

***Generation Interconnection
Combined Feasibility and System Impact
Study Report***

For

***PJM Generation Interconnection Request
Queue Position Y3-012***

***“Huron 69 kV”
(revised)***

December 2013

Preface

The intent of a Combined Feasibility/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 (cost allocation) with other projects will be identified in the Combined Report.

Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The Interconnection Customer may be 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

Marina Energy, LLC, the Interconnection Customer (IC), has proposed a 7.5 MW energy only natural gas fueled simple cycle combustion turbine addition to their existing generating facility located in Atlantic City, New Jersey. The addition of the 7.5 MWs from Y3-012 will result in the IC's generating facility having a 15.5 MW Maximum Facility Output (MFO) and an 8 MW Capacity rating. PJM studied the Y3-012 project as a 7.5 MW injection into the Atlantic City Electric Company's (ACE) system at the MARIGEN 12.9 kV substation and evaluated it for compliance with reliability criteria for summer peak conditions in 2017. The combustion turbine is currently operating as a behind the meter generator.

Point of Interconnection

Y3-012 will utilize the existing Point(s) of Interconnection at the ACE Huron 69 kV substation (see Attachment 1).

Direct Connection Requirements

Transmission Owner Scope of Work

Metering:

Scope:

- Provide metering equipment material to be installed in Interconnection Customer's Facility.
- Provide, install and program meters at each of the four 2 MW diesel generators.

Estimate: \$8,000

Interconnection Customer Scope of Work

The Interconnection Customer assumes full responsibility for design and construction of all facilities associated with the Y3-012 generating station and the direct connection line on the IC side of the Point of Interconnection.

The IC will be required to install metering and telemetry equipment to provide revenue metering and real-time telemetry data to PJM. The requirements for this equipment are listed in Appendix 2, Section 8 of Attachment O to the PJM Tariff, as well as PJM Manuals 01 and 14D. Protective relaying and metering design and installation must comply with DPL applicable standards.

Protective relaying and metering design and installation must comply with ACE's applicable standards. The IC is also required to provide revenue metering and real-time telemetering data to PJM in conformance with the requirements contained in PJM Manuals M-01 and M-14 and the PJM Tariff. The Interconnection Customer must provide a phone line connected to the diesel generator units 1-4 and combustion turbine unit meters to facilitate remote interrogation and data collection by the Interconnected Transmission owner.

The interconnection customer will purchase and install all metering instrument transformers as well as construct a metering structure per ACE's specifications. The secondary wiring connections at the instrument transformers will be completed by the interconnection customer's contractors and inspected by ACE, while the secondary wiring work at the metering enclosure will be completed by ACE's meter technicians. The metering control cable and meter cabinets will be supplied by ACE and installed by the interconnection customer's contractors. ACE's meter technicians will program and install two solid state multi-function meters (Primary & Backup) for the new metering position. Each meter will be equipped with load profile, telemetry, and form-c pulse outputs. The ownership of metering equipment purchased or installed by the IC shall be transferred to the Interconnected Transmission Owner at the time of commercial operation unless the IC asserts its right to install, own, and operate the metering system.

Special Operating Requirements

1. ACE will require the capability to remotely disconnect the generator from the grid by communication from its System Operations facility. Such disconnection may be facilitated by a generator breaker, a line recloser, or other method depending upon the specific circumstances and the evaluation by ACE.
2. It is the Interconnection Customer's responsibility to send the data that PJM and ACE requires directly to PJM. The Interconnection Customer will grant permission for PJM to send to ACE the following telemetry that the Interconnection Customer sends to PJM: real time MW, MVAR, volts, amperes, generator/status, and interval MWH and MVARH.

3. The Interconnection Customer will be required to make provisions for a voice quality phone line within approximately 3 feet of each Company metering position to facilitate remote interrogation and data collection.
4. ACE reserves the right to charge the Interconnection Customer operation and maintenance expenses to maintain the Interconnection Customer attachment facilities, including metering and telecommunications facilities, owned by ACE.

Transmission Network Impacts

Potential transmission network impacts are as follows:

Generator Deliverability

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

None

Multiple Facility Contingency

*(Double Circuit Tower Line, Line with Failed 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

Short Circuit

No issues identified.

Stability Analysis

Not required due to project size.

New System Reinforcements

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

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. The costs identified below represent the total to complete the reinforcement, not necessarily this project's cost. Actual cost allocations will be deferred until the System Impact Study is performed.)

None

ATTACHMENT 1

Y3-012

