W3-088 Southwest Lima (Long Prairie) 345kV

Generation Interconnection

Network Impacts

Queue project W3-088 was studied as a(n) 200 MW (26 MW of which was Capacity) injection into AEP's system. Project W3-088 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential transmission network impacts are as follows:

Option #1 – Southwest Lima 345kV circuit

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.)

No violations identified.

New System Reinforcements

None

Energy Portion of Interconnection Request

(PJM also studied the delivery of the energy portion of the surrounding generation. Any potential 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 Transmission Interconnection request.
Note: Only the most severely overloaded conditions are listed. 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 Request, a subsequent analysis will be performed which analyzes all overload conditions

associated with the overloaded element(s) identified. As a result of the aggregate energy resources in the area, the following violations were identified.)

None

Option #2 – Convoy-R60 345kV line

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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)

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.)

1. (AEP) The T-130_TAP-East Lima 345 kV line (from bus 292438 to bus 242935 ckt 1) loads from 140.37% to 159.88% (DC power flow) of its emergency rating (1022 MVA) for the tower contingency '419'. This project contributes approximately 199.43 MW to the thermal violation.

System Reinforcements

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.)

1. The overload on the T130 – East Lima 345 kV circuit can be alleviated by reconductoring the line at a cost 1.5 million/mile for 12 miles. The estimated cost to perform this work is **$18M** (PJM Estimate- Network Upgrade#n1485).

Energy Portion of Interconnection Request

(PJM also studied the delivery of the energy portion of the surrounding generation. Any potential 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 Transmission Interconnection request.
Note: Only the most severely overloaded conditions are listed. 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 Request, a subsequent analysis will be performed which analyzes all overload conditions associated with the overloaded element(s) identified. As a result of the aggregate energy resources in the area, the following violations were identified.)

2. (AEP) The W3-088TAP1-Convoy 345 kV line (from bus 904070 to bus 242933 ckt 1) loads from 92.89% to 112.46% (DC power flow) of its emergency rating (1022 MVA) for the operational contingency '1272_B2_B_T-130B'. This project contributes approximately 200.00 MW to the thermal violation.

3. (AEP) The Convoy-Robison Park 345 kV line (from bus 242933 to bus 243231 ckt 1) loads from 117.97% to 134.37% (DC power flow) of its emergency rating (1216 MVA) for the operational contingency '1272_B2_B_T-130B'. This project contributes approximately 199.43 MW to the thermal violation.

4. (AEP) The Convoy-Robison Park 345 kV line (from bus 242933 to bus 243231 ckt 1) loads from 119.38% to 129.78% (DC power flow) of its normal rating (897 MVA) for non contingency condition. This project contributes approximately 93.29 MW to the thermal violation.

5. (AEP) The R60_TAP-T-130_TAP 345 kV line (from bus 296566 to bus 292438 ckt 1) loads from 111.15% to 130.66% (DC power flow) of its emergency rating (1022 MVA) for the operational contingency '1273_B2'. This project contributes approximately 199.43 MW to the thermal violation.