Generation Interconnection

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

Project # M24 was evaluated for compliance with reliability criteria for summer peak conditions in 2008.

Network Impacts:
The #M24 project was studied as a total injection of 200 MW into the Grassy Falls facility, of which 40 MW was studied as capacity and the remaining 160 MW as energy-only.

Normal System (ECAR Standard 1):
Overload of two 138 kV breaker disconnect switches and one 138 kV wave trap on the Grassy Falls terminal at Crupperneck.

Single Contingency (ECAR Standard 2):
There are no contingency overloads identified for the 40 MW capacity portion of the project.

Facilities on the AEP 69 kV system are not monitored by PJM and problems resulting from full generator output must be mitigated.
The following overload occurs for an interconnection point on the Grassy Falls – McClung 138 kV transmission line.
For the outage of the Rt. 17 to Grassy Falls 138 kV line the following overloads occur:

- McClung 138/69 kV 130 MVA transformer loads to 122 % of its capability
- McClung - T-117 69 kV line loading is up to 183% of its capability
- Layland - McClung 69 kV line loading is up to 217% of its capability

For the outage of the AP Grassy Falls – Summerville 138 kV circuit, the Grassy Falls – Crupperneck 138 kV circuit will exceed its 4 hour rating when the total output of the Field Mountain facility exceeds 147 MW. Mitigation of this overload is optional.

Multiple Facility Contingency (ECAR Standard 3):
No identified problems.

Generator Deliverability:
No identified problems.

Short Circuit Study:
No identified problems.

New System reinforcements (upgrades):
Replace two 138 kV breaker disconnect switches and one 138 kV wave trap on the Grassy Falls terminal at Crupperneck Substation with two 1200 amp disconnect switches and one 1200 amp wave trap.

A redundant 138 kV transmission line from the new Rt. 17 switching station to Grassy Falls will be required.
OR
A new Bradley – McClung 138 kV circuit will be needed. This includes 26 miles of new line and 10.9 miles of reconductor plus a new steel pole, new circuit breaker at Bradley station and a new breaker and a half Quinwood station.

Optional: In order to allow the facility to operate at full output for the Grassy Falls – Crupperneck 138 kV circuit contingency identified above, the Grassy Falls – Crupperneck 138 kV circuit will require 7.96 miles of new 954 ACSR conductor. Without this upgrades the facility must reduce output.

Contribution to Previously Identified System Reinforcements;
None.