Generation Interconnection Feasibility Study Report (Web Version)

For

PJM Generation Interconnection Request Queue Position W3-114

Venango I Project

January, 2011

Overview

General

The Interconnection Customer (IC) has proposed the installation of PV arrays totaling 2.0 MW and 0.76 MW (capacity). The project is proposed to be in service by December 31, 2011. The analysis was performed using a 2014 base year. This project will be FERC Jurisdictional and will receive a PJM Interconnection Service Agreement.

PJM Report on the Transmission System

This portion of the report addresses the impacts on and the required reinforcements to that part of the transmission system under PJM jurisdiction.

Network Impacts

Queue project W3-114 was studied as a 2.0 MW (0.76 MW of which was Capacity) injection into PENELEC's system at the Venango Junction 115.0 kV substation. Project W3-114 was evaluated for compliance with reliability criteria for summer peak conditions in 2014.

Potential transmission network impacts are as follows:

Generator Deliverability

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

No violations identified.

Multiple Facility Contingency

(Double Circuit Tower Line contingencies only with full energy output. Stuck Breaker and Bus Fault contingencies will be applied during the Impact Study)

No violations identified.

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.)

No violations identified.

New System Reinforcements

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

None required.

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study.)

None required.

Short Circuit

(Report over-dutied breakers.)

None required.

Energy Portion of Interconnection Request

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. 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 analyzes all overload conditions associated with the overloaded element(s) identified. As a result of the aggregate energy resources in the area, the following violations were identified.*

No violations identified.

FirstEnergy Feasibility Analysis Report

This portion of this Feasibility Study Report has been prepared for PJM by Penelec (FirstEnergy). It addresses the impacts on and required reinforcements, if needed, including the attachment and direct connection facilities. It also presents the FirstEnergy standards-based requirements for interconnection.

Direct Connection

It was proposed that the project be studied as an interconnection into the Piney Substation 34.5kV bus via the 34.5kV PE line. The proposed generation is to be interconnected to the First Energy distribution system at pole # PE-51-2 by way of the Central REC facilities (Beaver REC delivery point).

IC will be responsible for remote relay and control work required by First Energy at Piney substation that is required due to connecting the facility.

The Interconnection Customer will be responsible for designing, furnishing and installing a SCADA RTU in their generation substation and obtaining the telecommunication circuits from the RTU to the Penelec Data Center. The connection to the Penelec Data Center will be to provide indication and control of the 12.47kV interconnection breaker at IC's generation substation.

Below are conceptual estimates for the engineering/construction associated with Direct Connection requirements.

Item	Description	Conceptual Cost Estimate
1	RTU programming for connection to the First Energy SCADA and relay and control work to connect this project.	$10,000
2	Replace the 12.47kV revenue metering with 34.5kV metering at the Beaver REC delivery point. Note: This metering replacement cost is also included in Project W3-115. If both projects go forward this replacement cost only has to be paid once.	$30,000

Conceptual Estimate: $40,000
Estimated Lead Time: 6 mos. from signed IA

Notes:

- Detailed Engineering & Construction Estimates TBD via System Impact Study
- The above estimates do not include 1) tax gross-up, 2) property costs and site development up to rough grade which is to be provided by the developer, 3) generation SCADA to be

provided by the developer, and 4) engineering and field activities for design review and commissioning of the developer's facilities.

The attached Figure 2 provides a conceptual one-line of the direct connection facilities needed.

Network Impacts

The W3-114 project was studied as total injection of 2.0 MW (0.76 MW of capacity) into the Piney 34.5 kV bus. Project W3-114 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

Generator Deliverability
None

Multiple Facility Contingency
None

Contribution to Previously Identified Overloads
None

New System Reinforcements
None

Contribution to Previously Identified System Reinforcements
None

Short Circuit
No identified problems

Cost Allocation
The W3-114 project will be responsible for 100% of the direct connection costs estimated at $40,000. Total costs are estimated to be $40,000 to accommodate interconnection of the project.