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 -1200 MW Injection into the TMI-Juniata 500kV substation (G32)

Network Impacts

Potential network impacts for the injection of 1200MW between the TMI-Juniata 500 kV transmission line was evaluated for summer peak conditions in 2005. The load flow study was performed under the assumption that the Yorkana-Otter Creek 230 kV line and Otter Creek 230 kV switchyard are in-service.

Generator Deliverability

No identified problems.

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

No identified problems.

Short Circuit

The addition of the G32 project results in eighteen (18) 230kV circuit breakers exceeding their interrupting rating. There are nine (9) circuit breakers impacted at Three Mile Island substation , six (6) at Middletown Junction substation and three (3) at Hummelstown substation.

Sub-Transmission System 69kV Overloads

Several 69kV system overloads were identified as a result of adding the G32 project.

- Manor-Engleside #2 line
- Manor-Engleside #1 line
- Manor-Face Rock line
- Manor-West Hempfield line

New System Reinforcements

1. Circuit breakers

Location	# of Breakers	Action	Cost Per	Total Cost
TMI 230kV Breakers	9	Replace	$500,000.00	$4,500,000.00
Middletown Jct 230kV Breakers	6	Replace	$500,000.00	$3,000,000.00
Hummelstown 230kV Breakers	3	Upgrade	$250,000.00	$ 750,000.00
Grand Total for G32				$8,250,000.00

2. The total cost to eliminate the overloads on the 69kV sub-transmission system is estimated to cost $5 million and take 3 years to complete. A more refined description of the 69kV overloads and associated cost and time estimates will be provided in the Impact Study.

Contribution to Previously Identified System Reinforcements

The G32 project will be allocated a percentage of the costs for the following previously identified network reinforcements:

- Installation of a new 230 kV circuit form Brunner Island - Otter Creek. The installation of the line is estimated to cost $30.2 million and take 6-8 years to complete. The G32 project contributes approximately 30 MW toward the need for this reinforcement.

Cost allocation percentages are not provided as part of the Feasibility Study analysis, however, cost allocation will be provided at the conclusion of the Queue D, E, F & G Impact Study evaluations.

Note: Several projects in the area have recently withdrawn from the PJM queue. Based upon a cursory review of the area, additional 230kV system overloads may occur due to these project withdrawals. The extent of the overloads and required upgrades will be defined in the Impact Study.