#Z1-093 – Woodville Battery 34.5kV
Generation Interconnection

General

The Interconnection Customer is proposing a 6MW Energy-only battery to be interconnected to the ATSI transmission system and located in Sandusky County, OH. ATSI is a FirstEnergy (FE) company. The proposed in-service date for this project is December 30, 2014 and is currently under review.

This Generation Interconnection Feasibility Study provides analysis results to aid the Interconnection Customer in assessing the practicality and cost of incorporating the facility into the PJM system.

Facilities to Accommodate the Interconnection

Scope of Direct Connection Work

The direct connects are estimated to cost approximately **$3,517,200**, with an extra **$791,400** tax gross-up if applicable, to interconnect and take a minimum of **20 months** after the receipt of an executed Construction Service Agreement to complete this work. The cost estimate above does not include any of the upgrades listed in the Network Impacts section of the report.

The Interconnection Customer is responsible for meeting all criteria as specified in the applicable sections of the "FirstEnergy Requirements for Transmission Connected Facilities" document.

The Interconnection Customer is responsible for constructing all of the Interconnection Customer-owned facilities on the Interconnection Customer's side of the Point of Interconnection.

Note: The analysis and associated information covered in this report only covers the generation portion of this project. The load portion of this project will have to be independently studied by ATSI.

Revenue Metering and SCADA Requirements

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

For ATSI: The Interconnection Customer will be required to comply with all FE Revenue Metering Requirements for Generation Interconnection Customers. The Revenue Metering Requirements may be found within the "FirstEnergy Requirements for Transmission Connected Facilities" document located at the following links:
www.firstenergycorp.com/feconnect
www.pjm.com/planning/design-engineering/to-tech-standards.aspx

Network Impacts

The Z1-093 project was studied as a 6.0MW Energy-only injection into the ATSI area at the Woodville 138 kV substation. Project Z1-093 was evaluated for compliance with reliability criteria for summer peak conditions in 2017.

Potential network impacts were as follows:

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

No violations were found.

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 violations were found.

Short Circuit
(Summary of impacted circuit breakers)

PJM:
Not Required.

ATSI:
ATSI will perform short circuit during the System Impact Study and Facilities Study. A circuit breaker adequacy study with the proposed GSU and generator impedances will be required to determine if any of the 34.5 kV or 138 kV circuit breakers at adjacent substations would become overdutied with the addition of the Z1-093 new generation.

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 were found.

New System Reinforcements
(Upgrades required to mitigate reliability criteria violations, I.e. "Network Impacts", initially caused by the addition of this project's generation.)

None.

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contributions to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study.)

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.

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, no violations were identified.