

ICSA FORM TEMPLATE
(From Attachment P of the PJM Tariff)

Original Service Agreement No. []
Effective Date: []

(PJM Queue # [])

INTERCONNECTION CONSTRUCTION SERVICE AGREEMENT

Among

PJM INTERCONNECTION, L.L.C.

And

[]

And

[]

- 12.0 Amendment. This CSA or any part thereof, may not be amended, modified, assigned, or waived other than by a writing signed by all parties.
- 13.0 Incorporation of Other Documents. All portions of the Tariff and the Operating Agreement pertinent to the subject of this CSA and not otherwise made a part hereof are hereby incorporated herein and made a part hereof.
- 14.0 Addendum of Interconnection Customer's Agreement to Conform with IRS Safe Harbor Provisions for Non-Taxable Status. To the extent required, in accordance with Section 2.4.1 of Appendix 2 to this CSA, Schedule L to this CSA shall set forth the Interconnection Customer's agreement to conform with the IRS safe harbor provisions for non-taxable status.
- 15.0 Addendum of Non-Standard Terms and Conditions for Construction Service. Subject to FERC approval, the parties agree that the terms and conditions set forth in the attached Schedule M are hereby incorporated by reference, and made a part of, this CSA. In the event of any conflict between a provision of Schedule M that FERC has accepted and any provision of the standard terms and conditions set forth in Appendix 2 to this CSA that relates to the same subject matter, the pertinent provision of Schedule M shall control.
- 16.0 Addendum of Interconnection Requirements for all ~~w~~Wind or ~~n~~Non-synchronous ~~g~~Generation ~~f~~Facilities~~a Wind-Generation Facility~~. To the extent required, Schedule N to this CSA sets forth interconnection requirements for all wind or non-synchronous generation facilities~~a wind-generation facility~~ and is hereby incorporated by reference and made a part of this CSA.
- 17.0 Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. All Transmission Providers, Interconnected Transmission Owners, market participants, and Interconnection Customers interconnected with electric systems are to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All public utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

{Include the following Schedule H for New Service Requests received before May 1, 2015}

SCHEDULE N

INTERCONNECTION REQUIREMENTS FOR A

WIND GENERATION FACILITY

{Include the appropriate language from the alternatives below}

{Include the following language if the Customer Facility is not a wind generation facility}

Not Required

[OR]

{Include the following language when the Customer Facility is a wind generation facility}

Schedule N sets forth requirements and provisions specific to the interconnection of a wind generation facility that is greater than 20 MW. All other requirements pertaining to the interconnection of generation facilities above 20 MW set forth in Part IV of the Tariff continue to apply to wind generation facility interconnections.

A. Technical Standards Applicable to a Wind Generation Facility

i. Low Voltage Ride-Through (LVRT) Capability

A wind generation facility shall be able to remain online during voltage disturbances up to the time periods and associated voltage levels set forth in the standard below. The Schedule N LVRT standard provides for a transition period standard and a post-transition period standard.

Transition Period LVRT Standard

The transition period standard applies to wind generation facilities subject to Commission Order No. 661 that have either: (i) Interconnection Service Agreements signed and filed with the Commission, filed with the Commission in unexecuted form, or filed with the Commission as non-conforming agreements between January 1, 2006 and December 31, 2006, with a scheduled in-service date no later than December 31, 2007, or (ii) wind generation turbines subject to a wind turbine procurement contract executed prior to December 31, 2005, for delivery through 2007.

1. Wind generation facilities are required to remain in-service during three-phase faults with normal clearing (which is a time period of approximately 4 – 9 cycles) and single line to ground faults with delayed clearing, and subsequent post-fault voltage

recovery to prefault voltage unless clearing the fault effectively disconnects the generator from the system. The clearing time requirement for a three-phase fault will be specific to the wind generation facility substation location, as determined by and documented by the transmission provider. The maximum clearing time the wind generation facility shall be required to withstand for a three-phase fault shall be 9 cycles at a voltage as low as 0.15 p.u., as measured at the high side of the wind generation facility step-up transformer (i.e. the transformer that steps the voltage up to the transmission interconnection voltage or “GSU”), after which, if the fault remains following the location-specific normal clearing time for three-phase faults, the wind generation facility may disconnect from the transmission system.

2. This requirement does not apply to faults that would occur between the wind generator terminals and the high side of the GSU or to faults that would result in a voltage lower than 0.15 per unit on the high side of the GSU serving the facility.

3. Wind generation facilities may be tripped after the fault period if this action is intended as part of a special protection system.

4. Wind generation facilities may meet the LVRT requirements of this standard by the performance of the generators or by installing additional equipment (e.g., Static VAR Compensator, etc.) within the wind generation facility or by a combination of generator performance and additional equipment.

5. Existing individual generator units that are, or have been, interconnected to the network at the same location at the initial effective date of the Schedule N LVRT standard are exempt from meeting the Schedule N LVRT standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule N LVRT standard.

Post-transition Period LVRT Standard

All wind generation facilities subject to Commission Order No. 661 and not covered by the transition period described above must meet the following requirements:

1. Wind generation facilities are required to remain in-service during three-phase faults with normal clearing (which is a time period of approximately 4 – 9 cycles) and single line to ground faults with delayed clearing, and subsequent post-fault voltage recovery to prefault voltage unless clearing the fault effectively disconnects the generator from the system. The clearing time requirement for a three-phase fault will be specific to the wind generation facility substation location, as determined by and documented by the transmission provider. The maximum clearing time the wind generation facility shall be required to withstand for a three-phase fault shall be 9 cycles after which, if the fault remains following the location-specific normal clearing time for three-phase faults, the wind generation facility may disconnect from the transmission system. A wind generation facility shall remain interconnected during such a fault on the transmission system for a voltage level as low as zero volts, as measured at the high voltage side of the wind GSU.

2. This requirement does not apply to faults that would occur between the wind generator terminals and the high side of the GSU.
3. Wind generation facilities may be tripped after the fault period if this action is intended as part of a special protection system.
4. Wind generation facilities may meet the LVRT requirements of this standard by the performance of the generators or by installing additional equipment (e.g., Static VAR Compensator) within the wind generation facility or by a combination of generator performance and additional equipment.
5. Existing individual generator units that are, or have been, interconnected to the network at the same location at the initial effective date of the Schedule N LVRT standard are exempt from meeting the Schedule N LVRT Standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule N LVRT Standard.

ii. Power Factor Design Criteria (Reactive Power)

The power factor requirements for wind generation facilities set forth in section 4.7 of Appendix 2 to Attachment O of the Tariff can be met by using, for example, power electronic devices designed to supply this level of reactive capability (taking into account any limitations due to voltage level, real power output, etc.) or fixed and switched capacitors if agreed to by the Transmission Provider, or a combination of the two. The Interconnection Customer shall not disable power factor equipment while the wind generation facility is in operation. Wind generation facilities shall also be able to provide sufficient dynamic voltage support in lieu of the power system stabilizer and automatic voltage regulation at the generator excitation system if the System Impact Study shows this to be required for system safety or reliability.

iii. Supervisory Control and Data Acquisition (SCADA) Capability

The wind generation facility shall provide SCADA capability to transmit data and receive instructions from the Transmission Provider to protect system reliability. The Transmission Provider and the wind generation facility Interconnection Customer shall determine what SCADA information is essential for the proposed wind generation facility, taking into account the size of the facility and its characteristics, location, and importance in maintaining generation resource adequacy and transmission system reliability in its area.

iv. Meteorological Data Reporting Requirement

The wind generation facility shall, at a minimum, be required to provide the Transmission Provider with site-specific meteorological data including:

- Temperature (degrees Fahrenheit)
- Wind speed (meters/second)

- Wind direction (degrees from True North)
- Atmospheric pressure (hectopascals)
- Forced outage data (wind turbine and MW unavailability)

The Transmission Provider and Interconnection Customer may mutually agree to any additional meteorological data that are required for the development and deployment of a power production forecast. All requirements for meteorological and forced outage data must be commensurate with the power production forecasting employed by the Transmission Provider. Such additional mutually agreed upon requirements for meteorological and forced outage data are set forth below:

[SPECIFICY AGREED UPON METEOROLOGICAL AND FORCED OUTAGE DATA REQUIREMENTS]

OR

[NOT ~~APPLICABLE~~ APPLICABLE FOR THIS CSA]

{Include the following Schedule H for New Service Requests received on or after May 1, 2015}

SCHEDULE N

INTERCONNECTION REQUIREMENTS FOR ALL

WIND AND NON-SYNCHRONOUS GENERATION FACILITIES

{Include the appropriate language from the alternatives below}

{Include the following language if the Customer Facility is not a wind or non-synchronous generation facility}

Not Required

[OR]

{Include the following language when the Customer Facility is a wind or non-synchronous generation facility}

Voltage Ride Through Requirements

The Customer Facility shall be designed to remain in service (not trip) for voltages and times as specified for the Eastern Interconnection in Attachment 1 of NERC PRC-24 for both high and low voltage conditions irrespective of generator size.

Frequency Ride Through Requirements

The Customer Facility shall be designed to remain in service (not trip) for frequencies and times as specified in Attachment 2 of NERC PRC-24 for both high and low frequency conditions irrespective of generator size.

Supervisory Control and Data Acquisition (SCADA) Capability

The wind or non-synchronous generation facility shall provide SCADA capability to transmit data and receive instructions from the Transmission Provider to protect system reliability. The Transmission Provider and the wind or non-synchronous generation facility Interconnection Customer shall determine what SCADA information is essential for the proposed wind or non-synchronous generation facility, taking into account the size of the facility and its characteristics, location, and importance in maintaining generation resource adequacy and transmission system reliability in its area.

**Meteorological Data Reporting Requirement
(Applicable to wind generation facilities only)**

The wind generation facility shall, at a minimum, be required to provide the Transmission Provider with site-specific meteorological data including:

- Temperature (degrees Fahrenheit)
- Wind speed (meters/second)
- Wind direction (degrees from True North)
- Atmospheric pressure (hectopascals)
- Forced outage data (wind turbine and MW unavailability)

The Transmission Provider and Interconnection Customer may mutually agree to any additional meteorological data that are required for the development and deployment of a power production forecast. All requirements for meteorological and forced outage data must be commensurate with the power production forecasting employed by the Transmission Provider. Such additional mutually agreed upon requirements for meteorological and forced outage data are set forth below:

[SPECIFICY AGREED UPON METEOROLOGICAL AND FORCED OUTAGE DATA REQUIREMENTS]

OR

[NOT APPLICABLE FOR THIS CSA]