Generation Interconnection

Combined Feasibility/System Impact Study Report

for

Queue Project AF2-288

Benvenue 12.47 KV

0 MW Capacity / 3 MW Energy

July 2020

1 Introduction

This Combined Feasibility/System Impact 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 Electric Utilities (PPL EU).

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.

The Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D.

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), **PE-Dellville LLC**, has proposed a new Solar-Battery hybrid generating facility located in Perry County, Pennsylvania. The installed facilities will have a total capability of 3 MW with 0 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is August 1, 2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-288
Project Name	BENVENUE 12.47 KV
State	Pennsylvania
County	Perry County
Transmission Owner	PPL
MFO	3
MWE	3
MWC	0
Fuel	Solar/Battery
Basecase Study Year	2023

3.1 Point of Interconnection

AF2-288 will interconnect with the PPL EU distribution system via the existing Benvenue 12.47 kV Circuit.

3.2 Cost Summary

The AF2-288 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$0[1]
Total System Network Upgrade Costs	$0
Total Costs	$0

4 Transmission Owner Scope of Work

The Transmission Owner scope of work for the physical interconnection will be outlined in a two party Interconnection Agreement between the Transmission Owner and the Interconnection Customer.

5 Interconnection Customer Requirements

The Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D.

[1] Since this Queue Project is interconnection to a non-FERC jurisdictional circuit, the scope and costs for the physical interconnection will be outlined in a two party Interconnection Agreement between the Transmission Owner and the Interconnection Customer.

6 Revenue Metering and SCADA Requirements

6.1 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.

6.2 Meteorological Data Reporting Requirements

The solar generation facility shall provide the Transmission Provider with site-specific meteorological data including:

- Temperature (degrees Fahrenheit)
- Atmospheric pressure (hectopascals)
- Irradiance
- Forced outage data

6.3 PPL Requirements

The Interconnection Customer will be required to comply with all PPL Revenue Metering Requirements for Generation Interconnection Customers.

7 Summer Peak – Load Flow Analysis

The Queue Project AF2-288 was evaluated as a 3 MW Capacity only injection at the Benvenue 12.47 kV substation in the PPL area. Project AF2-288 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-288 was studied with a commercial probability of 1.00. Potential network impacts were as follows:

7.1 Generation Deliverability

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

None

7.2 Multiple Facility Contingency

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

None

7.3 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

7.4 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

8 Short Circuit Analysis

The following Breakers are over dutied:

None.

9 Attachment 1 – One Line Diagram