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 - 500 MW Capacity Injection

Capacity injection of 500 MW into the New Freedom – Cardiff 230kV line was evaluated to determine Network Impacts. (note: Atlantic Electric zone 2001 baseline upgrades at Cardiff were modelled as completed)

Generator Deliverability

1. The Cardiff #2 230/69 kV transformer is contingency overloaded at 102% of the emergency rating (259MVA) for the outage of the Cardiff #1 230/69 kV transformer. The H11 project contributes approximately **71** MW to the loading on this transformer.
2. The Cardiff #1 230/69 kV transformer is contingency overloaded at 103% of the emergency rating (259MVA) for the outage of the Cardiff #2 230/69 kV transformer. The H11 project contributes approximately **71** MW to the loading on this transformer.
3. The Cardiff - Mill 69 kV circuit is contingency overloaded at 105% of the emergency rating (261MVA) for the outage of the Cardiff-Lewis 69 kV circuit. The H11 project contributes approximately **77** MW to the loading on this circuit.

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

No identified problems.

Short Circuit

There weren't any problems identified for the 230 kV and above circuit breakers. However, the short circuit analysis for the lower level voltage breakers will be done during the Impact Study evaluation and any required breaker replacements are not expected to materially alter the total network reinforcement cost.

New System Reinforcements

Overloads #1 can be relieved by upgrading the Cardiff #2 230/69 kV transformer to 300MVA rating. The cost is estimated at $1.35 Million and will take approximately 3 years to complete.

Overload #2 can be relieved by upgrading the Cardiff #1 230/69 kV transformer to 300MVA rating. The cost is estimated at $1.35 Million and will take approximately 3 years to complete.

Overload #3 can be relieved by upgrading the Cardiff - Mill 69 kV circuit. The cost is estimated at $0.02 Million and will take approximately 3 years to complete.

The total new Network upgrades are estimated to cost $2.72 million. The estimated time required to construct the new network upgrades is a minimum of 28 month.

Contribution to Previously Identified System Reinforcements

The H11 project will contribute to the cost of the following previously identified network reinforcements:

1. Install a second 230 kV circuit from Richmond – Waneeta. The project contributes approximately **14** MW. The cost is estimated at $45 million and is expected to take 5 years to complete.
2. Reconductor the existing 230 kV circuit from Richmond – Waneeta. The project contributes approximately **14** MW. The cost is estimated at $9 million and is expected to take 4 years to complete.
3. Reconductor the 230 kV circuit from Graysferry – Parrish. The project contributes approximately **38** MW. The cost is estimated at $3.7 million and the expected in service date is 03/01/04.
4. Replace Morton Tap disconnect switch. The project contributed approximately **25** MW. The cost is estimated at $36,000 and the expected in service date is 03/01/04.

Cost allocation percentages are not provided as part of the Feasibility Study analysis, however, cost allocation will be provided during the Impact Study evaluations.