

Generation Interconnection

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

Network Impacts -730 MW Injection into the Homer City 500kV substation (G9)

Network Impacts

Potential network impacts for the injection of 730 MW into the Homer City 500 kV transmission was evaluated for summer peak conditions in 2005.

Normal System

No identified problems.

Single Contingency

There is the potential for a post-contingency operating problem that results from the outage of either the Keystone-Juniata 500 kV line, Conemaugh-Juniata 500 kV line, or the Hunterstown-Conastone 500 kV line and Hunterstown 500/230 kV transformers.

While these outages cause no criteria violations, the resultant voltage angle difference across the breakers that must be reclosed to restore these lines to service would be 45 degrees at Juniata and 80 degrees at Hunterstown.

Multiple Facility Contingency – Tower Line Outages (MAAC Criteria IIC)

No identified problems.

Generator Deliverability

The generator contributes to a greater than 5% voltage drop at Juniata 500kV substation for the outage of Hunterstown - Conastone 500kV circuit and the Hunterstown 500/230 kV transformer #1.

Short Circuit

No identified problems.

System Reinforcements

The voltage drop concern at Juniata will be alleviated by installing an SVC at the 500 kV substation. See Figure #2. Estimated cost for installing a 350 MVAR SVC at Juniata, determined to be necessary for previous projects is estimated to cost \$24.4 million. This includes the capacitors, appropriately sized transformer, 500kV circuit breaker, all associated controls, site prep and substation modifications. It does not include gross-up for taxes. The SVC is estimated at \$16.5 million and site expansion costs and line relocations at \$7.9 million.

Other potentially less expensive methods of addressing this problem, such as using fast switches to shunt a portion of the existing Juniata capacitors, are being evaluated.

The actual cost allocation amounts for network upgrades required by more than one generation project will be defined in the Impact Study report.

The standing angle concerns described above will be fully addressed in the Impact Study report.

Figure #2

Proposed Juniata 500kv 350mvar SVC

