



**Generation Interconnection
Feasibility Study Report
for
Queue Project AF2-251
SUSQUEHANNA UNIT 1 230 KV
0 MW Capacity / 50 MW Energy**

July 2020

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1 Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is PPL.

2 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. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. 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.

An Interconnection Customer entering the New Services Queue on or after October 1, 2018 (except those regulated by the United States Nuclear Regulatory Commission) shall provide primary frequency response in accordance with Section 4.7.2 of Appendix 2 to the Interconnection Service Agreement. See PJM Manual 14D Section 7.1.1 for more information.

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.

3 General

The Interconnection Customer (IC) has proposed an uprate to an existing nuclear generating facility located in Luzerne, Pennsylvania. This project is an increase to the Interconnection Customer's Non-Queue project, NQ123, which will share the same point of interconnection. The AF2-251 queue position is a 50 MW (0 MW Capacity) uprate to the previous project. The total installed facilities will have a capability of 1310 MW with 1253.3 MW of this output being recognized by PJM as Capacity. The project capability is summarized in the table below:

Description	Maximum Facility Output (MW)	Capacity Interconnection Rights (MW)
Existing Unit 1 Capability (NQ123)	1260	1253.3
Requested Increase (AF2-251)	50	0
Total (NQ123 + AF2-251)	1310	1253.3

The proposed in-service date for this uprate project is **August 01, 2020**. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-251
Project Name	SUSQUEHANNA UNIT 1 230 KV
State	Pennsylvania
County	Luzerne
Transmission Owner	PPL
MFO	1310
MWE	50
MWC	0
Fuel	Nuclear
Basecase Study Year	2023

New service customers who can feasibly be commercially operable prior to June 1st of the basecase study year are required to request interim deliverability analysis.

4 Point of Interconnection

AF2-251 will interconnect with the PPL transmission system as an uprate at the Susquehanna G1 230 KV substation.

5 Cost Summary

The AF2-251 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$0
Total System Network Upgrade Costs	\$0
Total Costs	\$0

6 Transmission Owner Scope of Work

There is no new Transmission Owner work required to accommodate the AF2-251 interconnection request.

7 Revenue Metering and SCADA Requirements

7.1 PJM Requirements

The Interconnection Customer 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 Section 8 of Attachment O.

7.2 Interconnected Transmission Owner Requirements

The IC will be required to comply with all Interconnected Transmission Owner's revenue metering requirements for generation interconnection customers located at the following link:

<http://www.pjm.com/planning/design-engineering/to-tech-standards/>

8 Summer Peak - Load Flow Analysis

The Queue Project AF2-251 was evaluated as a 50.0 MW (Capacity 0.0 MW) injection as an uprate to the Susquehanna G1 230 kV substation in the PPL area. Project AF2-251 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-251 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

8.1 Generation Deliverability

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

None

8.2 Multiple Facility Contingency

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

None

8.3 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

8.4 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

9 Short Circuit Analysis

Short circuit analysis will be performed during the System Impact Study.

10 Stability Study Analysis

To be performed during the later study phases.