Metering Requirements for Small Generation Interconnection

PJM requires real-time information from customer facilities that produce, transfer, or use at least 10Mw of real energy, or if the customer chooses to participate in the Capacity or Regulation markets. This information can be supplied through the local utility if that utility has a direct connection to PJM, or if the customer chooses, a direct connection to PJM can be established. This connection can support real-time as well as revenue information, and will use the facilities of PJMs' Secure Internet Communications System for the communications interface. The revenue information represents the accumulated energy for the previous interval and is collected in engineering units using a non-proprietary meter interface. This information can be collected directly from the customer revenue meter, or if the customer prefers, a data concentrator that is used to interface with multiple meters, or to convert meter pulses and end of interval from older meters into engineering units. Note: revenue collection will not be accomplished through proprietary ASCII meter protocols. Real-time information will be transferred at a 10-second data rate, and the revenue information will be collected hourly.

Minimum instantaneous data model for real-time information at revenue point:

Compensated Net Mw at revenue point
Compensated Net MVar at revenue point

Minimum hourly data model for revenue information at revenue point:

Compensated MwH Delivered at revenue point
Compensated MwH Received at revenue point
Compensated MVarH Delivered at revenue point
Compensated MVarH Received at revenue point

Additional information:

The above required revenue information is required to satisfy the needs of PJMs' Market Settlements. A different but complimentary set of data is required for PJMs' Energy Management Applications. These applications (State Estimator, Security Analysis, etc) require additional real-time information.

Minimum Instantaneous data model for real-time information at non-revenue point:

Generator Net Mw for each unit
Generator Net MVar for each unit
Generator Terminal Bus Voltage

These data models represent the minimum information that PJM requires, additional data objects are required by the Transmission Owner and are listed in Attachment H Informative Annex #1.

PJM requires that the customer equipment communicate via industry standard protocol. PJM communicates with the customer using a Remote Terminal Unit (RTU) installed at the customer location that acts as a data concentrator. The RTU collects traditional instantaneous information via analog and digital inputs, as well as revenue information in engineering units via digital interface (example: DNP3 or MODBUS), or pulse stream with end of interval converted to engineering units from the revenue meter(s). The PJM New Participant Metering system supports the Distributed Network Protocol 3.0 (DNP3 - Implementation level 2) protocol for communicating to this class of customer. PJM has experience with many vendors' products and configurations that support this protocol. Revenue Meter vendors include, but are not limited to ABB, Electro Industries, Lansdis+Gyr,

Schlumberger, Scientific Columbus and Siemens industrial meters, as well as RTU vendors Advanced Control Systems, Arcom Controls, DAQ Electronics, DigitaLogic, Foxboro, GE, Metso Automation, Motorola, and QEI RTUs. For small installations an industrial meter may meet the requirements of both the data concentrator and revenue meter.

The transport media for communicating with PJM for this class of customer will be an encrypted Internet connection using PJM's Encrypted Internet SCADA method. Details on additional equipment required to support the Internet equipment needed to interface to the customers equipment can be found in Informative Annex' #2-4,5,6. The Internet transport used by the PJM's Encrypted Internet Method is provided by the customer. This Internet connection should be a Business class 24x7 type of connection. The type of Internet connection (Corporate LAN, Cable Modem, DSL, Wireless Cellular, Wireless Satellite, etc.) is dependent on the customer location and other customer Internet requirements. The Internet hardware should be powered by the Substation DC Power Source or an AC Power Source with a UPS.

PJM is striving to simplify the usually complex process of connecting customer equipment to the PJM systems. Please feel free to contact me at 610-666-4751, or e-mail me at komarak@pjm.com if you have any questions.

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