Generation Interconnection System Impact Study Report

For

PJM Generation Interconnection Request Queue Position AA2-076

Linwood 230kV

March 2017

Preface

The intent of the System Impact Study is to determine a plan, with approximate cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications (on PJM web site) for the appropriate transmission owner.

In some instances an Interconnection Customer may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the Feasibility Study, but the actual allocation will be deferred until the System Impact Study is performed.

The System Impact Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

General

Marcus Hook Energy, L.P., the Interconnection Customer (IC), has proposed an uprate to an existing natural gas generating facility located in Delaware County, Pennsylvania. This project requests an increase to the install capability of 0 MW with 18 MW of this output being recognized by PJM as capacity. The installed facilities will have a total capability of 852 MW with 813 MW of this output being recognized by PJM as capacity. The proposed in-service date for this project is May 2018. **This study does not imply a PECO Energy Company (PECO) commitment to this in-service date.**

Point of Interconnection

AA2-076 will interconnect with the PECO transmission system at the Linwood 230kV bus.

Cost Summary

The AA2-076 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	$ 0
Direct Connection Network Upgrades	$ 0
Non Direct Connection Network Upgrades	$ 0
Total Costs	**$ 0**

Attachment Facilities

There are no Attachment Facilities to be constructed to support this interconnection request.

Direct Connection Cost Estimate

There are no Direct Connection Facilities to be constructed to support this interconnection request.

Non-Direct Connection Cost Estimate

There are no Non-Direct Connection Facilities to be constructed to support this interconnection request.

Note Regarding Capacity Interconnection Rights

The increase in the amount of Capacity Interconnection Rights requested shall not be granted until (i) the completion of the baseline Network Upgrade in PJM's Regional Transmission Expansion Plan identified as b1900, including the removal of the Linwood Special Protection

Scheme as described in PJM Manual 3, which has an expected completion date of May 31, 2018; and (ii) the conforming Interconnection Service Agreement between PJM Interconnection, L.L.C., FPL Energy Marcus Hook, L.P. and PECO Energy Company, designated as First Revised Service Agreement Number 1352, with an effective date of June 27, 2005, with respect to PJM Queue Number O16, is terminated.

Revenue Metering and SCADA Requirements

PJM Requirements

Existing metering is adequate for this request.

Network Impacts

The Queue Project AA2-076 was evaluated as a 0.0 MW (Capacity 18.0 MW) injection at Phillips Island 230kV substation in the PECO area. This is an uprate to the X4-027 project. Project AA2-076 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AA2-076 was studied on a Summer Peak 2019 case. Potential network impacts were as follows:

Contingency Descriptions

The following contingencies resulted in overloads:

None.

Generator Deliverability

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

None.

Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None.

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.

Short Circuit

(Summary of impacted circuit breakers)

Not required.

Stability

Not required since there is no change in MFO.

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.

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 required.

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 required.