

Generation Interconnection Feasibility Study Report Queue Position W2-101

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 Quinton Township, Salem County, New Jersey. PJM studied W1-068 as a 20 MW injection into the Atlantic City Electric (ACE) system at the Quinton 69kV substation. 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 June 1, 2012.

Point of Interconnection

W2-101 will connect to the Atlantic City Electric transmission system at the new Quinton-Roadstown Tap 69kV substation.

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. Add a fourth breaker in the new Quinton-Roadstown Tap 69kV (W1-068) 69kV substation ring bus and create 69 kV terminal.

The estimated cost to perform this work is **\$700,000** and will take an estimated **24 –36 months** to complete after receipt of a fully executed Interconnection Service Agreement (ISA) and Interconnection Construction Service Agreement (CSA).

Note: the above cost and time estimates assume that the new Quinton-Roadstown Tap 69kV substation is constructed by the W1-068 project. Also, the cost does not include the Contribution in Aid of Construction (CIAC) tax.

Interconnection Customer Scope of Direct Connection Work

The IC is responsible for all design and construction related activities on their side of the Point of Interconnection. IC will interconnect W2-101 with the ACE system by constructing a customer owned 69kV circuit from their facility to the future 69kV substation adjacent to the Quinton-Roadstown Tap 69kV circuit. The above cost estimates do not include construction of that line or bus work. Route selection, line design, right-of-way acquisition, and construction of such lines will be entirely the responsibility of the Interconnection Customer.

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 Atlantic City Electric'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 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

No problems identified.

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. The RDSTN TP-W2-035TAP1 69 kV line (from bus 228223 to bus 902480 ckt 1) loads from 77.63% to 100.67% (DC power flow) of its emergency rating (58 MVA) for the single line contingency ('D/W-QUINT'). This project contributes approximately 20 MW to cause the thermal violation.
2. The QUINTON-D/W 69 kV line (from bus 228329 to bus 228323 ckt 1) loads from 99.97% to 116.65% (DC power flow) of its emergency rating (72 MVA) for the single line contingency ('WOOD-LAUR'). This project contributes approximately 12.01 MW to cause the thermal violation.
3. The W2-035TAP1-LAUREL#2 69 kV line (from bus 902480 to bus 228259 ckt 1) loads from 109.56% to 135.14% (DC power flow) of its emergency rating (58 MVA) for the single line contingency ('D/W-QUINT'). This project contributes approximately 20 MW to cause the thermal violation.
4. The LAUREL#2-LAUREL 69 kV line (from bus 228259 to bus 228218 ckt 1) loads from 141.85% to 147.54% (DC power flow) of its emergency rating (149 MVA) for the single line contingency ('USLC-SM_V4-036B_WITH_W1-085B'). This project contributes approximately 8.47 MW to cause the thermal violation.
5. The CRLS CR2-SHRMAN#2 69 kV line (from bus 228252 to bus 228226 ckt 1) loads from 284.55% to 293.93% (DC power flow) of its emergency rating (56 MVA) for the single line contingency ('USLC-SM_V4-036B_WITH_W1-085B'). This project contributes approximately 5.25 MW to cause the thermal violation.