Revised
Generation Interconnection
Combined Feasibility / System Impact Study Report
for
Queue Project AF2-436
WYALUSING 34.5 KV II
1.5 MW Capacity / 1.5 MW Energy

September 2020
Revision 1

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1 Introduction

This System Impact Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 205, as well as the System Impact Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is Mid-Atlantic Interstate Transmission (MAIT) (PENELEC zone).

2 Revision to July 2020 Combined Study Report

This revision updates an incorrect reference to the queue project to which the AF2-436 project is an uprate. This update is in Section 4, "General", of this report. The original report was referencing AB2-133 instead of AA2-133.

3 Preface

The intent of the System Impact Study is to determine a plan, with approximate cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications (on PJM web site) for the appropriate transmission owner.

In some instances an Interconnection Customer may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, 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 System Impact Study is performed.

The System 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.

4 General

The Interconnection Customer (IC) has proposed an uprate to a planned/existing Natural Gas generating facility located in Bradford, Pennsylvania. This project is an increase to the Interconnection Customer's AA2-133 project, which will share the same point of interconnection. The AF2-436 queue position is a 1.5 MW uprate (1.5 MW Capacity uprate) to the previous project. The total installed facilities will have a capability of 21.4 MW with 21.4 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this uprate project is April 13, 2020. This study does not imply a TO commitment to this in-service date.

Queue Number	**AF2-436**
Project Name	WYALUSING 34.5 KV II
State	Pennsylvania
County	Bradford
Transmission Owner	PENELEC
MFO	21.4
MWE	1.5
MWC	1.5
Fuel	Natural Gas
Basecase Study Year	2023

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.

5 Point of Interconnection

AF2-436 will interconnect with the PENELEC distribution system at the same POI as the existing AA2-133 project. The POI is a 34.5kV interconnection via a tap on the Wyalusing circuit at the Penelec-owned East Towanda substation.

Attachment 1 shows a one-line diagram of the direct connection facilities for the AF2-436 generation project to connect to the Penelec distribution system. IC will be responsible for constructing all of the facilities on its side of the POI, including the attachment facilities which connect the generator to the Penelec distribution system's direct connection facilities.

6 Cost Summary

The AF2-436 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$40,200
Allocation towards System Network Upgrade Costs	$0
Total Costs	$40,200

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.

Note 1: PJM Open Access Transmission Tariff (OATT) section 217.3A outline cost allocation rules. The rules are further clarified in PJM Manual 14A Attachment B. The allocation of costs for a network upgrade will start with the first Queue project to cause the need for the upgrade. Later queue projects will receive cost allocation contingent on their contribution to the violation and are allocated to the queues that have not closed less than 5 years following the execution of the first Interconnection Service Agreement which identifies the need for this upgrade.

Note 2: For customers with System Reinforcements listed: If your present cost allocation to a System Reinforcement indicates $0, then please be aware that as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, the cost responsibilities can change and a cost allocation may be assigned to your project. In addition, although your present cost allocation to a System Reinforcement is presently $0, your project may need this system reinforcement completed to be deliverable to the PJM system. If your project comes into service prior to completion of the system reinforcement, an interim deliverability study for your project will be required.

7 Transmission Owner Scope of Work

The AF2-436 will interconnect with the Penelec distribution system at the same POI as the existing AA2-133 project via a tap on the 34.5 kV Wyalusing circuit at pole # 239556B52919.

Attachment 1 shows a one-line diagram of the existing direct connection facilities for the AF2-436 generation project to connect to the Penelec distribution system.

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

Description	Total Cost
East Towanda 34.5kV SS. Adjust Remote Relay and Metering Settings.	$ 13,400
New Albany 34.5kV SS. Adjust Remote Relay and Metering Settings.	$ 13,400
Wyalusing 34.5kV SS. Adjust Remote Relay and Metering Settings.	$ 13,400
Total Physical Interconnection Costs	**$40,200**

8 Schedule

The relay setting upgrades will be coordinated with the customer's schedule for the upgrade project.

9 Transmission Owner Analysis

Penelec performed an analysis of its distribution system. The AF2-436 project did not contribute to any overloads on the distribution system.

10 Interconnection Customer Requirements

N/A

11 Revenue Metering and SCADA Requirements

11.1 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.

11.2 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/

12 Summer Peak Analysis

The Queue Project AF2-436 was evaluated as a 1.5 MW (Capacity 1.5 MW) uprate to AA2-133 which is tapping the East Towanda to North Mesohoppen 34.5 kV line in the PENELEC area. Project AF2-436 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-436 was studied with a commercial probability of 100.0 %. Potential network impacts were as follows:

12.1 Generation Deliverability

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

None

12.2 Multiple Facility Contingency

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

None

12.3 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

12.4 Steady-State Voltage Requirements

To be determined

12.5 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

12.6 System Reinforcements

None.

12.7 Flow Gate Details

The following indices contain additional information about each facility presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. The intent of the indices is to provide more details on which projects/generators have contributions to the flowgate in question. All New Service Queue Requests, through the end of the Queue under study, that are contributors to a flowgate will be listed in the indices. Please note that there may be contributors that are subsequently queued after the queue under study that are not listed in the indices. Although this information is not used "as is" for cost allocation purposes, it can be used to gage the impact of other projects/generators. It should be noted the project/generator MW contributions presented in the body of the report are Full MW Impact contributions which are also noted in the indices column named "Full MW Impact", whereas the loading percentages reported in the body of the report, take into consideration the PJM Generator Deliverability Test rules such as commercial probability of each project as well as the ramping impact of "Adder" contributions. The MW Impact found and used in the analysis is shown in the indices column named "Gendeliv MW Impact".

None.

12.8 Queue Dependencies

The Queue Projects below are listed in one or more indices for the overloads identified in your report. These projects contribute to the loading of the overloaded facilities identified in your report. The percent overload of a facility and cost allocation you may have towards a particular reinforcement could vary depending on the action of these earlier projects. The status of each project at the time of the analysis is presented in the table. This list may change as earlier projects withdraw or modify their requests.

None

12.9 Contingency Descriptions

None

13 Light Load Analysis

Not required for this project.

14 Short Circuit Analysis

The following Breakers are overdutied:

None.

14.1 System Reinforcements - Short Circuit

None.

15 Stability and Reactive Power

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

No impacts.

16 Affected Systems

16.1 NYISO

None.

17 Attachment 1: One Line Diagram