

#T59 Mickleton 14.4 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

Queue T59 was studied as a 14.4 MW Capacity injection at Mickleton. Project T59 was evaluated for compliance with reliability criteria for summer peak conditions in 2012. Network impacts were as follows:

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

No problems were identified.

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 were identified.

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)

1. Queue T59 contribution of 5 MW further overloads the Monroe to New Freedom 230 kV line from 103% to 104% for the outage of Gloucester to Eagle Pt 230 kV line and Gloucester 230/26 kV transformer (Cont. PS18).

Queue T59 will have no upgrade responsibility for the above because the T59 contribution to the previously identified overload is less than the threshold required for cost allocation.

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 T59 can meet the PJM Tariff 0.90 lag power (at the generator terminals) factor requirement based on manufacturer's design data.

Queue T59 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 T59 MW increase, all measured at the generator terminals.

T59 design capability ("D" curves or other documentation) information was not provided by the Interconnection Customer in sufficient time to include a Power Factor analysis in this Feasibility Study. **Power Factor requirements will be further evaluated for the Impact Study.**

New System Reinforcements

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

None

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.

Queue T59 contributes to the overload of the Monroe to New Freedom 230 kV line from 103% to 104% for the outage of Gloucester to Eagle Pt 230 kV line and Gloucester 230/26 kV transformer (Cont. PS18), but will have no upgrade responsibility because the T59 contribution to the previously identified overload is less than the threshold required for cost allocation.