

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

For

***PJM Generation Interconnection Request
Queue Position AB1-144***

Shawville 230kV

June 2016

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, if any, is included in the System Impact Study.

The 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 associated with them will be addressed when seeking an Interconnection Agreement as outlined below. . Developer will also be responsible for providing and installing metering equipment in compliance with applicable PJM and Transmission Owner standards.

General

NRG REMA LLC, the Interconnection Customer (IC), has proposed a natural gas generating facility located Clearfield County, Pennsylvania. The installed facilities will have a total capability of 590 MW with 590 MW of this output being recognized by PJM as capacity. The Capacity Interconnection Rights associated with this request are being transferred from the deactivated Shawville units. The proposed in-service date for this project is October 2016. **This study does not imply a Penelec commitment to this in-service date.**

Point of Interconnection

AB1-144 will interconnect with the Penelec transmission system at the Shawville 230kV substation.

Cost Summary

The AB1-144 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$ 0
Direct Connection Network Upgrades	\$ 0
Non Direct Connection Network Upgrades	\$ 0
Total Costs	\$ 0

Attachment Facilities

No Attachment Facilities are required to be constructed by the Transmission Owner.

Direct Connection Cost Estimate

No Direct Connection Facilities are required to be constructed by the Transmission Owner.

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
Remote end protection changes	\$ 10,000
Total Non-Direct Connection Facilities	\$ 10,000

Interconnection Customer Requirements

An Interconnection Customer entering the New Services Queue on or after October 1, 2012 with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

Revenue Metering and SCADA Requirements

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 Sections 24.1 and 24.2.

FirstEnergy Requirements

The Interconnection Customer will be required to comply with all FE Revenue Metering Requirements for Generation Interconnection Customers. The Revenue Metering Requirements may be found within the "FirstEnergy Requirements for Transmission Connected Facilities" document located at the following links:

<http://www.firstenergycorp.com/feconnect>

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

Network Impacts

No analysis is required since the rights being used from the deactivated units are located at the same bus as the new AB1-144 project.

