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 - 750MW Injection at East Towanda

Potential network impacts for the injection of 750 MW into the East Towanda 230 kV substation were evaluated for summer peak conditions in 2004. Several generation scenarios were studied in an attempt to bracket expected system conditions in 2004.

A) Normal Conditions

· No problems were identified

B) Single Contingency

· Results in contingency overload on East Sayre - North Waverly 115 kV and East Sayre - East Towanda 115 kV for the outage of the East Towanda - Hillside 230 kV circuit. The new generator increases the flow on the overloaded facilities by 135 MVA.

· Results in contingency overload of one East Towanda 230/115 kV transformer for the outage of the other East Towanda 230/115 kV transformer. The new generator increases the flow on the overloaded facility by 100 MVA.

· Results in contingency overload on South Troy - Mansfield 115 kV for the outage of the Farmers Valley - Potter 115 kV circuit. The new generator increases the flow on the overloaded facility by 15 MVA.

· Results in contingency overload on North Meshoppen 230/115 kV transformer for outage of the circuit from East Towanda to the new generator interconnection.

C) Tower Line Contingency

· No problems were identified.

D) Short Circuit Analysis

· The fault duty was evaluated at all substations that had a greater than 5% increase in fault current due to a 750 MW generator at the East Towanda 230 kV substation. The fault duty was below all circuit breaker interrupting capabilities and, as such, no circuit breaker replacements would be expected due to this new generation.

Based on this analysis, a 750 MW injection at the East Towanda 230 kV substation would result in the need for the following network upgrades:

- Install a third East Towanda 230/115 kV transformer ($4.1 million).

- Reconductor the East Sayre - North Waverly 115 kV circuit ($1.2 million).

- Replace terminal equipment at East Towanda 115 kV, East Sayre 115 kV, and Mansfield 115 kV to increase the circuit ratings for the East Towanda - East Sayre 115 kV, East Sayre - North Waverly 115 kV and Mansfield - South Troy 115 kV circuits ($0.1 million).

- Replace the North Meshoppen 230/115 kV transformer with a higher rated (224 MVA) transformer ($1.8 million).

The total network upgrade cost is, therefore, estimated at $7.2 million. The lead time for the network upgrades is estimated at 24 months.

The addition of a 750 MW generator at East Towanda 230 kV results in increased power flow into the NYSEG system at Hillside 230 kV, North Waverly 115 kV, and Goudey 115 kV. Any potential negative impacts to the NYSEG system have not been evaluated at this stage of analysis. The Impact Study will determine what, if any, negative impacts occur to the NYSEG system.