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 -650 MW Injection into the TMI 230kV substation (F1)

Network Impacts

All load flow studies were performed under the assumption that the Yorkana-Otter Creek 230 kV line is in-service. The F01 project cannot be granted capacity certification without Yorkana-Otter Creek in service. The projected in-service date for the Yorkana-Otter Creek 230kV line is June 2004.

Normal System

1) The 230kV circuit from Brunner Island to West Hempfield was loaded to 100% of the normal rating (508MVA). This project contributes approximately 54MW to the facility loading.

2) The 230kV circuit from Brunner Island to Yorkana was loaded to 100% of the normal rating (498MVA). This project contributes approximately 50MW to the facility loading.

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

No overloads identified.

Generator Deliverability

1) This project causes the Brunner Island-West Hempfield 230 kV circuit to be loaded to 101% of its emergency rating (611 MVA) due to an outage of the Brunner Island-South Manheim 230kV circuit. This project contributes 61MW to the facility loading.

2) This project causes the Brunner Island-West Hempfield 230 kV circuit to be loaded to 101% of its emergency rating (611 MVA) due to an outage of the Yorkana-OtterCreek 230kV circuit. This project contributes 75MW to the facility loading.

3) This project causes the Yorkans-Brunner Island 230 kV circuit to be loaded to 105% of its emergency rating (617 MVA) due to an outage of the Brunner Island-West Hempfield 230kV circuit. This project contributes 68MW to the facility loading.

4) This project contributes 22MW to the previously identified overload of the Hunterstown 230/115kV transformer.

Short Circuit Analysis

Analysis underway.

System Reinforcements

Two options to mitigate the identified overloads were evaluated. The options are:

1) Interconnect the 650MW plant to the new Brunner Island 500kV substation that is proposed to be added into the TMI-Peach Bottom 500kV line for connection of project D19. Injecting the 650MW into the new Brunner Island 500kV substation will require the installation of an approximately 15 mile long 500 kV radial, single circuit transmission line from the generating plant site to the Brunner Island 500kV substation. The estimated construction costs are $48.5 million.

2) Installation of a new approximately 25 mile Brunner Island-Otter Creek 230kV line. The line would be constructed by building a new approximately 14 mile 230kV line from Brunner Island to Yorkana and installing conductor on the vacant side of the future Yorkana-Otter Creek 230kV line. The estimated construction costs are $30.2 million. Note: Based on engineering drawings, it appears that existing lines and transformers at Brunner Island can be reconfigured to accommodate the new circuit into Brunner Island 230kV substation. However, a field review of the proposed connection into the Brunner Island 230kV substation is required to confirm the plausibility of this reinforcement alternative.

The estimated lead time for in-service of both options is 6-8 years, including permits, condemnations, and construction. As with other major transmission line projects, construction at a higher voltage level is likely to be more contentious.

Both options adequately mitigated the TMI 500/230kV transformer, Brunner Island - West Hempfield 230kV line and Brunner Island - Yorkana 230kV line overloads. However, the Brunner Island - Otter Creek 230kV line option was more effective in reducing loading on the 230kV system, therefore, it is the recommended reinforcement alternative.