#T152 Hanging Rock 138kV

Generation Interconnection

This analysis was completed to assess the reliability impact for the increase in new generation interconnecting to the PJM system as a capacity resource.

Local Impacts

The impact of the proposed generating facility on the AEP System was assessed for adherence with applicable reliability criteria. AEP planning criteria require that the transmission system meet single contingency performance criteria in accordance with the AEP FERC Form 715. Therefore, this criterion was used to assess the impact of the proposed facility on the AEP System. The AEPSC project was studied as a 140 MW net capacity consistent with the interconnection application. In addition, 12.5 MW of load was assumed to be purchased from AEP at the interconnection point. The results are summarized below.

Normal System (2011 Summer Conditions)

- No problems identified.

Single Contingency (2011 Summer Conditions)

- Outage of the Hanging Rock-East Wheelersburg 138 kV circuit overloads the Franklin Furnace-K.O. Coal 69 kV line section of the N. Haverhill-Millbrook Park 69 kV circuit to 100% of its emergency rating (40 MVA).

Short Circuit Analysis

- No problems identified.

Stability Analysis

- Stability studies were not performed as part of this Feasibility Study and are not normally performed as part of a Feasibility Study effort. The stability assessments are part of the System Impact Study. Based upon the results of this future System Impact Study, the extent of system upgrades could change and the associated costs could be significantly different.

Local Upgrades

To facilitate the #T152 generation, upgrades are required to the N. Haverhill-Millbrook Park 69 kV circuit. To mitigate the line overload, a 5% series reactor and bypass circuit breaker can be installed at the N. Haverhill 69 kV station on the Millbrook line.

The AEP construction scope system upgrades:

- Install a 69 kV 5% series reactor and 69 kV bypass circuit breaker at N. Haverhill station on the Millbrook Park 69 kV line.

  Estimated Cost (2008 Dollars)*: **$739,000**

- Replace relaying at Millbrook Park 69 kV station.

  Estimated Cost (2008 Dollars)*: **$92,000**

- Replace backup relaying at Dow Chemical 69 kV station.

  Estimated Cost (2008 Dollars)*: **$173,000**

Total Estimated System Upgrade Cost: $1,004,000

*The estimates are preliminary in nature, as they were determined without the benefit of detailed engineering studies. Final estimates will require an on-site review and coordination to determine final construction requirements. It will take approximately one year after obtaining the authorization to construct the facilities as outlined above.

Network Impacts

The Queue Project #T152 was studied as a 140MWinjection at the Hanging Rock 138 kV substation in the AEP area. Project #T152 was evaluated for compliance with reliability criteria for summer peak conditions in 2012. Potential network impacts were as follows:

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

No problems identified.

Multiple Facility Contingency
(Double Circuit Tower Line, Line with Failed Breaker and Bus Fault contingencies for the full energy output)

No problems identified.

Short Circuit
(Summary form of Cost allocation for breakers will be inserted here if any)

No problems 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)

None

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)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

None