Generation Interconnection
Facility Study Report

For

PJM Generation Interconnection Request
Queue Position Z2-107

East Carbondale-Lackawanna 69kV

(Revised) February 2019

A. Transmission Owner Facilities Study Summary

1. Description of Project

Waymart Storage LLC, the Interconnection Customer (IC), has proposed to add batteries to an existing wind generating facility in Wayne County, Pennsylvania. This project requests an increase to the install capability of 10 MW with 0 MW of this output being recognized by PJM as Capacity. The installed facilities will have a total capability of 74.5 MW with 9 MW of this output being recognized by PJM as capacity.

The capability of the existing facility and the proposed increase is summarized below:

Description	Maximum Facility Output (MW)	Capacity Interconnection Rights (MW)
K21 Existing	64.5	9
Z2-107 Increase	10	0
K21 + Z2-107 Total	**74.5**	**9**

The proposed in-service date for this project is December 15, 2020. **This study does not imply a PPL Electric Utilities (PPL EU) commitment to this in-service date.**

2. Amendments to the System Impact Study data or System Impact Study Results

The Interconnection Customer reduced the output of the project from 20 MW to 10 MW

3. Interconnection Customer's Submitted Milestone Schedule

December 2020 – Requested in service date

4. Scope of Customer's Work

Installation of a 10 MW battery array at the location of the Waymart Wind Farm.

5. Description of Facilities Included in the Facilities Study

Attachment Facilities – None

Direct Connection Network Upgrades – None

Non Direct Connection Network Upgrades:

- Lackawanna substation work (PJM Network Upgrade Number n4394)

6. Total Costs of Transmission Owner Facilities included in Facilities Study

Description	Total Cost
Attachment Facilities	$ 0
Direct Connection Network Upgrades	$ 0
Non Direct Connection Network Upgrades	$ 150,000
Total Costs	**$ 150.000**

7. Summary of Milestone Schedules for Completion of Work Included in Facilities Study:

PPL estimates that it will take 12 months to complete all work.

B. Transmission Owner Facilities Study Results

1. Transmission Lines – New

None

2. Transmission Line – Upgrades

None

3. New Substation/Switchyard Facilities

None

4. Upgrades to Substation / Switchyard Facilities

Lackawanna Substation Work

PJM Network Upgrade Number n4394

To accommodate Z2-107, the following upgrades are required at PPL EU's Lackawanna 230-69kV Substation, assuming existing RTU at Waymart can accommodate the Z2-107:

- Modify SCADA for new alarms
- Modify AMS (Alarm Management System)
- Perform system checks and test equipment before placing in service

- Coordination, engineering, implementation, and testing

5. Metering & Communications

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 Sections 24.1 and 24.2.

PPL EU Requirements

PPL EU SCADA Equipment Requirements

PPL EU will require PPL EU approved SCADA equipment that will connect to its existing SCADA system to provide real time values of KW, KVAR, and kV metering data at the POC. SCADA equipment will also provide capability to trip and the status monitoring of the POC isolating circuit breaker. In addition to that, monitoring of other abnormal conditions at developer's plant will be provided where deemed necessary. This connection will be a 4-wire dedicated FDDA-type phone line. PPL EU will provide detailed specifications and design drawings for this equipment.

Revenue Metering Equipment Installation at the Point of Interconnection

Installation of revenue grade Bi-directional Metering Equipment will be required at the Queue Z2-107 Point of Interconnection (POI) to measure KWh and KVARh. PPL EU will design and supply the required metering equipment but all the installation cost would be borne by the developer including CT/PTs. All metering equipment must meet applicable PPL EU tariff requirements as well as being compliant with all applicable requirements of the PJM agreements. The equipment must provide bi-directional revenue metering (KWH and KVARH) and real-time data (KW, KVAR, circuit breaker status, and generator bus voltages) for the developer's generating resource. The equipment should be housed in a control cabinet or similar enclosure and must be accessible to PPL EU metering personnel.

6. Environmental, Real Estate and Permitting Issues

None.

7. Summary of Results of Study

Description	NUN	Total Cost
Attachment Facilities		$ 0
Direct Connection Network Upgrades		$ 0

Description	NUN	Total Cost
Non Direct Connection Network Upgrades		
Lackawanna Substation work	N4394	$ 150,000
Total Costs		**$ 150.000**

Attachment 1. Single Line Diagram