

#Q52 – Hunlock Creek 230kV 300 MW **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

The Q52 project was studied as three options. Option 1 considers an injection of 300 MW (capacity) into a tap of the Susquehanna – Stanton #2 230 kV circuit. Option 2 considers the injection of 300 MW into Mountain 230 kV substation. Option 3 considers the injection of 300 MW into a tap of Mountain-Susquehanna T10 230 kV circuit. Project #Q52 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

Generator Deliverability (single contingency)

OPT1: No problems identified.

OPT2: No problems identified.

OPT3: No problems identified.

Multiple Facility Contingency (MAAC Criteria IIC)

OPT1: No problems identified.

OPT2: No problems identified.

OPT3: No problems identified.

Short Circuit Analysis

OPT1: The three-phase symmetrical short circuit duty at the 230kV point-of-connection, with Q52 generation in-service, is estimated to be approximately 6,489 MVA. With Q52 generation out-of-service, the three-phase symmetrical short circuit duty would be approximately 5,664 MVA. No 230kV breakers at the Susquehanna Switchyard or Stanton Substation were identified as being overdutied. The analysis was based on the assumption that prior queue positions in the “Q” listing are in-service.

OPT2: Eight 66 kV line circuit breakers at the Mountain substation will potentially be overdutied do to the installation of the Q52 generator. It is estimated that the cost to replace these breakers is \$70,000 each, therefore, the total replacement cost is estimated to be **\$560,000**.

OPT3: Eight 66 kV line circuit breakers at the Mountain substation will potentially be overdutied do to the installation of the Q52 generator. It is estimated that the cost to replace these breakers is \$70,000 each, therefore, the total replacement cost is estimated to be **\$560,000**.

Local System Impacts / Network Upgrade Requirements

The System reinforcements, listed below, on the PPL EU 69kV regional system may need to be advanced due to the addition of the Q52 generation. The impacts are similar for all three interconnection options.

- Stanton 230/69kV, Install Fourth Transformer
- Harwood 230/69kV, Install Third Transformer
- Stanton-Providence #1 and #2 69kV Circuits, Reconductor/Rebuild
- Stanton-Suburban 69kV Circuit, Reconductor/Rebuild
- Harwood-Berwick 69kV Circuit, Reconductor/Rebuild

Cost estimates to advance these system reinforcement projects will be defined during the Impact Study.

Contribution to Previously Identified Overloads

None.

Contribution to Previously Identified System Reinforcements

None.