



# **Generation Interconnection**

## **Feasibility Study Report**

**for**

**Queue Project AF2-160**

**BRUNOT ISLAND 138 KV**

**3.5 MW Capacity / 3.5 MW Energy**

July 2020

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## 1 Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between, the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is Duquesne Light Company (DL).

## 2 Preface

The intent of the feasibility 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 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 impact study is performed.

PJM utilizes manufacturer models to ensure the performance of turbines is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a \$10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model. The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

The Feasibility 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.

### 3 General

The Interconnection Customer (IC), has proposed 3.5 MW of natural gas generation located in Allegheny County, Pittsburgh, Pennsylvania. This project requests 3.5 MW energy with 3.5 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is April 1, 2020. This study does not imply a TO commitment to this in-service date.

|                            |                      |
|----------------------------|----------------------|
| <b>Queue Number</b>        | <b>AF2-160</b>       |
| <b>Project Name</b>        | BRUNOT ISLAND 138 KV |
| <b>State</b>               | Pennsylvania         |
| <b>County</b>              | Allegheny            |
| <b>Transmission Owner</b>  | DL                   |
| <b>MFO</b>                 | 283.5                |
| <b>MWE</b>                 | 3.5                  |
| <b>MWC</b>                 | 3.5                  |
| <b>Fuel</b>                | Natural Gas          |
| <b>Basecase Study Year</b> | 2023                 |

#### 3.1 Point of Interconnection

AF2-160 will interconnect with the DL transmission system as an uprate to the Brunot Island CT1A and CC4 at the Brunot Island 138 kV substation.

#### 3.2 Cost Summary

The AF2-160 project will be responsible for the following costs:

| Description                            | Total Cost  |
|--|-------------|
| Attachment Facilities                  | \$ 0        |
| Direct Connection Network Upgrade      | \$ 0        |
| Non Direct Connection Network Upgrades | \$ 0        |
| <b>Total Costs</b>                     | <b>\$ 0</b> |

In addition, the AF2-160 project may be responsible for a contribution to the following costs

| Description     | Total Cost |
|-----------------|------------|
| System Upgrades | \$ 0       |

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

## **4 Transmission Owner Scope of Work**

## **5 Attachment Facilities**

There is no Attachment Facility scope of work required.

## **6 Direct Connection Cost Estimate**

There is no Direct Connection scope of work required.

## **7 Non-Direct Connection Cost Estimate**

There is no Non-Direct Connection scope of work required.

## **8 Schedule**

The schedule for the required Network Impact Reinforcements will be more clearly identified in future study phases. The estimate elapsed time to complete each of the required reinforcements is identified in the “System Reinforcements” section of the report.

## **9 Transmission Owner Analysis**

No network impacts were identified as detailed in the “Network Impacts” section below.

## 10 Interconnection Customer Requirements

ITO facility connection requirements as posted on PJM's website:

<https://www.pjm.com/planning/design-engineering/to-tech-standards/private-duquesne.aspx>

## **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 DL Requirements**

The Transmission Owner will install, own and maintain the metering equipment at the Point of Interconnection (See Attachment 1). The IC's facility shall be independently metered, and the IC shall provide the communication link required to send the Revenue Metering and real time data directly to PJM. All costs associated with the installation and maintenance of the metering equipment (including upgrades) shall be the responsibility of the IC.

## 12 Network Impacts

The Queue Project AF2-160 was evaluated as a 3.5 MW (Capacity 3.5 MW) injection as an uprate to the Brunot Island CT1A and CC4 at the Brunot Island 138 kV substation in the DL area. Project AF2-160 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-160 was studied with a commercial probability of 53%. 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 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

## **13 Affected Systems**

### **13.1 LG&E**

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

### **13.2 MISO**

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

### **13.3 TVA**

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

### **13.4 Duke Energy Progress**

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

### **13.5 NYISO**

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

## **14 Short Circuit**

Not applicable