



Working to Perfect the Flow of Energy

PJM Manual 14A
Generation and
Transmission
Interconnection Process

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Department

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Section 5: Additional Generator Requirements

In this section you will find:

- The definition of Behind the Meter Generation and requirements related to such projects,
- Generator power factor requirements, and
- Wind or Non-Synchronous generator requirements.

5.1 Behind the Meter Generation Projects

Behind the Meter Generation refers to one or more generating units that are located with load at a single electrical location such that no transmission or distribution facilities owned or operated by any Transmission Owner or Electric Distributor are used to deliver energy from the generating unit(s) to the load; provided, however, that Behind the Meter Generation does not include (i) at any time, any portion of such generating unit(s)' capacity that is designated as a Capacity Resource; or (ii) in any hour, any portion of the output of the generating unit(s) that is sold to another entity for consumption at another electrical location or into the PJM Interchange Energy Market. Behind the Meter Generation rules permit load serving entities in PJM to net operating Behind the Meter Generation against load in the calculation of charges for energy, capacity, transmission service, ancillary services and PJM administrative fees. This total netting approach is intended to encourage the use of Behind the Meter Generation during times of scarcity and high prices, thus increasing the opportunity for load to compete in PJM markets.

5.1.1 Behind the Meter Generation Interconnection Requests

Any Behind the Meter Generation that desires to be designated, in whole or in part, as a Capacity Resource or Energy Resource must submit a Generation Interconnection Request. **(OATT at Part VI, in Section 36.1.01 – formerly Subpart A at 36.1A, in Part IV)**

5.1.2 Metering of Behind the Meter Generation

Behind the meter generation consisting of one or more generating units individually rated at ten megawatts or greater or that otherwise have been identified by PJM as requiring metering for operational security reasons must have both revenue quality metering and telemetry equipment for operational security purposes. Behind the meter generation consisting of multiple generating units that are individually rated less than ten megawatts but together total more than ten megawatts at a single site and are identified by PJM as requiring revenue quality metering and telemetry equipment may meet these metering requirements by being metered as a single unit. **(Operating Agreement, Section 14.5)**

5.1.3 Behind the Meter Generation Effects on Market Operations

Market Buyers shall be charged for all load and associated ancillary services based on the Market Buyer's total load (net of operating Behind the Meter Generation, but not to be less than zero.) **(Operating Agreement, Schedule 1)**

Prior to the commencement of the Planning Period, Parties may elect to place ALM associated with Behind the Meter Generation under the direction of PJM. This election shall remain in effect for the entire Planning Period. In the event such an election is made, such Behind the Meter generation will not be netted from load for the purposes of calculating Accounted-For Obligations under the appropriate PJM Regional Reliability Assurance Agreement.

5.2 Generator Power Factor Requirements

Except as PJM may determine otherwise for small generation resources of 20 MW or less, all generators interconnected with the PJM System shall be designed to maintain a composite power delivery at continuous rated power output and reactive capability, at the generator terminal, corresponding to the power factor requirements stated in the PJM Tariff. **(OATT at Part VI, Att. O, App. 2, Section 4.7.1 – formerly 54.7.1 in Part IV)**

5.2.1 Application of Power Factor Requirements to Increases of Existing Generation

PJM Tariff provisions require existing generators to be designed to operate at a specified leading and lagging power factor as measured at the generator terminals.

- Power Factor requirements also apply to capacity or energy increases to existing generation. (OATT at Part VI, Att. O, App. 2, Section 4.7.1.2)
- Increases to existing generators must be designed to maintain the grandfathered Mvar capability for the existing and pre-upgraded gross generator output capability and the Section 4.7.1.2 power factor requirement for all incremental MW increases.

Grandfathered Mvar capability will be determined using the following methodology and considerations.

- If an agreement exists and contains a reference to required Mvar capability, the methodology in the agreement will determine the grandfathered Mvar capability.
- Consideration will be given to the potential interpretations of the language in the agreement. Non-standard or vague terms and conditions will be discussed by PJM and the parties named in the agreement.
- If no agreement exists or there is no reference to required Mvar capability in an existing agreement, PJM will use alternate methods to determine the grandfathered Mvar capability of the machine.
- Examples of potential alternate methods that may be used at PJM's discretion.
- Use of the D-Curve provided by the manufacturer and is on file with PJM.
- Review of the data with the GO and provide an opportunity for the GO provide additional analytical evidence as to the actual Mvar capability, if different from the manufacturer design data.

- Consideration of available test data with acknowledgement that tests are not always performed under ideal conditions and the system may limit the capability during testing. Input from the GO will also be considered as part of the evaluation by PJM.
- Consideration of historical operational data.

Attachment H to this Manual 14A details a process, adhering to the requirements of the PJM OATT, to mitigate the reactive deficiency arising when an increase of capacity or energy to an existing generator results in the generator not being able to meet the PJM power factor requirements for the existing and/or incremental capacity or energy.

5.3 Wind ~~or Non-Synchronous -Powered~~ Generation Projects

Because of the intermittent nature of wind-power ~~and other non-synchronous~~ generation, a specific procedure is required to determine an appropriate capacity value for ~~wind-generator output~~ ~~these facilities~~. ~~Further, the use of induction-type generators for wind-powered projects requires the application of specific reactive power requirements.~~

5.3.1 Wind ~~or Non-Synchronous~~ Generation Capacity Credit Rules

PJM business rules allow for wind ~~or non-synchronous -powered~~ generation projects to qualify for Capacity Resource status. Refer to PJM Manual 21 – “Rules and Procedures for Determination of Generating Capability” for details of PJM procedures for calculating Capacity Credits for ~~Wind Farms~~ ~~these facilities~~.

5.3.2 Wind ~~or Non-Synchronous~~ Generation—Specific Technical Requirements

Without exception, all Customer Facilities will be subject to the provisions of the PJM OATT **at Part VI, in Section 4.7.2 and Section 4.7.3 in Att. O, App. 2 – formerly 54.7.2 and 54.7.3 in Part IV**, which describes real-time obligations to supply reactive power and the consequences of deviations from voltage schedules and/or reactive power schedules.

~~Wind projects connected to lower voltage systems must be designed to operate to a voltage schedule, reactive schedule or power factor schedule designed to meet local transmission owner criteria. When applicable, non-standard terms and conditions will be included in a project's Interconnection Service Agreement to address individual power factor requirements.~~