Generation Interconnection System Impact Study Report

For

PJM Generation Interconnection Request Queue Position AD1-016

"Marengo 34.5 kV"

January 2021

Preface

The intent of the System 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 reinforcement costs may be shared with other projects, and the allocations tables are included in this report, if applicable.

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 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.

General

The Interconnection Customer (IC) has proposed a solar generating facility located in McHenry County, Illinois. The installed facilities will have a total capability of 20.0 MW with 7.6 MW of this output being recognized by PJM as Capacity. The original proposed in-service date for this project occurred in the past and a new in-service date will need to be determined during the Facilities Study phase.

Point of Interconnection

The Interconnection Customer (IC) proposes to interconnect with the ComEd transmission system by connecting to a 34 kV feeder out of the TSS 123 Marengo Substation (See Attachment 1).

Transmission Owner Scope of Work and Schedule

The interconnection for this project is within the jurisdiction of a state tariff and the PJM process is solely for the access to the wholesale energy and ancillary markets. Therefore, there is no Transmission Owner scope of work included in this report. Attachment facilities work scope and schedule will be identified in a separate two party interconnection agreement between the Interconnection Customer and ComEd's distribution organization. The IC is responsible to contact ComEd directly to negotiate that agreement.

Network Impacts

The Queue Project AD1-016 was evaluated as a 20.0 MW (7.6 MW Capacity) injection into the Marengo;B 138 kV substation in the ComEd area. Project AD1-016 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AD1-016 was studied with a commercial probability of 100%. Potential network impacts were as follows:

Summer Peak Analysis - 2021

Generator Deliverability

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

None

Multiple Facility Contingency

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

None

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

Steady-State Voltage Requirements

None

Short Circuit

No issues found

Affected System Analysis & Mitigation

MISO Impacts:

None

Delivery of Energy Portion of Interconnection Request

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 Interconnection Customer can proceed with network upgrades to eliminate the

operational restriction at their discretion by submitting a Merchant Transmission Interconnection request. Only the most severely overloaded conditions are listed. 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 will study all overload conditions associated with the overloaded element(s) identified.

1. (CE - CE) The AB1-089 TAP-AD1-064 TAP 345 kV line (from bus 930480 to bus 934400 ckt 1) loads from 99.97% to 100.03% (AC power flow) of its emergency rating (2058 MVA) for the single line contingency outage of 'COMED_P1-2_345-L97116__-R'. This project contributes approximately 1.7 MW to the thermal violation.

CONTINGENCY 'COMED_P1-2_345-L97116__-R'
  TRIP BRANCH FROM BUS 270759 TO BUS 270883 CKT 1 / U3-021 SILVE; R 345
  END

Light Load Analysis - 2020

Light Load Studies to be conducted during later study phases (as required by PJM Manual 14B).

No issues found.

Stability and Reactive Power Requirement

No issues found or mitigations required. See Dynamic Simulation Analysis Report for full details.)

No issues found.

Summer Peak Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

None

Light Load Load Flow Analysis Reinforcements

None

ATTACHMENT 1