

***PJM Generation Interconnection Request***

***System Impact Study Report***

***For***

***Queue Position AD1-129***

***“Belvidere 34kV”***

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 Boone County, Illinois. The installed facilities will have a total capability of 12.5 MW with 7.5 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 proposes to interconnect with the ComEd transmission system by connecting to a 34 kV feeder out of the Belvidere 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**

Queue Project AD1-129 was evaluated as a 12.5 MW (Capacity 7.5 MW) injection at the Belvidere 34.5 kV substation in the ComEd area. Project AD1-129 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AD1-129 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**

*(Results of the steady-state voltage studies should be inserted here)*

None

### **Short Circuit**

*(Summary of impacted circuit breakers)*

No issues.

## **Affected System Analysis & Mitigation**

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 developer 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.

None

## **Light Load Analysis - 2021**

No issues found.

## **System Reinforcements**

### **Short Circuit**

*(Summary form of Cost allocation for breakers will be inserted here if any)*

None

### **Stability and Reactive Power Requirement**

*(Results of the dynamic studies should be inserted here)*

Not required.

## **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

# ATTACHMENT 1

