

# ***Generation Interconnection Feasibility Study Report Queue Position W2-035***

The Interconnection Customer (IC) has proposed a 20 MWE (7.5 MWC) solar generating facility consisting of ground mounted fixed solar photovoltaic arrays. The facility will be located in Salem County, New Jersey. W2-035 was studied as a 20 MW injection into the Atlantic City Electric's (ACE) system at a tap of the Laurel Street-Roadstown 69kV circuit and evaluated for compliance with reliability criteria for summer peak conditions in 2014. The planned in-service date, as stated in Attachment N, is September 1, 2011.

## **Point of Interconnection**

W2-035 will interconnect with the ACE system at a tap of the Laurel Street-Roadstown 69kV circuit.

## **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:

Atlantic City Electric (ACE) will construct a new 69 kV tap structure with three (3) 69kV switches adjacent to the Laurel Street-Roadstown 69kV circuit.

The total estimated cost to perform this work is **\$500,000** and will take **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 does not include the Contribution in Aid of Construction (CIAC) tax.

### **Interconnection Customer Scope of Direct Connection Work**

The Interconnection Customer assumes full responsibility for design and construction of all facilities associated with the W2-035 generating station and the 69kV direct connection line on the IC side of the POI. Site preparation including grading and an access road, as necessary, is assumed to be by the IC. Route selection, line design, right-of-way acquisition and construction of lines will be entirely the responsibility of 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 Atlantic City Electric Applicable Standards.

### **Cost and Timing Summary**

While the information in this transmittal is reasonable for the scope of work defined, it should however be noted that the cost figures are conceptual in nature at this stage, as an engineering team has not been assigned to the project. Obviously, any change to the scope of work will require that the estimates be revisited. The costs are a best estimate, but the developer will be charged for actual costs. Any under or over-runs will be reconciled at the conclusion of the project.

### **Network Impacts**

Potential network impacts were 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**

No problems identified.

#### **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

### **Stability Analysis**

Not required due to project size.

### **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-QUINTON 69 kV line (from bus 228223 to bus 228329 ckt 1) loads from 84.07% to 101.38% (DC power flow) of its normal rating (44 MVA) for non-contingency condition. This project contributes approximately 7.62 MW to cause the thermal violation.
2. The LAUREL-WOODTWN2 69 kV line (from bus 228218 to bus 228360 ckt 1) loads from 101.74% to 106.37% (DC power flow) of its emergency rating (108 MVA) for the single line contingency ('USLC-SM\_V4-036B\_WITH\_W1-085B'). This project contributes approximately 5 MW to cause the thermal violation.
3. The W2-035TAP1-RDSTN TP 69 kV line (from bus 902480 to bus 228223 ckt 1) loads from 109.64% to 124.94% (DC power flow) of its emergency rating (58 MVA) for the single line contingency ('WOOD-LAUR'). This project contributes approximately 8.87 MW to cause the thermal violation.
4. The CRLS CR2-SHRMAN#2 69 kV line (from bus 228252 to bus 228226 ckt 1) loads from 123.16% to 135.48% (DC power flow) of its normal rating (44 MVA) for non-contingency condition. This project contributes approximately 5.42 MW to cause the thermal violation.
5. The LAUREL#2-LAUREL 69 kV line (from bus 228259 to bus 228218 ckt 1) loads from 131.03% to 139.07% (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 11.98 MW to cause the thermal violation.

6. The RDSTN TP-QUINTON 69 kV line (from bus 228223 to bus 228329 ckt 1) loads from 127.52% to 143.37% (DC power flow) of its emergency rating (56 MVA) for the single line contingency ('WOOD-LAUR'). This project contributes approximately 8.87 MW to cause the thermal violation.
7. The CRLS CR2-SHRMAN#2 69 kV line (from bus 228252 to bus 228226 ckt 1) loads from 267.41% to 279.86% (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 6.97 MW to cause the thermal violation.