#T118 Linwood 230 kV (10 MW)

Generator 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

The Queue T118 project was studied as a 10 MW increase at the Linwood 230 kV substation. Project T118 was evaluated for compliance with reliability criteria for summer peak conditions in 2012. Potential network impacts were as follows:

NETWORK IMPACTS

Generator Deliverability

(Normal System conditions, all facilities in-service, and Single, or N-1, contingencies for the Capacity portion only of the interconnection)

1. The Linwood – Chichester 230 kV line is overloaded from 99.59% to 100.06% of its normal rating (753 MVA) in the basecase after Queue T118 is added. This project contributes approximately 3.5 MW to cause the thermal violation.

Multiple Facility Contingency

(Double Circuit Tower Line contingencies only for the full energy output. Stuck breaker and bus fault contingencies will be performed for the Impact Study)

No problems identified.

Short Circuit

Not applicable, there is no change to generator and transformer impedance.

Stability Analysis

Not required, there are no changes to generator characteristics

Power Factor Analysis

Preliminary results indicate that T118 can meet the PJM Tariff 0.90 lag power factor (at the generator terminals) requirement based on manufacturer's design data.

Queue T118 generator interconnection design must be capable of either;

- A power factor of 0.95 lead to 0.90 lag (at the generator terminals) at the new MW value, or

- A MVAR capability equal to the original MVAR capability (grandfathered lead and lag MVAR capability before the MW increase, or 0.95 lead to 0.90 lag for the original MWs whichever is less) plus a power factor of 1.0 to 0.90 lag for T118 MW increase, all measured at the generator terminals.

Power Factor requirements will be evaluated further in the Impact Study.

Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None were identified.

NETWORK UPGRADE RESPONSIBILITIES

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. "Network Impacts", initially caused by the addition of this project generation)

1. The Chichester to Linwood 230 kV circuit #2, 220-43 line, will need to be reconductored to increase the normal rating of the line. The cost to reconductor the line and make possible modifications to the substations is **$2,500,000**. The work will take approximately **24 months** to complete.

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

None were identified.