PJM Generator Interconnection Request
Queue W3-125
Eagle Point 230kV
Feasibility Study Report

January 2011
#629807

W3-125 Eagle Point 230kV Feasibility Study

General

The Interconnection Customer (IC) has requested an increase of 27.9MW of CIR's at the IC's existing facility located at 1240 Crown Point Road, Westville, Gloucester County, New Jersey. The facility has had 195 MW of CIR's in the past, but has lost CIR's as the plant load increased. Plant load has now decreased and the facility is capable of delivering 27.9 more MW to the system.There is no change in any of the equipment at the plant. The plant is presently claiming 167.1 MW of CIR's and is increasing the request to 195 MW.

The plant consists of 2 GE frame 7 combustion turbine generatorss and one ABB steam turbine generator.

The breakdown of the output from the generators.

	Rating	Present CIR's	Future CIR's
GTA	90.87MVA	60	75
GTB	90.87MVA	60	75
ABB	52.90MVA	47.1	45

The intent of the Feasibility study is to determine system reinforcements and associated costs and construction time estimates required to facilitate the addition of the new generating plant to the transmission system. The reinforcements include the direct connection of the generator to the system and any network upgrades necessary to maintain the reliability of the transmission system.

Direct Connection

There will be no change to the interconnection of the plant. See Figure #1. The present interconnection arrangement will accommodate the increased output to the transmission system. Note that the entire 230kV station is owned by the Eagle Point Refinery.

Figure #1

Network Impacts

Queue project W3-125 was studied as a(n) 27.9 MW (27.9 MW of which was Capacity) injection into PSEG's system at the Eagle Point 230.0 kV substation. Project W3-125 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

1. (PSEG) The Eagle Point-Gloucester 230 kV line (from bus 219120 to bus 219110 ckt 1) loads from 88.57% to 90.68% (DC power flow) of its normal rating (651 MVA) for non contingency condition. This project contributes approximately 13.73 MW to the thermal violation.

Multiple Facility Contingency

(Double Circuit Tower Line, Line with Failed Breaker and Bus Fault contingencies for the full energy output)

No problems identified.

Short Circuit
(Summary form of Cost allocation for breakers will be inserted here if any)

No problems identified

Stability

Not required because the project is less than 30 MW.

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.)

2. (AE) The PJM Generation Queue position Q90-Monroe 230 kV line (from bus 228401 to bus 228402 ckt 2) loads from 110.85% to 112.27% (DC power flow) of its emergency rating (446 MVA) for the single contingency 'PS18'. This project contributes approximately 6.33 MW to the thermal violation.

3. (PSEG) The Eagle Point-Gloucester 230 kV line (from bus 219120 to bus 219110 ckt 1) loads from 114.42% to 116.48% (DC power flow) of its emergency rating (740 MVA) for the tower contingency 'AE1TOWER'. This project contributes approximately 15.85 MW to the thermal violation.

4. (AE) The PJM Generation Queue position Q90-Monroe 230 kV line (from bus 228401 to bus 228402 ckt 1) loads from 110.85% to 112.27% (DC power flow) of its emergency rating (446 MVA) for the single contingency 'PS18'. This project contributes approximately 6.33 MW to the thermal violation.

New System Reinforcements

1. The overload on the Eagle Point-Gloucester 230kV circuit can be alleviated by replacing the three line wavetraps, two at Gloucester and one at Eagle Point, and three disconnect switches at Gloucester. Replacing the wavetraps improves the normal rating of the line to 688MVA. But after replacing the three line disconnect switches the normal rating of the line becomes 732MVA, which is the actual conductor rating.The total cost to replace the line wavetraps and three disconnect switches is approximately **$500,000**. The replacements at Gloucester are PSE&G's responsibility. Replacing the wave trap at Eagle Point is the IC's responsibility.

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study.)

2 To mitigate the Mickleton-Monroe 230kV ckt #2 overload will require the reconductoring of the #2 Mickleton-Monroe 230kV line with an ACSS/TW conductor. The estimated cost to perform this work is **$7Million** and will take 30 months to complete following the receipt of a fully executed ISA and CSA.

3. The upgrade listed in 1 above is also sufficient to alleviate the contingency overload on the Eagle Point-Gloucester 230kV circuit since it will raise the emergency rating to 887 MVA.

4. The upgrade listed in 2 above will also alleviate this overload.

Energy Portion of Interconnection Request

(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. There is no guarantee of full delivery of energy 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 overloaded element(s) identified. As a result of the aggregate energy resources in the area, the following violations were identified.)

No problems identified.