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 - 749MW Injection at Sayreville 230kV

Potential network impacts for the injection of 749 MW into the Sayreville 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.

Based on this analysis, the 749 MW injection results in significant system upgrades that would be required to maintain the reliability of the PJM system. A summary of the results follows:

A) Normal Conditions

· No problems were identified.

B) Single Contingency

· 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 I 230 kV, Kilmer I - Lake Nelson 230 kV, Middlesex - Lake Nelson 230 kV and Raritan River 230/115 kV for the outage of South River - Atlantic 230 kV and Parlin - Freneau 230 kV.
· Contingency overload on Atlantic - South River 230 kV for outage of Raritan River - Kilmer I&W 230 kV tower line.

D) Short Circuit Analysis

· Eight 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.

Listed below are the necessary upgrades that need to be made to reliably connect the proposed project to the transmission system

1. Upgrade the Raritan River-Kilmer I 230 kV line to bundled 2-1590 ACSR conductor: $13,662,000

2. Upgrade the Kilmer I-LakeNelson 230 kV line to bundled 2-1033 ACSR conductor: $5,990,000

3. Upgrade the Middlesex-Lake Nelson 230 kV line to bundled 2-1033 ACSR conductor: $9,076,000

4. Upgrade the Atlantic-South River 230 kV line to bundled 2-1033 ACSR conductor: $27,195,000

5. Upgrade the Parlin-Freneau 230 kV line to bundled 2-1033 ACSR conductor: $7,355,000

6. Replace eight 230 kVcircuit breakers at Raritan River Substation. $2,800,000

The total cost estimate to eliminate the identified reliability problems is approximately $66 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.

This evaluation was done with the assumption that project A24 South River was not installed to limit the evaluation time. Installation of both projects would require reinforcements greater than those identified for each project individually. If both projects elect to proceed to the impact evaluation, alternatives that look at the development of new transmission lines into the area will be evaluated.