PJM Generator Interconnection Request
Queue #W3-127
City of Columbus (2500 Jackson Pike) 13kV
Feasibility/Impact Study

677877
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W3-127 City of Columbus (2500 Jackson Pike) Feasibility/Impact Study Report

General

Central Ohio BioEnergy, LLC has installed a 1 MW Methane-Biogas generating facility connecting to the City of Columbus distribution system (MELP) which is in turn connected to the 138 kV Bulk Electric transmission System (BES) at American Electric Power's (AEP) Vine Street Station in Columbus, Ohio. The location of the generating facilities is 2500 Jackson Pike, Columbus, Ohio which is approximately 5 miles (geographically) from Vine Street Station (See Exhibit 1). The full output of the generator is currently under contract for purchase by AEP but the contract will expire at the end of 2011. The customer proposes PJM Project #W3-127 for the purpose of participating in the PJM market upon expiration of the current contract with AEP.

The objective of this Feasibility / Impact Study is to determine budgetary cost estimates and approximate construction timelines for identified transmission facilities required to connect the proposed generating facilities to the AEP transmission system. These reinforcements include the Attachment Facilities, Local Upgrades, and Network Upgrades necessary to maintain the reliability of the AEP transmission system.

Attachment Facilities

The MELP distribution system connected to W3-127 is served by the BES entirely through two 138 kV circuits originating at AEP's Vine Street Station. The existing AEP owned attachment facilities will be fully adequate to serve the proposed connection. Adequacy of MELP facilities is not considered in this study.

Per the AEP generation interconnection requirements, primary and backup metering utilizing ION 8600 meters and a D20 RTU is required at the IPP and is to be funded by Central Ohio Bio energy, LLC. The metering installed must provide daily information for settlement purposes to AEP/PJM and must meet applicable PJM requirements for an IPP connection of this size/type.

Loss compensation between the generator location and the first point of contact with the BES must be accounted for. The developer and/or local distribution entity is required to allow AEP Transmission to review and accept their proposed loss factor calculation.

The IPP must comply with the requirements of IEEE1547.

AEP Local Network Impacts

The impact of the 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 1 MW net capacity consistent with the interconnection application. The results are summarized below.

Normal System

- No problems identified.

Single Contingency

- No problems identified.

Short Circuit Analysis

- No problems identified.

Stability Analysis

- No problems identified.

Local/Network Impacts

- No problems identified.

Conclusion

Based upon the results of this Feasibility / Impact Study, the connection of the Central Ohio BioEnergy, LLC (PJM Project #W3-127) to the 138 kV bus at AEP's Vine Street via MELP's distribution system will require no upgrades to AEP's system. Metering and communication at the W3-127 location is required to include primary & backup ION 8600 metering with D20 RTU, to provide daily settlement information, and to satisfy all applicable PJM metering requirements. Central Ohio BioEnergy, LLC, MELP, PJM, and AEP collaborated on this plan of service and will continue to do so as necessary.

Network Impacts

Queue project W3-127 was studied as a(n) 1.0 MW (0.0 MW of which was Capacity) injection into AEP's system at the City of Columbus 138.0 kV substation. Project W3-127 was evaluated for compliance with reliability criteria for summer peak conditions in 2014.

Potential transmission network impacts are 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)

No problems identified.

Exhibit 1
W3-127 IPP
Vine Street / MELP area