#V4-033 Desoto (Lynn Wind Project) 345kV

Generation Interconnection

Network Impacts

The queue V4-033 project was studied as a 300MW (39MW of which was capacity) injection into the AEP system. The project was studied at two different optional points of interconnection. The primary option was a tap of the Desoto – Tanners Creek (circuit 1) 345kV transmission line, while the secondary option was a direct connection into the Desoto 345kV substation. Project V4-033 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

Option 1 – Desoto – Tanners Creek 138kV 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

Stability

Not required because the project is less than 30 MW.

System Reinforcements

None.

Potential Congestion due to Local Energy Deliverability

(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 below. There is no guarantee of full deliverability 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 identified overloaded element(s). As a result of the aggregate energy resources in the area, the following violations were identified:

1. The Keystone - Sorenson 345kV line (from bus 243225 to bus 243232 ckt 1) loads from 115.03% to 119.92% (DC power flow) of its normal rating (897MVA) for non-contingency conditions as a result of V4-033. This project contributes approximately 43.8MW to cause this thermal violation.

2. The Keystone - Sorenson 345kV line (from bus 243225 to bus 243232 ckt 1) loads from 102.27% to 107.16% (DC power flow) of its emergency rating (1301MVA) for the operational contingency ('4814_B2') as a result of V4-033. This project contributes approximately 63.7MW to cause this thermal violation.

Option 2 –Desoto 345kV Station

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

Stability

Not required because the project is less than 30 MW.

System Reinforcements

None.

Potential Congestion due to Local Energy Deliverability

(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 below. There is no guarantee of full

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

1. The Keystone - Sorenson 345kV line (from bus 243225 to bus 243232 ckt 1) loads from 115.02% to 120.25% (DC power flow) of its normal rating (897MVA) for non-contingency conditions as a result of V4-033. This project contributes approximately 46.9MW to cause this thermal violation.

2. The Keystone - Sorenson 345kV line (from bus 243225 to bus 243232 ckt 1) loads from 102.26% to 107.5% (DC power flow) of its emergency rating (1301MVA) for the operational contingency ('4814_B2') as a result of V4-033. This project contributes approximately 68.2MW to cause this thermal violation.

MISO Impacts

Any impacts on MISO facilities will be determined in the Impact Study.