Generation Interconnection
Feasibility Study Report
W3-087

The Interconnection Customer (IC) has proposed a 15 MWE (5.7 MWC) solar powered generating facility consisting of ground mounted fixed panel solar photovoltaic arrays. The project is to be located in Dover, Delaware. PJM studied W3-087 as a 15 MW injection into the Delmarva Power and Light (DPL) system at the Cartanza 69kV substation. The project was evaluated for compliance with reliability criteria for summer peak conditions in 2014. The requested in-service date is December 31, 2012.

Point of Interconnection

W3-087 will interconnect with the Delmarva Power and Light transmission system at the Cartanza substation through the City of Dover's 69kV system.

Attachment facilities and local upgrades (if required) along with terms and conditions to interconnect W3-087 to the City of Dover's system will be specified in a separate two party interconnection agreement between the City of Dover and the Interconnection Customer. From the transmission system perspective, no network impacts were identified as detailed below.

Direct Connection Requirements

Transmission Owner Scope of Direct Connection Work

There is no direct connection scope of work for Delmarva Power and Light.

Interconnection Customer Scope of Direct Connection Work

The Interconnection Customer assumes full responsibility for design and construction of all facilities associated with the W3-087 generating facility and the 69kV direct connection line on the IC side of the POI.

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. Protective relaying and metering design and installation must comply with Delmarva Power and Light's Applicable Standards.

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, Line with Failed 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

Short Circuit

None

Stability Analysis

Not required due to project size.

New System Reinforcements

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

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project.

None

Potential Congestion due to Local Energy Deliverability

(PJM also studied the delivery of the energy portion of the surrounding generation. Any potential 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 Transmission Interconnection Request. Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full deliverability for this project by

fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which analyzes all overload conditions associated with the identified overloaded element(s). As a result of the aggregate energy resources in the area, the following violations were identified:

These are ***not*** required reliability upgrades.

1. (PJM) The New Freedom-Windsor 500 kV line (from bus 200012 to bus 200028 ckt 1) loads from 99.99% to 100.02% (DC power flow) of its emergency rating (2982 MVA) for the operational contingency 'PJM27B_U2-74B'. This project contributes approximately 5.14 MW to the thermal violation.