

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

***For***

***PJM Generation Interconnection Request  
Queue Position Y1-054***

***Rochelle 138 kV***

September 2012

## 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. The Developer will also be responsible for providing and installing metering equipment in compliance with applicable PJM and Transmission Owner standards.

## General

The University of Cincinnati, the Interconnection Customer (IC), has proposed a natural gas generating facility located in Cincinnati, Hamilton County, Ohio. The installed facilities will have a total capability of 20.0 MW with 0 MW of this output being recognized by PJM as capacity. This means that the remaining 20.0 MW will be curtailable should a system reliability constraint occur. The proposed in-service date for this project is May 1, 2013. **This study does not imply a Duke Energy commitment to this in-service date.**

## Point of Interconnection

Y1-054 will interconnect with the Duke Energy transmission system via two taps of the six breaker 138 kV ring bus at Rochelle Substation.

## Cost Summary

The Y1-054 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
Allocation for New System Upgrades	\$ 0

Contribution for Previously Identified Upgrades	\$	0
<b>Total Costs</b>	<b>\$</b>	<b>0</b>

## **Attachment Facilities**

There are no attachment facilities to construct with this project because the Interconnection Customer is already being serviced from a connection to Rochelle 138 kV substation.

## **Interconnection Customer Requirements**

The Interconnection Customer will install reverse power relays on their side of the Point of Interconnection to limit injection into the transmission system to 20 MW.

## **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.

## **Network Impacts**

The Queue Project #Y1-054 was studied as a 20.0MW (Capacity 0.0MW) injection at the 08RCHLE3 138 kV substation in the Duke area. Project #Y1-054 was evaluated for compliance with reliability criteria for summer peak conditions in 2015. Potential network impacts were as follows:

### **Contingency Descriptions**

The following contingencies resulted in overloads:

None.

### **Generator Deliverability**

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

None.

### **Multiple Facility Contingency**

*(Double Circuit Tower Line contingencies were studied for the full energy output. The contingencies of Line with Failed Breaker and Bus Fault will be performed for the Impact Study.)*

None.

### **Short Circuit**

*(Summary of impacted circuit breakers)*

New circuit breakers found to be over-duty:

None.

Contributions to previously identified circuit breakers found to be over-duty:

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.

### **Steady-State Voltage Requirements**

*(Summary of the VAR requirements based upon the results of the steady-state voltage studies)*

None.

## **Stability and Reactive Power Requirement for Low Voltage Ride Through**

*(Summary of the VAR requirements based upon the results of the dynamic studies)*

None.

## **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.

## **Potential Congestion due to Local Energy Deliverability**

*PJM also studied the delivery of the energy portion of this interconnection request. Any 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 Merchant Transmission Interconnection request.*

*Note: Only the most severely overloaded conditions are listed below. 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 shall study all overload conditions associated with the overloaded element(s) identified.*

None.

# Attachment 1

## System Configuration

