

#R58 Gloucester 55 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 #R58 project was studied as an injection of a 55 MW Capacity Resource into the Gloucester 230 kV (Camden Cogen) substation. Project #R58 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

Generator Deliverability

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

1. The Gloucester – Cuthbert Blvd. 138 kV line is overloaded from 98% to 102% of its normal rating (239 MVA). The R58 project contributes approximately 8 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 were identified

Short Circuit

No problems were identified

Stability Analysis

Will be performed for the R58 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)

2. Contribution of 6 MW further overloads the Three Mile Island 500/230 kV ckt#2 transformer is overloaded at 123% of its emergency rating (1077 MVA) for the outage of Conastone to Peachbottom 500 kV line (Cont Id. PJM17).

The overload is caused by R24 and other projects which contribute to this overload are R26, R28, R36, R37 and R38.

New System Reinforcements

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

1. Gloucester – Cuthbert Blvd. 138 kV upgrade - The Gloucester-Cuthbert Blvd overload is due to the underground conductor. It is 4.5 miles. The thermal violation can be addressed using either of the following solutions:
 - Re-conductor the circuit. The next limit becomes the two-winding transformer at 274MVA. This could cost upwards of **\$30M**.
 - Reconfigure the New Freedom PARs. This is estimated to cost **\$5-10M**.

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)

2. TMI 500-230 kV transformer upgrade – The estimated cost to add a second 500-230 kV transformer is **\$11,800,000** and the time required is approximately 20 months.

Docs # [430653](#)