PJM Generator Interconnection Request
Queue #P44
City of Columbus138kV
Feasibility/Impact Study Report

June 2006
#375685
v2 October 2006

© PJM Interconnection 2006. All rights reserved.

City of Columbus 138kV (P44) Feasibility/Impact Study

General

American Municipal Power – Ohio, Inc. has proposed bringing five (5) diesel generators connected to the City of Columbus system out from behind the meter to obtain Capacity Interconnection Rights. One 1.825 MW unit is installed at Pumping Station ST-8 at 1900 West Broad Street, one 1.1 MW init is installed at Pumping Station ST – 1 & 1A at 601 I-71 West, one 1.825 MW unit is installed at Pumping Station Dodge Park at 585 Sullivant Avenue and two 1.36 MW units are installed at Pumping Station Renick Run at 1390 Emig Road. This project has been assigned position P44 in the PJM Generation Interconnection Queue. The project is to be evaluated as a 7 MW capacity resource. The units are presently in-service.

The intent of the feasibility / impact study is to determine system reinforcements and associated costs and construction time estimates required to facilitate the addition of the new generating plant to the transmission system. The reinforcements include the direct connection of the generator to the system and any network upgrades necessary to maintain the reliability of the transmission system.

Direct Connection

Since these generators are already interconnected to the system, there are no changes required other than to install metering as described below:

The Interconnection Customer is responsible for installing metering equipment that is capable of transmitting the following real time data to PJM. (See PJM manual 14D)

a. Instantaneous net MW for the plant
b. Instantaneous net MVAR for the plant

The Interconnection Customer is responsible for installing metering equipment that is capable of transmitting the following non real-time data to PJM. (See PJM manual 14D)

a. Hourly compensated MWh delivered by the plant.
b. Hourly compensated MWh received by the plant.
c. Hourly compensated MVARh delivered by the plant
d. Hourly compensated MVARh received by the plant

This metering equipment needs to be installed on each of the generators and the data transmitted to PJM. PJM will then make the KWH data available to AEP so that it can be used in conjunction with the data AEP now collects at the interconnection points between AEP and the City of Columbus to determine the total City of Columbus load.

The Interconnection Customer needs to supply NET MW and MVar (real-time instantaneous data) and NET MWH and MVARH for all 5 units at the generation voltage. The generator circuit breaker status and Phase A-B line to line voltage would be nice, but is not required.

Amp-Ohio will install the PJM recommended Director Series III manufactured by Arcom. The director will poll a virtue RTU that will reside in our SCADA system and contain the following.

© PJM Interconnection 2006. All rights reserved.

The data points for each site will consist of the instantaneous MW and MVar readings from the ION meter (net values) at each site and the phase 'A' line to line voltage. Each site will also report, the MWH delivered and received, and the MVarH delivered and received. PJM will poll this virtual RTU via the Amp-Ohio always on internet connection using encrypted DNP3. The communications from the director to the virtual RTU will be via Modbus over TCP/IP. The end of hour values will be polled by PJM at 2 ½ minutes past the top of the hour. The Director will be kept time synced via SMTP protocol. PJM will take the 4 sites data and total it for a single reading that will be equivalent to the combined output of the 5 Columbus floodwall generators. The site setup at 2600 Airport Drive will also have a duplicate of the site setup in Westerville. PJM will work out the details of whether they see 2 distinct sites on their system and use the best data, the offline system will transmit data with a failed quality flag, or if both sites will be the same address with Amp-Ohio turning the one side off before enabling the other site.

All of the work described above is to be done by the Interconnection Customer. There is no additional work identified to be done by either AEP or PJM.

Network Impacts

The #P44 project was studied as a 7 MW Capacity injection into the City of Columbus 138 kV substation. Project #P44 was evaluated for compliance with reliability criteria for summer peak conditions in 2010. Potential network impacts were as follows:

Generator Deliverability
No problems were identified

Multiple Facility Contingency
No problems were identified

Short Circuit
Not required for projects whose output is less than 20 MW

Stability
Not required for projects whose output is less than 30 MW

Contribution to Previously Identified Overloads

None

New System Reinforcements

None

Contribution to Previously Identified System Reinforcements

None

© PJM Interconnection 2006. All rights reserved.