

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

For

***PJM Generation Interconnection Request
Queue Position X1-032***

Costen 25kV

September 2011

Preface

The intent of the 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 with other projects may be identified in the Feasibility Study, but the actual allocation will be deferred until the System Impact Study is performed.

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 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

Chesapeake Renewable Energy, LLC, the Interconnection Customer (IC), has proposed a 4 MW energy only (4 MW MFO) solar powered generating facility to be located in Pocomoke City, Maryland. PJM studied X1-032 as a 4 MW injection into the Delmarva Power and Light system at the Choptank Electric Cooperative's (CEC) Costen 138/25kV substation. The project was evaluated for compliance with reliability criteria for summer peak conditions in 2015. The proposed in-service date is June 30, 2012.

Point of Interconnection

X1-032 will interconnect with the Delmarva Power and Light (DPL) transmission system through the Choptank Electric Cooperative's Costen 138/25kV substation (see Attachment 1).

Direct Connection Requirements

Transmission Owner (DPL) Scope of Direct Connection Work

The DPL scope of work and estimated costs for the direct connection facilities is as follows:

There is no Attachment Facility or Network Upgrades required to the DPL system for the interconnection of X1-032.

Choptank Electric Cooperative (CEC) Scope of Work

The CEC scope of work is as follows:

Costen 138/25kV substation

1. Install one (1) new 25kV feeder approximately 200 feet in length from the Costen substation to the generating site.
2. Install a utility operated recloser with relaying and communication equipment.
3. Install utility grade metering.
4. Install loss of supply voltage transmission protection relaying.

The estimated costs and schedule to perform this work will be provided in a separate two party interconnection agreement between the Interconnection Customer and CEC.

Interconnection Customer Scope of Direct Connection Work

The Interconnection Customer (IC) has assumed full responsibility for the design and construction of all facilities associated with the X1-032 generating facility on the IC side of the point of common coupling.

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.

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

None

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.

None

Potential Congestion due to Local Energy Deliverability

(PJM also studied the delivery of the energy portion of the surrounding generation. Any potential 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 Transmission Interconnection Request. Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full deliverability for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which analyzes all overload conditions associated with the identified overloaded element(s). As a result of the aggregate energy resources in the area, the following violations were identified:

These are **not** required reliability upgrades.

None

Attachment 1 X1-032

