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 -30 MW Injection into the Martins Creek 230kV substation (G6)

Network Impacts
With the additional capability of 30 MW at Martins Creek 230 kV unit #4 the transmission system was evaluated for compliance with reliability criteria for summer peak conditions in 2005.

Normal System
No identified problems.

Multiple Facility Contingency – Tower Line Outages (MAAC Criteria IIC)
No identified problems.

Generator Deliverability
No identified problems.

Short Circuit
No identified problems.

Contribution to Previously Identified Reinforcements
The 30 MW additional capability of Martins Creek #4 contributes 10 MW to loading on the Martins Creek - Morris Park - Gilbert 230 kV for the loss of the Hosensack-Steel City 500kV circuit. The Martins Creek - Morris Park - Gilbert 230kV circuit is required to be upgraded for a previously queued generation project.

System Reinforcements
No new identified network reinforcements.

To alleviate the Martins Creek – Morris Park – Gilbert 230 kV overloads listed above, the Martins Creek – Morris Park – Gilbert 230 kV path will be upgraded to include a second 1590 ACSR circuit on the existing structures for most of the path (the initial 0.37 mile section of the path will require new single circuit construction in parallel with the existing line). The Delaware River crossing, which consists of a 0.3 mile section built to 2-2493 ACAR construction, will not require upgrading.

Specific upgrades include:

- From Martins Creek 230 kV substation to the Delaware River crossing, install a second 0.37 mile section of single circuit 1590 ACSR parallel with the existing ssingle circuit Martins Creek – Morris Park 230 kV line. The estimated cost is $0.865 million

- Upgrade the line termination by replacing equipment in Bay 0 with 3000 amp equipment at Martins Creek 230 substation. The estimated cost is $1.725 million

The above listed work will be done by PPL Utilities. The estimated cost is $2.6 million.

- String 1590 45/7 kcmil ACSR conductor at 125 degrees C on the vacant side of the Martins Creek-Morris Park Tap double circuit tower line from the Delaware River crossing to the Morris Park Tap (7.8 miles). The estimated cost is $1.451 million

- String 1590 45/7 kcmil ACSR conductor at 125 degrees C on the vacant side of the Morris Park Tap-Gilbert double circuit tower line from Morris Park Tap to the Route 78 crossing (3.0 miles) and from the other side of Route 78 to Gilbert substation (7.25 miles). The estimated cost is $1.945 million.

- String 2493 kcmil ACAR conductor at 100 degrees C on the vacant side of the Morris Park Tap-Gilbert double circuit tower line where it crosses Route 78 (.3 miles). The estimated cost is $0.166 million.

- Tie the ends of both circuits together to form a new single circuit. The work will include

- Connecting each new single conductor on the double circuit tower line at the Delaware River to the existing single circuit, double conductored, 500kV tower.

- Tying each of the single conductors on the double circuit tower line together at Morris Park Tap and connecting the resultant tap to the Morris Park 230kV bus.

- Tying each of the single conductors on the double circuit tower line together at Gilbert substation and Connecting the resultant circuit to the Gilbert 230kV bus.

The estimated cost is $0.316 million

The above listed work will be done by GPU Energy. The estimated cost is $3.878 million.

The total cost to upgrade the Martins Creek-Morris Park-Gilbert line is $6.478 million. It is estimated it will take 24-36 months from initiation of design engineering to complete the upgrade.

Line lengths (ft)

Martins Creek – Morris Park
38966 + 2080 + 1603 (river crossing, 2-2493 ACAR 500 kV const) + 1793 (steel pole) + 199

Morris Park - G Gilbert
38274 + 1440 + 15669

The Martins Creek #4 uprate will receive an apportioned cost, based upon relative impact, of the system reinforcement.