

***Generation Interconnection  
PJM Combined Feasibility/Impact Study  
and  
APS Feasibility Study Report***

***For***

***PJM Generation Interconnection Request  
Queue Position W1-064***

***Grand Point 12kV***

**PJM DOCS No. 603675 v1  
July, 2010**

## **Overview**

PPL Renewable Energy (IC) has submitted an Attachment N to propose the interconnection of a 1.6 MW landfill methane gas fired generator for the purpose of selling up to 1.6 MW energy and 1.6 MW of Capacity into the PJM market. The Commercial Operation date for this project was requested to be January 31, 2011. The analysis was performed using a 2014 base year.

Since this project is FERC non-jurisdictional, this report will present a combined feasibility/impact study prepared by PJM, accompanied by a feasibility study prepared by the Transmission Owner, APS.

## **PJM Combined Feasibility/Impact Study Report**

### **Network Impacts**

Queue project W1-064 was studied as a 1.6MW (1.6MW of which is Capacity) injection into APS's system at the Grand Point 138kV substation. Project W1-064 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

#### **Generator Deliverability**

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

No problems 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 problems identified.

#### **Contribution to Previously Identified Overloads**

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

No problems 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.

#### **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.

## **Short Circuit**

Not required as part of PJM analysis.

## **APS Feasibility Study Report**

This feasibility study has been prepared for PJM queue project W1-064 (PPL Renewable Energy) by Allegheny Power.

### **Injection into the Woodstock 12.5kV Circuit**

#### **Attachment Facilities and Related Network Upgrades**

- Tap the Woodstock 12.5kV circuit near pole 593634, install 12.5kV metering, and provide the customer with a 12.5kV point of interconnection. The developer shall interconnect into the new tap via a new customer-owned 12.5kV line from the customer facility. Note: All rights-of-way must be obtained by the IC and transferred, at no cost, to AP.

**Estimated Cost: \$25,000 in 2010 dollars**

The estimated project duration is **4 months** after the receipt of an executed Interconnection Agreement and Construction Agreement.

While the information in this report is reasonable for the scope of work defined, it should, however, be noted that the cost figures are conceptual in nature at this stage, as an engineering team has not been assigned to the project. Obviously, any change to the scope of work will require that the estimates be revisited. The costs are a best estimate, but the IC will be charged for actual costs. Any under-runs or over-runs will be reconciled at the conclusion of the project. The estimates in this report do not include tax gross-up.

The IC will interconnect with the Allegheny Power (AP) system via a new customer-owned 12.5kV line from the customer facility. The above cost estimates do not include construction of that line. Route selection, line design, rights-of-way acquisition and construction of such lines will be entirely the responsibility of the IC. It is assumed that the IC's main step up transformer will conform to the AP standard with grounded wye on both sides (high and low voltage) as illustrated in the AP Engineering Manual:

[http://www.alleghenypower.com/PowerQuality/Attachments/e1935\\_00.pdf](http://www.alleghenypower.com/PowerQuality/Attachments/e1935_00.pdf) .

### **Short Circuit**

No breakers were identified as being over their maximum interrupting rating.

AP reserves the right to review the electrical protection design and relay settings for IC facilities to ensure that the protective relaying equipment will be compatible with that installed at AP facilities. The relaying package will likely include both primary and backup protection. AP personnel must be present at the time of commissioning to inspect and witness proper function of the control scheme and related coordination. The estimated cost to perform this engineering review and field test effort is **\$5,000 in 2010 dollars**.

*Note: The purchase and installation of protective relaying and associated equipment at the generation site is the responsibility of the IC and is not included in this scope of work.*

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 the AP applicable standards.

### **Overloads and Required Reinforcements**

No Generator Deliverability overloads were identified.

### **Other Supporting Facilities Charge**

The Other Supporting Facilities Charge (OSFC) may include non-transmission facilities directly assigned and/or a general (rolled-in) facilities charge. The guidelines apply to all wholesale customers and all generators selling into or through the PJM market, regardless of capacity, not connected directly to the AP Transmission System.

The Other Supporting Facilities Charge for the W1-064 generator interconnection project has been estimated to be **\$685/month** in 2010 dollars. The estimate is based on a direct assigned rate.

## Single Line Diagram

