Generation Interconnection Feasibility Study Report

For

PJM Generation Interconnection Request Queue Position AC2-053

Germantown 115 kV

July 2017

Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, 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 impact study is performed.

The Feasibility 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

Interconnection Customer has proposed an uprate of 20 MW to prior queue project AC1-048 which is a solar generating facility located approximately 0.1 miles from Germantown substation in Adams County, Pennsylvania. GPS coordinates: 39°45'29.6"N, 77°07'33.2"W. The following table summarizes the MFO and Capacity Interconnection Rights (CIR) for this Point of Interconnection with PJM:

PJM Queue Position	Requested MW Energy	Requested MWs Capacity	MFO	CIRs	PJM website link
AC1-048	35	13.3	35	13.3	*Feasibility Study:* http://www.pjm.com/pub/planning/project-queues/feas_docs/ac1048_fea.pdf
AC2-053	20	7.6	55	20.9	

The proposed in-service date for the AC1-053 project is 6-1-2019.

This study does not imply a Mid-Atlantic Interstate Transmission ("MAIT" or ("Transmission Owner") commitment to this in-service date.

The Facilities of this Queue Project will be studied together with the active queue project AC1-048 for the same Interconnection Customer.

Point of Interconnection

AC1-053 will interconnect with the MAIT transmission system by direct injection into Germantown Substation 115 kV bus (via an overhead line dead-ending inside the sub). Substation entrance will be from west side, alternatively from the north-west side; please refer to the one line diagram in Appendix 2 for system configuration.

Network Impacts

The Queue Project AC2-053 was evaluated as a 20.0 MW (Capacity 7.6 MW) injection at the Germantown 115 kV substation in the METED area. Project AC2-053 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AC2-053 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Analysis - 2020

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

Steady-State Voltage Requirements

To be determined at later study phases.

Short Circuit
(Summary of impacted circuit breakers)

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.
Only the most severely overloaded conditions are listed. 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 will study all overload conditions associated with the overloaded element(s) identified.

None

Light Load Analysis - 2020

Light Load Studies to be conducted during later study phases (as required by PJM Manual 14B).

System Reinforcements

Short Circuit

None

Stability and Reactive Power Requirement

To be determined at later study phases.

Summer Peak Load Flow Analysis Reinforcements

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

Light Load Load Flow Analysis Reinforcements

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

Appendix 1

Facility Location
PJM Queue Position: AC2-053

Appendix 2

Interconnection One-Line Diagram
PJM Queue Position: AC2-053