

Generation Interconnection Feasibility Study Report Queue Position W2-003

The Interconnection Customer (IC) has proposed a 20 MWE (7.6 MWC) solar powered generating facility consisting of ground mounted fixed panel solar photovoltaic arrays. The project is to be located in Kennedyville, Kent County, Maryland. PJM studied W2-003 as a 20MW injection into the Delmarva Power and Light (DPL) system at two optional Points of Interconnection; the Kennedyville 69kV substation, and at a tap of the Lynch-Kennedyville 69kV circuit. The project was evaluated for compliance with reliability criteria for summer peak conditions in 2014. The planned in-service date, as stated in the Attachment N, is December 1, 2011.

Point(s) of Interconnection

The Interconnection Customer requested two (2) Points of Interconnection (POI) be evaluated for the W2-003 project. The Primary POI is a distribution interconnection at the Choptank Electric Cooperative's Kennedyville 25kV substation. The Secondary POI is a transmission interconnection at a tap of the Delmarva Power and Light's Lynch-Kennedyville 69kV circuit.

Primary Option

W2-003 will connect to the Choptank Electric Cooperative's distribution system at the Kennedyville 25kV substation via a new dedicated feeder.

Direct Connection Requirements

Transmission Owner Scope of Direct Connection Work

The scope of work and estimated costs for the direct connection facilities is as follows:

1. **Kennedyville 69/25kV substation**
 - a. Increase substation footprint, install high and low side bay, 20 MVA transformer with protective equipment. The estimated cost to perform this work is **\$3,700,000**.
 - b. Install one (1) new 25kV feeder approximately 0.9 miles in length from the Kennedyville substation to the generating site according to RUS standards. The estimated cost to perform this work is **\$110,000**.
 - c. Install a utility operated recloser with relaying and communication equipment. The estimated cost to perform this work is **\$20,000**.
 - d. Install utility grade metering. The estimated cost to perform this work is **\$20,000**.
 - e. Install SCADA to Control Center. The estimated cost to perform this work is **\$6,000**.
 - f. Install loss of voltage transmission protection relaying. The estimated cost to perform this work is **\$70,000**.

The total estimated cost to perform this work is **\$3,926,000** and will take an estimated **18 – 24 months** to complete after receipt of a fully executed Interconnection Service Agreement (ISA), Interconnection Construction Service Agreement (CSA) and construction payment.

Interconnection Customer Scope of Direct Connection Work

The Interconnection Customer (IC) assumes full responsibility for design and construction of all facilities associated with the W2-003 generating station. Site preparation including grading and an access road, as necessary, is assumed to be by the IC.

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 Choptank Electric Cooperative's Applicable Standards.

Monthly Charges

There will be a monthly charge to maintain the interconnection service. The solar facility will be on a general service rate for any energy consumed from Choptank Electric. The estimated monthly charge will be provided as part of the System Impact Study phase of W2-003.

Railroad Right-of-Way Charges

There will be a railroad crossing engineering study fee and annual lease charge for a new railroad utility line crossing.

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 contingencies at **Full** energy output. Stuck Breaker and Bus Fault contingencies will be applied during the System Impact Study.)*

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

Not required.

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.

None

Secondary Option

W2-003 will connect to the Delmarva Power and Light’s transmission system at a tap of the Lynch-Kennedyville 69kV circuit.

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 contingencies at **Full** energy output. Stuck Breaker and Bus Fault contingencies will be applied during the System Impact Study.*

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

Potential Congestion due to Local Energy Deliverability

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These are **not** required reliability upgrades.

None