



# **Generation Interconnection**

## **Feasibility Study Report**

**for**

## **Queue Project AF1-060**

**LENA 138 KV**

**12 MW Capacity / 12 MW Energy**

January, 2020

## 1 General

The Interconnection Customer (IC) has proposed a storage generating facility located in Stephenson County, Illinois. The installed facilities will have a capability of 12 MW with 12 of new request MW of this output being recognized by PJM as capacity. The conduct of light load analysis as required under the PJM planning process is not performed during the Generation Interconnection Feasibility Study phase of the PJM study process. Additional reinforcement requirements for this Interconnection Request may be defined during the conduct of the light load analysis which shall be performed following execution of the System Impact Study agreement.

<b>Queue Number</b>	<b>AF1-060</b>
<b>Project Name</b>	LENA 138 KV
<b>State</b>	Illinois
<b>County</b>	Stephenson
<b>Transmission Owner</b>	ComEd
<b>MFO</b>	112
<b>MWE</b>	12
<b>MWC</b>	12
<b>Fuel</b>	Storage
<b>Basecase Study Year</b>	2023

### 1.1 Point of Interconnection

Queue Position AF1-060, a 12 MW storage facility proposes to interconnect with the ComEd transmission system.

### 1.2 Cost Summary

The AF1-060 project will be responsible for the following costs:

Description	Total Cost
<b>Attachment Facilities</b>	\$200,000
<b>Direct Connection Network Upgrade</b>	\$0
<b>Non Direct Connection Network Upgrades</b>	\$0
<b>Total Costs</b>	\$200,000

In addition, the AF1-060 project may be responsible for a contribution to the following costs

Description	Total Cost
<b>System Upgrades</b>	\$0

Cost allocations for these upgrades will be provided in the System Impact Study Report.

## 2 Transmission Owner Scope of Work

To accommodate interconnection of AF1-060; the relaying, SCADA, Communication and metering between TSS 969 Eco Grove Wind Farm and Lena and Lancaster Substations would be reviewed and upgraded if needed.

## 3 Attachment Facilities

The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
<b>SCADA, Communication, relays and metering</b>	\$200,000
<b>Total Attachment Facility Costs</b>	\$200,000

## 4 Direct Connection Cost Estimate

The total preliminary cost estimate for the Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
<b>Total Direct Connection Facility Costs</b>	\$0

## 5 Non-Direct Connection Cost Estimate

The total preliminary cost estimate for the Non-Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
<b>Total Non-Direct Connection Facility Costs</b>	\$0

## 6 Schedule

ComEd would take approximately 18-months to review and possibly upgrade the relaying, SCADA, Communication and metering after the ISA / ICSA are signed.

## 7 Transmission Owner Analysis

To accommodate interconnection of AF1-060; the relaying, SCADA, Communication and metering between TSS 969 Eco Grove Wind Farm and Lena and Lancaster Substations would be reviewed and upgraded if needed.

## 8 Interconnection Customer Requirements

ComEd interconnection requirements can be found at <https://www.pjm.com/planning/design-engineering/to-tech-standards/private-comed.aspx>

To the extent that these Applicable Technical Requirements and Standards may conflict with the terms and conditions of the Tariff, the Tariff shall control.

ComEd distribution line drops to move customer cranes and heavy equipment is not part of PJM process. The customer should directly contact ComEd New Business Group to arrange for line drops, if needed.

## 9 Revenue Metering and SCADA 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.

## 10 Network Impacts

The Queue Project AF1-060 was evaluated as a 12.1 MW (Capacity 12.0 MW) injection at the Ecogrove 34.5 kV substation in the ComEd area. Project AF1-060 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-060 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

# Summer Peak Load Flow

## 11 Generation Deliverability

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

None

## 12 Multiple Facility Contingency

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

None

### 13 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

### 14 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.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
44140654	271498	FREEPORT;BT	138.0	CE	271494	FREEPORT;2R	138.0	CE	1	COMED_P2-1_119-L11904__	operation	173.0	93.34	100.27	DC	12.0

### 15 System Reinforcements

None

### 16 Flow Gate Details

The following indices contain additional information about each flowgate presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact. It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

None

# Affected Systems

## 17 Affected Systems

### 17.1 LG&E

LG&E Impacts to be determined during later study phases (as applicable).

### 17.2 MISO

MISO Impacts to be determined during later study phases (as applicable).

### 17.3 TVA

TVA Impacts to be determined during later study phases (as applicable).

### 17.4 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

### 17.5 NYISO

NYISO Impacts to be determined during later study phases (as applicable).

Contingency Name	Contingency Definition
COMED_P2-1_119-L11904__	CONTINGENCY 'COMED_P2-1_119-L11904__' TRIP BRANCH FROM BUS 271897 TO BUS 271498 CKT 1 / LANCASTER; R 138 FREEPORT ;BT END

# Short Circuit

## 18 Short Circuit

The following Breakers are overdutied:

None