Generation Interconnection

Combined Feasibility and Impact Study Report

for

Queue Project AG2-422

Bustleton 13 KV

0 MW Capacity / 1.2 MW Energy

September 2021

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1 Introduction

This Combined Feasibility and 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 PSEG.

2 Preface

The intent of the Combined Feasibility and Impact 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 Combined Feasibility and 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.

3 General

The Interconnection Customer (IC), Convergent Energy and Power LP, has proposed a solar/storage generating facility located in Burlington County, New Jersey. The installed facilities will have a total capability of 1.2 MW with 0 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 31, 2022. This study does not imply a TO commitment to this in-service date.

Queue Number	AG2-422
Project Name	Bustleton 13 kV
State	New Jersey
County	Burlington
Transmission Owner	PSEG
MFO	1.2
MWE	1.2
MWC	0
Fuel	Solar/Storage
Basecase Study Year	2024

Any 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

AG2-422 will interconnect with the PSEG system via the Bustleton 13 kV circuit 8022. The point of interconnection will be at the termination of the Underground cable in the Interconnection Customer's switchgear.

5 Cost Summary

The AG2-422 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$ 300,000
Total System Network Upgrade Costs	$ 0
Total Costs	$ 300,000

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 88-129. If at a future date it is determined that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

6 Transmission Owner Scope of Work

AG1-422 is a request to interconnect to a non-Ferc jurisdictional circuit. As a result, the scope, cost and schedule for the physical interconnection will be captured in a two party Interconnection Agreement between the Interconnection Customer and the Transmission Owner. A preliminary estimate is provided below:

The total physical interconnection costs is given in the table below:

Description	Total Cost
Tap of the BUS8022 13kV circuit and termination in IC switchgear. Installation of revenue grade metering.	$ 300,000
Total Physical Interconnection Costs	$ 300,000

7 Schedule

The estimated time to complete the scope of work is **10 months** after the relevant agreement(s) are signed and PSE&G receives Notice to Proceed. This duration does not include time for the IC to obtain necessary permits, easement, and approvals for Interconnection Facilities. The developer must obtain these approvals prior to PSE&G installation. PSE&G's schedule assumes reasonable efforts will be made by the Interconnection Customer to meet the proposed schedule, consequently delays to the Interconnection Customer's activities may lead to delays/changes to the PSEG's schedule as well.

8 Revenue Metering and SCADA Requirements

8.1 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.

8.2 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

8.3 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/

9 Summer Peak - Load Flow Analysis

The Queue Project AG2-422 was evaluated as a 1.2 MW (Capacity 0 MW) injection at the Bustleton 13 kV substation in the PSEG area. Project AG2-422 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG2-422 was studied with a commercial probability of 100.0 %. Potential network impacts were as follows:

9.1 Generation Deliverability

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

None

9.2 Multiple Facility Contingency

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

None

9.3 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

9.4 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

9.5 System Reinforcements - Summer Peak Load Flow - Primary POI

None

10 Light Load Analysis

The Queue Project AG2-422 was evaluated as a 1.2 MW injection at the Bustleton 13 kV substation in the PSEG area. Project AG2-422 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG2-422 was studied with a commercial probability of 100%. Potential network impacts were as follows:

10.1 Light Load Deliverability

(Single or N-1 contingencies)

None

10.2 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies)

None

10.3 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

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None

10.5 System Reinforcements

None

11 Short Circuit Analysis

The following Breakers are overdutied:

None

11.1 System Reinforcements - Short Circuit

None

12 Affected Systems

None

13 Stability and Reactive Power

(Summary of the VAR requirements based upon the results of the dynamic studies)

Not Required

14 Attachment 1: One Line Diagram