#W3-013 – Miami 345kV
Generation Interconnection

Direct Connection Cost Estimate

This project will connect to a new substation to be built along DP&L's Miami – Shelby 345kV transmission line about 2 miles south of Fletcher, Ohio. The estimated work to build this new 345kV substation is **$4,400,000** and assumes that the Interconnection Customer will build their 345kV line to the takeoff structure of the substation. It is also assumed that the Interconnection Customer will provide the land for this new substation adjacent to the existing transmission line. This new substation will require OPSC approval and will require about 24 – 30 months to obtain OPSC approval, engineer, and build. These costs do not include CIAC Tax Gross-up.

Revenue Metering and SCADA Requirements

For PJM: IC will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Sections 24.1 and 24.2.

Network Impacts

Queue project W3-013 was studied as a 300MW (39MW Capacity) injection into Dayton's system tapping the Miami to Shelby 345kV line. Project W3-013 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

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

No problems were identified.

Multiple Facility Contingency
(Double Circuit Tower Line contingencies were studied for the full energy output. The contingencies of Line with Failed Breaker and Bus Fault will be performed for the Impact Study.)

No problems were identified.

Short Circuit
(Summary of impacted circuit breakers)

- Dayton results: No problems were identified.

- AEP results: PJM has completed the short circuit analysis of the W3-013 queue project Miami. **This is originally a Dayton project with the point of interconnection being three buses away from an AEP substation.** One option was considered during this study: the option was a tap between Miami and Shelby substation 345 kV. Our analysis found 2 new breakers, to be over-duty in the AEP transmission area at the East Lima 138kV substation. Both breakers will be replaced to correct this overload. The total cost estimate for upgrading the breakers is **$800,000** ($400,000/breaker).

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 problems were identified.

Steady-State Voltage Requirements
(Summary of the VAR requirements based upon the results of the steady-state voltage studies)

To be determined in the System Impact Study.

Stability and Reactive Power Requirement for Low Voltage Ride Through
(Summary of the VAR requirements based upon the results of the dynamic studies)

To be determined in the System Impact Study.

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)

None.

Potential Congestion due to Local Energy Deliverability

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.

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 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, there were no violations identified.