [(1) 230kV circuit breaker, (2) 230kV manual operated disconnect switches, (1) 230kV line motor operated disconnect switch, (1) set of CCVTs & lightning arrestors)]. In addition, new circuit breaker and line protections relays, along with associated incoming underground fiber cable connection will be installed in existing Cumberland substation control house.

4. OTHER SCOPE OF WORK

N/A

5. MILESTONE SCHEDULE FOR COMPLETION OF ACE WORK

Facilities outlined in this report are estimated to take 36 to 48 months to construct, from the time the Generation Interconnection Agreement is fully executed. This schedule may be impacted by the timeline for procurement and installation of long lead items, the ability to obtain outages to construct and test the proposed facilities.

Description	Start month	Finish Month
Detailed Design	1	30
Permitting	30	36
Construction	36	48

6. ASSUMPTIONS IN DEVELOPING SCOPE/COST/SCHEDULE

- The 230 kV circuit breaker (CB) is identified as a critical path item. At the time of submission of this report, the estimated procurement lead time is 145 weeks. This lead time is subject to change based on market conditions, manufacturer availability, and other external factors.
- To the extent the developer has the ownership or property rights ACE may need to build its network upgrade, this facility study assumes that we can build the required network upgrade on the land identified. To the extent that additional land may be required outside of what is shown, neither the estimate nor schedule proposed accounts for the costs or time to acquire other suitable property.

7. REVENUE METERING REQUIREMENTS

All revenue metering needed for this interconnection project must meet the metering requirements stated in Appendix 2, section 8 of the AG2-297 GIA, and in PJM Manuals M01 and M14D. The details of applicable revenue metering requirements are given in the 'ACE Engineering & Construction Standards' posted on PJM website.

A three-phase revenue metering point must be established at the Point of Change in Ownership, with no line-loss or transformer-loss compensation provided. The Project Developer is responsible for installing proper equipment to supply real-time telemetry data to PJM. The Project Developer will procure, install, own, and maintain revenue grade instrument transformers, and will provide a metering cabinet and structure in accordance with Exelon's specifications. Placement of metering equipment requires Exelon approval and must be in a secure location with unescorted access for Exelon employees. The Transmission Owner will procure, install, own, and maintain the revenue

meter. The Project Developer will complete wiring connections at the secondary of the instrument transformers, terminate at a terminal/shorting block, and supply/install conduit as needed for Exelon to finish wiring and connections at the metering enclosure.

8. LAND REQUIREMENTS FOR INTERCONNECTION SUBSTATION

This generation project will not require additional land for the interconnection substation, as all new facilities will be installed within the existing substation fence line.

9. APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS

Applicable Technical Requirements and Standard:

PHI Substation Design Manual

OH Transmission Design Manual

10. ENVIRONMENTAL AND PERMITING

While no major permitting constraints are anticipated due to all new installations being located within the existing substation fence, minor permits will still be required, including approvals from the Soil Conservation District and applicable local building permits, prior to construction.

C. APPENDICES

Attachment #1: Single Line Diagram for the Physical Interconnection

ATTACHMENT 1: Single Line Diagram for the Physical Interconnection

