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 - 257 MW Injection

Injection of 257MW at New Castle 138kV Substation has the following network impacts:

Single contingency screening and towerline outage analysis resulted in no network problems which were solely attributable to the generator. Several other generators that appear in the queue ahead of the New Castle generator, alleviate an overload of the Basin Road to Churchmans 138 kV line for the contingency loss of the Keeney 230kV-138kV transformer. If these generators are not built then there may be network upgrades necessary to accommodate the New Castle generator. Upgrade of the Basin Road to Churchmans 138 kV line to 269 MVA emergency summer rating is estimated to cost $0.5 Million and take 12 months to construct.

However, the generator does contribute to problems that may exist on several lines in the PECO territory if other generators with lower queue positions develop their projects. These flow contributions are approximately

· 50 MVA on the Grays Ferry - Parrish 230kV circuit
· 30 MVA on the Master - N. Philadelphia 230kV circuit, and
· 20 MVA on the N. Philadelphia - Waneeta 230kV circuit.

Consequently, the generator may be involved in the allocation of costs for these facilities should they need to be upgraded.

Time and cost estimates for PECO zone upgrades, if necessary, are as follows:

Grays Ferry - Parrish 230kV (220-27 line) $10 Million
Master - N. Philadelphia 230kV (220-44 line) $8 Million
N. Philadelphia - Waneeta 230kV (220-49 line) $6 Million

Approximate time to contruct each upgrade individually is approximately 18 to 24 months. If all upgrades are required, construction time will increase due to the inability to obtain the required facilty outages to perform the work concurrently.

A short circuit analysis was also performed. No circuit breaker short circuit interrupting ratings were exceeded. A short circuit analysis should be rerun when actual unit and transformer data are available.