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 - 725 MW Injection at South River

Potential network impacts for the injection of 725 MW at the South River 230 kV substation were evaluated for summer peak conditions in 2004. PJM was economically dispatched to determine the resulting generation pattern due to the additional 725 MW of generation. Several generation scenarios were studied in an attempt to bracket expected system conditions in 2004.

Based on this analysis, the 725 MW injection results in significant system upgrades that would be required to maintain the reliability of the PJM system.

A) Normal Conditions
- Normal overload on South River - Raritan River 230 kV circuit.

B) Single Contingency
- Contingency overload on the South River - Atlantic 230 kV circuit for the outage of either Freneau - Parlin 230 kV or South River - Raritan River 230 kV.
- Contingency overload on the Freneau - Parlin 230 kV circuit for the outage of South River - Atlantic 230 kV.

C) Tower Line Outages
- Contingency overload on Raritan River - Kilmer 230 kV, Kilmer - Lake Nelson 230 kV, and Sayreville 230/115 kV for the outage of South River - Atlantic 230 kV and Parlin - Freneau 230 kV.

D) Short Circuit Analysis
- Four 230 kV circuit breakers at the Raritan River 230 kV substation would need to be replaced because the fault duty exceeds the breaker fault interrupting capability.

Note: Each overloaded line is listed only once and that is for the first occurrence the overload was identified.

Although the effect of adding new lines to the system was analyzed, it was determined that the addition of the lines would be extremely difficult, if even possible. No present rights of way (ROW) have the capacity to handle any new line additions in the area around South River. Several developments have been built on the edge of the existing ROW making the widening of the ROW nearly impossible. The only option then would be to obtain new ROW, which at the feasibility study level was not pursued. The cost estimate for all system reinforcements was, therefore, based on upgrades to or

replacements of existing facilities.

The total cost estimate to eliminate the identified reliability problems is approximately $80 million. The time required to complete the necessary upgrades is estimated at over 6 years. The long lead time is a result of the multiple reinforcements along the same transmission corridor. As such, they can not all be performed simultaneously without disrupting service to customers.