Generation Interconnections

This analysis was completed to assess the reliability impact for a new generator interconnecting to the PJM system as a capacity resource.

Network Impacts - 800 MW Injection at Oyster Creek 230kV

Network Impacts

Potential network impacts for the injection of 250 MW into the Wayne - Homer City 345 kV line were evaluated for summer peak conditions in 2004. The analysis performed for this project included a revised breaker configuration at the Erie West 345 kV made necessary for a previously queued generator interconnection project.

A summary of the results follows:

Normal System

· No problems were identified

Single Contingency (MAAC Criteria IIA)

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· The new generator contributes 65 MW to the post-contingency overload on Erie South 345/230 kV transformer #1 for the outage of Erie West - Ashtabula - Perry 345 kV and Erie West 345/115 kV transformer #1.

Multiple Facility Contingency (MAAC Criteria IIC)

· The new generator contributes 80 MW to the post-contingency overload on Homer City 345/230 kV #2 for the line fault, stuck breaker condition involving the outage of the Homer City - Stolle Road 345 kV line and Homer City 345/230 kV transformer #1

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· The new generator contributes 90 MW to the post-contingency overload on Homer City 345/230 kV transformer #2 for the line fault with stuck breaker condition involving the outage of the Homer City - Watercure 345 kV line and Homer City 345/230 kV transformer #1.

Short Circuit Analysis

· Fault duty was evaluated at all substations that had a greater than 5% increase in fault current due to the new generator. The fault duty was below all circuit breaker interrupting capabilities and, as such, no circuit breaker replacements are anticipated due to this

project.
System Reinforcements

· The overload of the Erie South 345/230kV transformer #1 for the outage of the Erie West-Ashtabula-Perry 345kV line and the Erie West 345/115kV transformer #1 will be alleviated by the rearrangement of the Erie West 345kV substation. Two breakers are added at Erie West to separate the Ashtabula line from the 345/115kV transformer. Estimated cost for this element of the substation rearrangement is $2.978 million. This project will be allocated a portion of the cost for this upgrade. It is estimated it will take 2 years to complete this upgrade, 6 months for engineering and 18 months for construction.

· The overload on the Homer City 345/230kV transformer #2 for the line fault and stuck breaker condition involving the outage of the Homer City-Stolle Rd. 345kV line and the Homer City 345/230kV transformer #1 can be alleviated by installing a 345kV circuit breaker at the Homer City end of the Homer City-Stolle Rd. line, as shown in Figure #2. Estimated cost for the breaker installation is $1.75 million. It is estimated that it will take 1 year to install the breaker, consisting of 1month for design and 11 months for ordering, delivery and installation.

· The overload on the Homer City 345/230kV transformer #2 for the line fault and stuck breaker condition involving the outage of the Homer City-Watercure Rd. 345kV line and the Homer City 345/230kV transformer #1 can be alleviated by installing a 345kV circuit breaker at the Homer City end of the Homer City-Watercure Rd. line, as shown in Figure #2. Estimated cost for the breaker installation is $1.75 million. It is estimated that it will take 1 year to install the breaker, consisting of 1month for design and 11 months for ordering, delivery and installation.

The circuit breaker estimates are based upon recent prices for 500kV breakers. There is no recent history on the costs for 345kV breakers, however, it is anticipated the cost would be less than that stated.

Complete cost allocation for the installation of this project will be defined in the Impact Study Report.