R13 Tidd-Canton Central 345kV
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

Option #1 Tidd-Canton Central 345kV circuit (AEP)

The #R13 project was studied as a 350 MW of Capacity at two distinct points. The first interconnection option is a tap of the Tidd-Canton Central 345 kV line and the second option is into the Arroyo 138 kV substation. Project #R13 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

Generator Deliverability

No problems were identified

Multiple Facility Contingency

No problems were identified

Short Circuit

No problems identified.

Contribution to Previously Identified Overloads

None identified

New System Reinforcements

None

Contribution to Previously Identified System Reinforcements

None identified.

Option #2 Arroyo 138kV substation (Allegheny Power)

The #R13 project was studied as a 350 MW of Capacity at two distinct points. The first interconnection option is a tap of the Tidd-Canton Central 345 kV line and the second option is into the Arroyo 138 kV substation. Project #R13 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

Generator Deliverability

The following network impacts follow no gasification (i.e. 560 MW are delivered to the network), and interconnection into the Arroyo 138 kV substation:

1. The 138 kV line from Arroyo to Arroyo Junction loads from -6% to 151% of its normal rating (173 MVA). The R13 project contributes 272 MW to cause this thermal violation.

2. The Arroyo-Wylie Ridge 138 kV circuit loads from -39% to 122% of its normal rating (173 MVA). The R13 project contributes 278 MW to cause this thermal violation.
3. The Arroyo Junction-Wylie Ridge 138 kV circuit loads from -38% to 119% of its normal rating (173 MVA). The R13 project contributes 272 MW to cause this thermal violation.

Multiple Facility Contingency
No problems were identified

Short Circuit
No problems identified.

Listed below are the positive and zero sequence source equivalent impedance at Arroyo 138 kV with the GSU and generators OPEN.

Positive: (0.00474 + j0.02914)
Zero: (0.02465 + j0.07687)

Contribution to Previously Identified Overloads
None identified

New System Reinforcements
Reconductor two Wylie Ridge – Arroyo 138 kV circuits with Pecos ACSS TW or equivalent high temperature conductor. Due to the age of the circuits (50+ years), it is assumed that all structures will require replacement. The estimated cost for this work is **$8,800,000 in 2011 dollars.**

Upgrade terminal equipment at Wylie Ridge substation to accommodate the new 138 kV circuit conductors. The estimated cost for this work is **$1,500,000 in 2011 dollars.**

Contribution to Previously Identified System Reinforcements
None identified.