Generation Interconnection Feasibility Study Report Queue Position W2-039

The Interconnection Customer (IC) has proposed a 63 MWE (63 MWC) oil and natural gas fueled simple cycle combustion turbine generating facility. The facility will be located near the Clayville substation in Vineland, New Jersey. W2-039 was studied as a 63 MW injection into the Atlantic City Electric's (ACE) system at a tap of the South Millville-Butler 69kV circuit and evaluated for compliance with reliability criteria for summer peak conditions in 2014. The planned in-service date is June 1, 2014.

Point of Interconnection

W2-039 will interconnect with the ACE system at a new 69kV substation to be built adjacent to the South Millville-Butler 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 three breaker ring bus substation adjacent to the Butler-South Millville 69kV circuit to interconnect W2-039.
The total estimated cost to perform this work is **$4,700,000** and will take **24 – 36 months** to complete after receipt of a fully executed Interconnection Service Agreement (ISA) and Interconnection Construction Service Agreement (CSA).

The above cost estimate assumes that the generation site is electrically close (less than 500 feet) from the new 69 kV substation. The Interconnection Customer will be required to provide 2-3 acres (depending upon zoning requirements) of property for the construction of the new 69 kV substation.

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 W2-039 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)*

1. The first section of the Second Street-South Millville 69 kV line (bus 228228-228215) loads to 111% of its emergency rating (77 MVA) for the single line contingency (loss of W20-39 to Butler 69 kV line). This project contributes 52.4 MW to the flow. – AEC identified.

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)

1. The COOPER-GRACETON 230 kV line (from bus 214089 to bus 220964 ckt 1) loads from 131.87% to 132.05% (DC power flow) of its emergency rating (485 MVA) for the single line contingency ('PJM17'). This project contributes approximately 5.89 MW to cause the thermal violation.

2. The PCHBTMTP-COOPER 230 kV line (from bus 213869 to bus 214089 ckt 1) loads from 134.94% to 135.12% (DC power flow) of its emergency rating (485 MVA) for the single line contingency ('PJM17'). This project contributes approximately 5.89 MW to cause the thermal violation.

3. This project contributes 6.5 MW to the existing overload of the Mickleton – Thorofare 230 kV line (from bus 228401 to bus 219121 ckt 1) of its emergency rating (566 MVA) for the single contingency (loss of Mickleton – Delco Tap 230 kV line) – AEC identified

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)

1. To mitigate the first section of the Second Street-South Millville 69 kV line (bus 228228-228215) overload will require an upgrade to a 69 kV strand bus and current transformer at Second Street. The estimated cost to perform this work is **$250,000** and will take **18 to 24 months** to complete after receipt of a fully executed Interconnection Service Agreement and Interconnection Construction Service Agreement.

Contribution to Previously Identified System Reinforcements

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

1. To mitigate the COOPER-GRACETON 230 kV line (from bus 214089 to bus 220964 ckt 1) overload will require the following:

   PECO Portion

   Reconductor Line 220-93 from Cooper Substation to Graceton Substation to get a minimum summer emergency rating of 725 MVA. The line is approximately 4 miles long. The estimated cost to perform this work is **$2,800,000** and will take **24 months** to complete after receipt of a fully executed Interconnection Service Agreement and Interconnection Construction Service Agreement. This cost is for the PECO portion only.

   BGE Portion

   A double circuit line will be built with 1033.5kcmil ACSR creating one circuit by connecting the two lines into one. Rating for 2 – 1033.5kcmil 45/7 ACSR (Ortolan) at 125°C = 968/1227MVA SN/SE. BGE ownership is for 1.85 miles and the rebuild of 11 structures. It would be built as a double circuit line with the conductors jumpered across at the terminal ends. The line construction is estimated at **$3,000,000**. Two breakers ($400,000/breaker) would need to be replaced at Graceton for a cost of **$800,000**. An additional cost of **$200,000** would also be incurred for 4 breaker disconnects and line connections to cover thermal. The project is estimated to take **30 months** to complete: 12 months for the CPCN process & design and an additional 18 months for construction. The total cost of the project is estimated at **$4,000,000.**

2. To mitigate the PCHBTMTP-COOPER 230 kV line (from bus 213869 to bus 214089 ckt 1) overload will require the reconductor of Line 220-08 from PB Tap to Cooper Substation to get a minimum summer emergency rating of 741 MVA. The line is approximately 1.4 miles long. The estimated cost to perform this work is **$1,000,000** and will require **24 months** to complete after receipt of a fully executed Interconnection Service Agreement and Interconnection Construction Service Agreement.

3. To mitigate the Mickleton – Thorofare 230 kV line (from bus 228401 to bus 219121 ckt 1) overload will require the rebuild of 1.69 miles of conductor with a conductor that has capability of at least 2500 A emergency. The estimated cost to perform this work is **$3,500,000** and will take **24 – 36 months** to complete after receipt of a fully executed Interconnection Service Agreement and Interconnection Construction Service Agreement.

Stability Analysis

Will be performed during the System Impact Study phase of W2-039.