Generation Interconnection
Feasibility Study Report
Queue Position AB2-166

The Interconnection Customer (IC) has proposed a 5.5 MW MFO (2 MWC) solar generating facility to be located in Wicomico County, Maryland. PJM studied AB2-166 as a 5.5 MW injection into the Delmarva Power and Light Company's (DPL) system at the Edgewood 69 kV Substation and evaluated it for compliance with reliability criteria for summer peak conditions in 2020. The planned in-service date, as requested by the IC during the project kick-off call, is November 1, 2017.

Point of Interconnection

The Interconnection Customer requested a distribution level interconnection. Distribution facilities in the area of the AB2-166 project are owned by the Choptank Electric Cooperative (CEC). As a result, AB2-166 will interconnect with the CEC system at the Edgewood Substation. The DPL system feeds the Edgewood Substation.

Transmission Owner Scope of Work

Required Relaying and Communications

Three phase 69kV Bus PTs and Overvoltage Protection
The AB2-166 project will require the addition of three phase potential monitoring devices on the 69 kV bus at Edgewood Substation in order to sense overvoltages related to backfeeding a single phase to ground fault. This potential should be wired into the voltage input of a relay capable of detecting and tripping for overvoltage.

Over Voltage Protection

A relay capable of detecting overvoltage should remove the generation from service.

The following trip times are required:
Trip in 0.16 seconds for V < 50%
Trip in 2 seconds for 50% < V < 88%
Trip in 1 second for 110% < V <120%
Trip in 0.16 second for 120% < V

Interconnection Customer Scope of Work

The Interconnection Customer assumes full responsibility for design and construction of all facilities associated with the AB2-166 generating station and the direct connection line on the IC side of the Point of Interconnection.

The IC will be required to install metering and telemetry equipment to provide revenue metering and real-time telemetry data to PJM. The requirements for this equipment are listed in Appendix 2, Section 8 of Attachment O to the PJM Tariff, as well as PJM Manuals 01 and 14D.

It is the IC's responsibility to send the data that PJM and DPL requires directly to PJM. The IC will grant permission for PJM to send DPL the following telemetry that the IC sends to PJM: real time MW, MVAR, volts, amperes, generator status, and interval MWH and MVARH.

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Summer Peak Analysis - 2020

Transmission Network Impacts

Potential transmission network impacts are as follows:

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

Summer Peak Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

None

Steady-State Voltage Requirements

Not required.

Short Circuit

Not required.

Stability and Reactive Power Requirement

Not required.

Delivery of Energy Portion of Interconnection Request

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

1. (DP&L - DP&L) The SHORT 1-LAUREL 69 kV line (from bus 232828 to bus 232249 ckt 1) loads from 97.86% to 100.33% (DC power flow) of its emergency rating (57 MVA) for the single line contingency outage of 'CKT 23002'. This project contributes approximately 1.4 MW to the thermal violation.

   CONTINGENCY 'CKT 23002'
   DISCONNECT BUS 232007 /INDIAN RIVER - PINEY GROVE 230 & PNY GRV AT-20 XFMER
   END

Light Load Analysis - 2020

Not required.