#U2-092 Delaware-Centerville 138kV

Generation Interconnection

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

Local AEP 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 performance criteria in accordance with the AEP FERC Form 715. Therefore, this set of criteria was used to assess the impact of the proposed facility on the AEP System. The project was studied as a 200 MW net energy injection consistent with the interconnection application. This project was studied with PJM projects #S71, U2-062, U2-090 and U2-091 already in service at 100% output in the vicinity of U2-092. The results are summarized below. .

Normal System (2012 Summer Conditions)

- No problems identified

Single Contingency (2012 Summer Conditions)

- No problems identified

Multiple Contingency (2012 Summer Conditions)

- No problems identified

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 Facility 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

- None

Network Impacts

The Queue Project U2-092 was studied as a(n) 100MW (Capacity = 13MW) injection to the Modoc Centerville section of the Delaware-College Corner 138kV transmission line in the AEP area. Project U2-091 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

Delivery of Energy Portion of Interconnection Request

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request. **These are not required reliability upgrades.**

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

As a result of the aggregate energy resources in the area, the following potential congestion was identified

1.**(AEP/AEP)** The Randolph-Bleff Point 138kV line (from bus 23500 to bus 23415 ckt 1) loads from 109.0% to 113.1% (DC power flow) of its normal rating (156MVA) for non-contingency condition. This project contributes approximately 6.5MW to the thermal congestion.

2. **(AEP/AEP)** The Randolph-Bluff Point 138kV line (from bus 23500 to bus 23415 ckt 1) loads from 99.6% to 102.2% (DC power flow) of its emergency rating (192MVA) for the single line contingency outage (AEP447). This project contributes approximately 4.9MW to the thermal congestion.

3. **(AEP/AEP)** The S71C-Jay 138kV line (from bus 90787 to bus 23469 ckt 1) loads from 111.8% to 114.8% (DC power flow) of its emergency rating (201MVA) for the single line contingency outage (AEP21). This project contributes approximately 6.1MW to the thermal congestion.

4. **(AEP/AEP)** The S71C-Jay 138kV line (from bus 90787 to bus 23469 ckt 1) loads from 109.1% to 112.2% (DC power flow) of its normal rating (191MVA) for non-contingency condition. This project contributes approximately 6.1MW to the thermal congestion

MISO Impacts

Any impacts on the MISO transmission systems will be identified in the Impact Study.