

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 -260 MW Injection into the Warren 230kV substation (G40)

Network Impacts

Potential network impacts for the injection of 260 MW into the Warren 230 kV substation were evaluated for summer peak conditions in 2005.

Generator Deliverability

1. The Warren – Falconer 115 kV circuit is overloaded at **112%** of the normal rating (82 MVA). The G40 project contributes approximately 33 MW to the loading on this circuit.

The Warren – Falconer 115 kV circuit is also overloaded for the following contingencies:

- Contingency overloaded at **161%** of the emergency rating (116 MVA) for the outage of the Glade – Forest, Glade – Lewis Run 230 kV circuit. The G40 project contributes approximately 57 MW to the loading on this circuit.
- Contingency overloaded at **120%** of the emergency rating (116 MVA) for the outage of the Erie South – Warren 230 kV circuit. The G40 project contributes approximately 57 MW to the loading on this circuit.

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

No identified violations.

Short Circuit

No identified problems.

New System Reinforcements

- 1) The overload on the Warren – Falconer 115 kV circuit can be relieved by:
- Rebuilding the Warren-Falconer 115 kV line (15.56 miles of the 19.54-mile circuit) with 795 Kcmil 26/7 ACSR conductor at an estimated cost of \$8.71 and an estimated time of 2 years from execution of an ISA.
 - Replacing a 115 kV disconnect switch at Warren substation and a 115 kV circuit breaker at Falconer substation at an estimated cost of \$0.19 million and an estimated time of 1 year from execution of an ISA.

The Warren-Falconer line is a tie between First Energy in Pennsylvania and Niagara Mohawk/National Grid in New York. The 4.01 miles of the line in New York that must be rebuilt and the circuit breaker replacement at Falconer were estimated by First Energy. More accurate estimates will be solicited from Niagara Mohawk/National Grid in the Impact Study phase of the project.

The cost estimate for the network upgrades is \$8.9 million and it will take minimum of two years to complete. The estimate does not include gross-up for taxes.

An assumption in developing the time estimates is that the Warren 230kV substation can be outaged whenever necessary to complete the work required. Due to the dependence of the Seneca pumping station on the Warren generating plant, outages will need to be coordinated with PJM Operations. It is not likely that outages will be permitted during the summer.

Contribution to Previously Identified System Reinforcements

None identified.