Generation Interconnection

System Impact Study Report

for

Queue Project AG1-507

CALUMET 138 KV

296 MW Capacity / 296 MW Energy

August 2021

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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 ComEd.

2 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.

An Interconnection Customer with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

3 General

The Interconnection Customer (IC) has proposed a Natural Gas generating facility located in in Cook County, Illinois. The installed facilities will have a total capability of 296 MW with 296 MW of this output being recognized by PJM as Capacity. The Capacity Interconnection Rights associated with this request are being transferred from the deactivated Southeast Chicago Energy Project. The proposed in-service date for this uprate project is June 1, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-507
Project Name	CALUMET 138 KV
State	Illinois
County	Cook
Transmission Owner	ComEd
MFO	296
MWE	296
MWC	296
Fuel	Natural Gas
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

AG1-507 will interconnect with the ComEd transmission system at the Calumet 138 kV substation. AG1-507, a 296 MW natural gas facility named TSS 944 Southeast Chicago Energy Center, proposes to re-establish its interconnection with the ComEd transmission system at TSS 150 Calumet by utilizing the existing attachment facilities shown in the one-line diagram.

5 Cost Summary

The AG1-507 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$ 0
Allocation towards System Network Upgrade Costs (PJM Identified - Summer Peak)*	$ 0
Allocation towards System Network Upgrade Costs (PJM Identified - Light Load)*	$ 0
Allocation towards System Network Upgrade Costs (TO Identified)*	$ 0
Total Costs	$ 0

*As your project progresses through the study process and other projects modify their request or withdraw, then your cost allocation could change.

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.

6 Transmission Owner Scope of Work

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

AG1-507 proposes to re-establish its interconnection with the ComEd transmission system at TSS 150 Calumet by utilizing the existing attachment facilities. A review of the existing attachment facilities confirms they are in operational condition.

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 Analysis

The Queue Project AG1-507 was evaluated as a 296.0 MW (Capacity 296.0 MW) injection claiming rights from the Southeast Chicago Energy Project at the Calumet 138 kV substation in the ComEd area. Project AG1-507 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-507 was studied with a commercial probability of 100.0 %. 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 Steady-State Voltage Requirements

None

8.5 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

8.6 System Reinforcements

None

9 Light Load Analysis

Not Required

10 Short Circuit Analysis

The following Breakers are overdutied:

None

10.1 System Reinforcements - Short Circuit

None

11 Stability and Reactive Power

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

To be determined in the Facilities Study Phase.

12 Affected Systems

12.1 MISO

None

13 Attachment 1: One Line Diagram