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March 6, 2015

Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1-A
Washington, D.C. 20426

Re: *PJM Interconnection, L.L.C.*, Docket No. ER15- 1193 -000

Dear Secretary Bose:

Pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d and Section 35.13 of the regulations of the Federal Energy Regulatory Commission (“FERC” or the “Commission”), 18 C.F.R. Part 35, PJM Interconnection, L.L.C. (“PJM”) hereby submits for filing revised sheets of the Open Access Transmission Tariff (“Tariff”).¹ The purpose of the proposed revisions are to incorporate changes to PJM’s generator interconnection rules to require “enhanced inverter” capabilities be utilized by prospective Interconnection Customers contemplating the interconnection of wind and other non-synchronous generation facilities.

PJM respectfully requests waiver of the Commission’s prior notice requirements to permit the revisions contained in this filing to become effective on May 1, 2015. As explained below, PJM maintains that good cause exists for this waiver so as to allow the proposed requirements to become effective on a date that coincides with the start of a new interconnection queue.

I. Introduction

A. Background

In recent years, led by favorable policies, advanced technologies and positive economics, the interconnection of variable energy resources² (*e.g.* photovoltaic (“PV”), wind and battery storage) with the distribution and transmission system in this country has flourished, and, in the aggregate, is poised to become a significant amount of installed capacity in many regions of the

¹ Capitalized terms not otherwise defined herein have the meaning specified in the Amended and Restated Operating Agreement of PJM, Interconnection, L.L.C. or the PJM Open Access Transmission Tariff, as appropriate.

² The term “variable energy resources” is used herein interchangeably with the term “wind and non-synchronous units”

country. In PJM alone, since the 2007/2008 delivery year, the installed capacity megawatt value of variable energy resources has increased from approximately 8,000 MW to nearly 12,000 MW in the 2013/2014 delivery year, and is expected to reach nearly 15,000 MW by the 2016/2017 delivery year. Currently, PJM has approximately 288 wind and PV projects at various stages of development in the new services interconnection queue, representing more than 25,000 MW of expected maximum net capability.³

The capacity of these variable energy resources, individually, are small relative to large scale legacy generating units (*e.g.*, fossil fuel and nuclear units, static VAR compensators, and synchronous condensers), but when aggregated, can have a large impact on the electric system. Variable energy resources are geographically dispersed and inject power at various points of interconnection along the electric grid, consequently increasing (depending on system conditions) the voltage injected on the system at those points at any given time. In addition, the output from these resources is intermittent and can change significantly over short periods of time due to a variety of environmental conditions. As the variable generation resource output fluctuates, it causes the voltage along the electrical grid to vary which, in turn, must be addressed to resolve any potential grid reliability issues. Generally, such voltage swings can be managed through reliance upon legacy electromechanical systems and equipment, such as line regulators and capacitors, since most variable generation resources as configured today do not provide such voltage support. However, as the penetration level of variable generation resources increases, the magnitude and frequency of voltage swings caused by such direct-current producing equipment could become increasingly difficult to control with legacy equipment.

In addition, traditional interconnection settings relative to long-term system fluctuations for variable generation resources has been historically very conservative, typically resulting in such units “tripping” off-line during relatively minor frequency and voltage system events. For many years, engineering standards – most notably the Institute of Electrical and Electronics Engineers (“IEEE”) standard 1547- have prescribed that variable energy resources should trip or cease to energize in an effort to protect the resource whenever a contingency would drive frequency or voltage out of its normal operating range (*i.e.* a “must trip” requirement). However, in more recent years, the expected performance of these units during and after system disturbances has been re-evaluated⁴ and the need for mandatory “ride-through” requirements for variable energy resources in particular has been expressed by the North American Electric Reliability Corporation (“NERC”),⁵ acknowledged by the IEEE in their more recent IEEE 1547a standard,⁶

³ Of these 288 projects, proposed wind projects make up the bulk of expected MW maximum net capability with over 20,500 MW in the PJM new services queue.

⁴ To the degree that certain jurisdictions outside of the United States, including certain European countries, now mandate “enhanced inverter” capabilities to include heightened capabilities to respond, and contribute to solving, system events.

⁵ *Performance of Distributed Energy Resources During and After System Disturbance: Voltage and Frequency Ride-Through Requirements*, NERC, 2013; available at: http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/IVGTF17_PC_FinalDraft_December_clean.pdf. See, also, *2012 Special Assessment: Interconnection Requirements for Variable Generation*, NERC, 2012; available at: http://www.nerc.com/files/2012_IVGTF_Task_1-3.pdf

and mandated by the Commission, for all Bulk Electric System generating resources, through the adoption of NERC Reliability Standard PRC-024-1, which is to become effective beginning July 1, 2016.⁷

B. PJM “Enhanced Inverter” Stakeholder Process

With these considerations in mind, early in 2014, PJM stakeholders, working through the PJM Planning Committee, established a sub-committee to review applicable technical standards and requirements to examine whether current technologies and functionalities could, or should, be applied to variable energy resources in the PJM Region to address the operational issues identified above. More specifically, this group was charged with considering whether PJM should adopt enhanced interconnection standards and requirements to specify that all interconnected variable energy resources provide reactive power support, expanded frequency trip points and low voltage “ride-through” capabilities, similar to those requirements in place for legacy generating resources. To this end, the group was tasked with reviewing current technologies, including contemporary “inverter” technologies and developing proposed solutions to assess opportunities for deployment of equipment designed to address these issues.

At a basic level, wind and other non-synchronous units require the use of inverters to convert direct current output to alternating current before the resulting energy can be “pushed” onto the electrical system. A large portion of generation inverters in use today can produce “real power,” (*i.e.* watts) but had traditionally been configured not to provide reactive power⁸ (*i.e.* VARS) necessary to provide voltage and frequency support. However, modern inverters commercially available on the market for the past several years, similar to ones deployed in Europe, and older systems deployed here in the US through upgraded firmware, are economically capable of producing enhanced functionality that would generate or consume reactive power and mitigate voltage swings associated with dispersed, variable generation resources. These “enhanced inverters” are also capable of achieving fault “ride through” capability so that the variable generation resource can remain on-line during faults and contribute to grid stability during system disturbances where the grid voltage or frequency may go outside the normal operating ranges.

⁶ *Standard for Interconnecting Distributed Resources with Electric Power Systems*, IEEE Std. 1547a-2014, 2014. While the amended standard stops short of mandating increased “ride through” capabilities, it does recognize broader inverter support to support such capabilities and leaves the details of whether such requirements must be enabled to the mutual agreement of the resource owner and the interconnected system owner or operator.

⁷ *Generator Verification Reliability Standards*, 146 FERC ¶ 61,213 (2014) (Order No. 796). PRC-024-1 requires that generator owners set their generator protective relays such that generating units remain connected during defined frequency and voltage excursions, unless a specified exception applies, and meets the Commission’s earlier stated directive that any such proposed Reliability Standard explicitly require all generators be capable of “riding through” the same set of Category B and C contingencies as required by wind generators through application of FERC Order No. 661. While not truly a “plant ride through” requirement, it has nearly the same effect by keeping the resource “on-line” during defined system excursions.

⁸ Fundamentally, reactive power, expressed as volt-amperes reactive, or VARs, is necessary to maintain voltage to deliver active, or real, power, expressed as watts, along distribution and transmission lines. The more “real power” that is pushed onto a line, the more reactive power is necessary to push that power to load.

At the outset, after various internal discussions, PJM identified that utilization of these enhanced inverters could provide a cost effective, proactive means to address reactive power needs and “ride-through” concerns. Prior to reaching this conclusion, PJM staff considered a variety of available options and identified that the desired operational characteristics for variable energy resources might be addressed in a variety of piecemeal ways. For instance, PJM staff considered the feasibility of deploying static VAR compensators at several locations to address potential voltage issues, but recognized early on this approach would fail to address frequency issues. Alternatively, PJM also considered the increased reliance upon legacy units, or even dedicated “reactive power” units which could provide assistance in this regard, but again, these units would not address frequency issues. Moreover, in either case, PJM considered that the stated alternatives could be cost prohibitive.⁹ As a result, the stakeholder group centered on evaluating inverter-related standards and reviewing potential solutions to incorporate such standards into PJM’s processes and procedures. After several months, the stakeholder group developed the concepts embodied in the changes presented to the Commission in this filing, and sought broader stakeholder approval to move forward.

Throughout the stakeholder process, the “enhanced inverter” group considered, as instructional to the process, the enhancements undertaken by the IEEE to amend standard 1547, as well as NERC’s development of PRC-024-1 and the efforts of others to develop best practices and incorporate policies, particularly in other jurisdictions (*e.g.* California’s “Rule 21” and Germany’s PV grid integration solutions) to harmonize the interconnection of variable energy resources with the grid reliably and safely, and built upon those efforts to develop recommendations for the larger PJM stakeholder group. At the same time, the group remained cognizant of ensuring that any developed requirements would not unnecessarily encumber variable energy resource owners or become barriers to entry, and recognized the need to harmonize any efforts with state jurisdictions to ensure there were no overlaps in requirements.

The resulting requirements and processes, submitted herein for filing to the Commission, represent the culmination of those efforts and represent the consensus of the PJM stakeholders, which approved the amendments to PJM’s governing agreements without objection or abstention. Broadly, the proposal adopted by the PJM stakeholders requires all variable energy resources (*i.e.* wind and other non-synchronous units) entering PJM’s new interconnection services queue after May 1, 2015¹⁰ to:

- 1) Have the capability to autonomously provide dynamic reactive support within a range of 0.95 leading to 0.95 lagging at inverter terminals unless a system impact study or

⁹ In either case, the deployment of static VAR compensators or conversion of existing units to synchronous condensers to provide reactive support, can cost upwards of \$50,000/MVar and even exceed \$85,000/MVar, as compared to the relatively low incremental costs to enable “enhanced inverter” support. *Third-Party Provision of Reactive Supply and Voltage Control and Regulation and Frequency Response Services*, Docket No. AD14-7-000, *see, Commission Staff Report: Payment for Reactive Power* at Appendix 1, p. 6; Appendix 2, pp. 4-5 (April 22, 2014).

¹⁰ Wind and non-synchronous units which have entered the PJM new services queue prior to May 1, 2015, would not be required to retrofit existing equipment or adhere to the new standards.

the interconnected transmission owner establishes a need for more conservative limits;

- 2) Adhere to NERC Reliability Standard PRC-024-1 with respect to voltage and frequency ride-through capabilities, irrespective of resource size, and;
- 3) Have generator power management controls to include the capability of active power control, ramp rate control and frequency response.

II. The Proposed Revisions

A. Reactive Power Support

One of the more sweeping changes to the existing requirements as a result of PJM's proposal is the inclusion of a presumptive requirement which specifies that all wind and non-synchronous units, entering the new services interconnection queue after May 1, 2015, be capable of providing dynamic reactive support within a range of 0.95 leading to 0.95 lagging at the inverter terminals, unless a system impact study or the interconnected transmission owner establishes, through a system study, a reliability need for more conservative limits. This requirement amends the current process which, in the absence of a system impact study relative to the proposed interconnection, does not require wind and non-synchronous units to provide dynamic reactive support; and when they are required, that such reactive support capability is measured at the point of interconnection.

As it stands now, the process requires that PJM view each proposed interconnection in isolation and PJM may only require reactive support if that one particular proposed interconnection represents a detriment to the safety and reliability of the system at a given point, at a given time. However, with the increasing number of such variable energy resource interconnection requests system-wide, the system, as a whole, can benefit from the availability of reactive power on a presumptive basis since viewing each interconnection in isolation and possibly dismissing the requirement to provide reactive capability based upon a study of the system at a given time, could have cumulative effects as the need for such support grows in the future. Quite simply, PJM's system impact studies are not the appropriate mechanism to make long-term planning determinations since they are focused on relatively more near-term transmission conditions.

PJM and its stakeholders maintain that the adoption of this new tariff rule to apply to prospective interconnection customers is necessary to reflect the fact that an increasingly larger amount of variable energy resources are contemplating interconnection to the PJM transmission system and, thus, should correspondingly be relied upon to provide reactive power support in order to continually ensure the safety and reliability of the transmission system as a whole. As further explained below, enhanced technologies exist at very low or no incremental cost to allow a prospective interconnection customer to provide dynamic reactive power support which will serve to strengthen the existing, and continued, resiliency of the transmission system, allowing the system, as a whole to benefit from increased reactive resource capability.

1. PJM’s Proposal is Just and Reasonable and, to the Extent Necessary, Should be Considered for an “Independent Entity Variation” From the Final Rule Adopted in Order No. 661.

PJM recognizes the proposed amendments departs from the Commission’s directive in Order No. 661, and successor orders, which established standard procedures and technical requirements for the interconnection of large wind (*i.e.*, > 20 MW) resources to the transmission system.¹¹ There, the Commission determined wind generators are required to maintain a power factor of 0.95 leading and 0.95 lagging only if the transmission provider shows, in a system impact study, such reactive power capability is necessary.

However, PJM maintains the proposed revisions here are nevertheless just and reasonable and, presumably, should qualify for the allowance to permit an ISO/RTO greater flexibility in its compliance to those requirements in the form of an “independent entity variation” from the conflicting requirements of the final rule adopted in Order 661 and 661-A.¹² Generally, in lieu of compliance with each directive in a particular order, the Commission has often allowed entities, especially ISOs and RTOs, to demonstrate that their existing, or proposed, policies and procedures are consistent with overall stated policy and are not unduly discriminatory. Specifically, this standard reflects the Commission’s recognition that “...an RTO or ISO has different operating characteristics depending on its size and locations and is less likely to act in an unduly discriminatory manner than a Transmission Provider that is a market participant.”¹³

In this particular case, expanding the requirement to provide reactive support to wind and non-synchronous units places all resource owners within PJM, going forward, on equal footing to contribute to the reliable and secure operation of the transmission system. Importantly, as emphasized below, PJM maintains that an independent entity variation is appropriate because of a combination of factors, including a reduction in the cost of applicable technology to provide the stated capabilities as well as PJM’s ability to compensate customers for the capability to provide, and actual provision of, reactive power, both of which directly mitigate the Commission’s concerns as addressed in Order No. 661 relative to creating undue barriers to entry for wind interconnection customers.

Most notably, as already mentioned, the need for reactive power capability becomes greater as the penetration levels of wind and other non-synchronous units increases. As mentioned above, PJM has seen approximately 288 proposed interconnection requests representing over 25,000 MW of expected capability enter the new service queue for operation in future delivery years,

¹¹ *Interconnection for Wind Energy*, 70 FR 3499 (June 16, 2005), FERC Stats. & Regs. ¶ 31,186 (2005) (“Order No. 661”); *order on reh’g*, FERC Stats and Regs. ¶ 31,198 (2005) (“Order No. 661-A”).

¹² Order 661, P. 107, 109; Order 661-A at P. 26. (“The Final Rule permits Transmission Providers to justify variations between their *pro forma* tariff and the Final Rule Appendix G based on the regional reliability, the “consistent with or superior to,” or the independent entity variation standards in Order No. 2003.”)

¹³ *Standardization of Generator Interconnection Agreements and Procedures*, Order No. 2003 , 104 FERC ¶ 61,103 at P. 827 (2003).

and the likelihood of variable energy resource penetration levels increasing in the very near future is greater with contemporary policy determinations favoring such resources over legacy units. At the same time, PJM anticipates resource retirements in the amount of approximately 12,000 MW over the next several years, the bulk of which is made up of legacy generating units.¹⁴ This flourish of new unit activity, coupled with expected legacy unit retirements, and the comprehensive policies and economics favoring them (*e.g.* sweeping environmental regulations) were not contemplated, or at least given nearly as much weight, at a time when Order No. 661 and 661-A were issued nearly a decade ago.

Moreover, as a primary justification for the requirements of Order 661 and 661-A, the Commission found that requiring wind generators to install reactive power capability in the absence of a system impact study demonstrating a need to ensure system reliability could raise discrimination issues because the cost to add such equipment was significant relative to equipping conventional resources with the necessary equipment to provide reactive power.¹⁵ However, to this point, the Commission relied upon the technology as it existed at the time of Order No. 661 and 661-A to guide policy which favored the, then, unique characteristics of wind units, including the fact that they used induction generators. In the not too distant past, most of the wind generation units connected to the grid were induction generators, and a few PV plants had line-commutated inverters with no inherent reactive power or voltage control capabilities. Most notably, these units – designated as Type 1 and Type 2 wind units - had induction generators which absorbed reactive power, without a corresponding electronic means to control reactive power. Yet, in more recent years, wind Type III and Type IV units are now the “standard,” and are capable, whether by use of electronics or variable frequency synchronous generators in place of the induction generators, of providing dynamic reactive power capability.

In the ensuing years, inverter technology has also evolved to a degree that providing for the capability to provide reactive support adds very little, if any, to the incremental costs of the equipment, thereby reducing, or even eliminating, cost disparity. A Commission staff report prepared in April, 2014, in response to a Commission inquiry on third-party provision of reactive support, indicates that an American Wind Energy Association industry report issued in 2012 noted that the vendors making up roughly 70% of the market share of wind turbines sold in the United States during 2010 through 2012 already offer inherent dynamic reactive power capability for their units measured at the generator terminals equal to or better than the standards proposed by PJM in this filing.¹⁶ In fact, going forward, because many areas outside of the United States¹⁷ require inherent dynamic reactive power capability already, an increasing number

¹⁴ Future deactivation request information can be accessed at: <http://pjm.com/planning/generation-deactivation/gd-summaries.aspx>

¹⁵ Order No. 661-A at PP 41, 45.

¹⁶ *Third-Party Provision of Reactive Supply and Voltage Control and Regulation and Frequency Response Services*, Docket No. AD14-7-000, *see, Commission Staff Report: Payment for Reactive Power* at Appendix 2, p. 1. (April 22, 2014) (“Commission Staff Report on Reactive Power”).

¹⁷ Dynamic reactive power requirements are included in various interconnection rules in most of Europe and several areas in Canada.

of manufacturers will find it more cost effective to produce equipment with inherent capability for worldwide distribution; thereby further eliminating any cost disparity going forward.¹⁸ However, even assuming that inherent dynamic reactive power is not already “baked-in” to the particular equipment selected by a prospective interconnection customer, a San Diego Gas & Electric whitepaper issued in August, 2013, projected that additional manufacturing costs to install the necessary firmware upgrades on inverters to enable enhanced functionality is estimated to be about 10%, which equates to about .10 per watt.¹⁹

Additionally, even assuming for any incremental costs, such minor incremental costs will be moderated because resources providing reactive power and voltage control are permitted to recover their cost of service through the PJM Tariff by filing a rate schedule with the Commission.²⁰ In addition to this base cost of service “capability payment,” PJM also pays market sellers that provide reactive services at the direction of PJM, based on the difference between locational marginal price and the unit’s offer price, depending on whether the active energy out of the market seller’s resource is reduced or raised.²¹ Such revenue requirements and payments can help offset any costs to invest in the incremental ability to provide reactive support and compensate for the “loss” of real power revenue when the unit is called upon to provide reactive support. On balance, the resource owner is adequately compensated in this regard and its proposed project’s financial viability will not be negatively impacted by the adoption of PJM’s proposed requirement.

Overall, to this last point, the proposals offered in this filing offer the least cost-burdensome alternative to address, both, reactive power support and “ride-through” capabilities and are preferable to any alternatives reviewed by PJM and, subsequently reviewed considered by stakeholders. As noted above, and recognized by Commission Staff in its report on reactive power, both, the addition of static VAR compensators, or the addition of dedicated generation or transmission options are not cost effective and fail to account for all operational considerations.

In sum, much of the primary policy relied upon by the Commission in adopting the requirements of Order No. 661 and 661-A are no longer as relevant today since wind units are steadily evolving from a resource of “unique characteristics” to one that increasingly is becoming seamlessly integrated with the legacy transmission system in the United States.

¹⁸ *Id.*

¹⁹ *Inverter Technical Standards Proposal*, San Diego Gas & Electric, p. 7 (August 7, 2013). A copy of this whitepaper is available at: <https://www.sdge.com/sites/default/files/documents/2060692059/Inverter%20Technical%20Standards%20White%20Paper%20August%207%202013.pdf>

²⁰ *See, e.g.*, PJM Tariff, Attachment O (Form of Interconnection Service Agreement), Appendix 2 § 4.7.4; *See, also*, PJM Tariff, Schedule 2 – Reactive Supply and Voltage Control from Generation or Other Sources Service; Section 3.2.3B of Appendix to Attachment K.

²¹ PJM Tariff, Section 3.2.3B of Appendix to Attachment K.

2. PJM's Proposal Can be Distinguished From CalISO's 2010 Proposal

PJM maintains that its current proposal to require enhanced dynamic reactive capability, while similar to a proposal offered by the California Independent System Operator Corporation ("CalISO") in 2010, which was rejected by the Commission²², can be distinguished in several aspects. For instance, one of the Commission's primary justifications for adopting Order No. 661 and 661-A in the first instance, namely to shield potential wind interconnection customers from undue discrimination to adhere to costly requirements to provide reactive support, is not a consideration here. For one, as noted above, variable energy resource inverter technology and design has evolved to a degree that such capabilities are now "baked in" to the initial capital costs of procuring the equipment, and, even in those cases where a potential customer may not have such capability already "on board," the incremental costs to upgrade its equipment is very low.

Moreover, to the extent that an interconnection customer must invest in upgraded equipment to provide the necessary reactive support, it may recover the costs of providing such capability as specified in PJM's Tariff, Schedule 2, and, further, may receive a payment based upon the differential between location marginal price and the unit's offer price as specified in PJM's Tariff, Section 3.2.3B of Appendix to Attachment K. This is not an insignificant distinction. While a variable energy resource unit owner may not achieve total cost equilibrium with respect to providing reactive capability, it will be permitted to recover the cost of having the capability to provide reactive power, and payment for actual reactive services provided. CalISO does not have the same tariff provisions providing for "capability" and market payments for reactive support²³.

Additionally, the Commission responded to the CalISO proposal with an observation that CalISO failed to explain why system impact studies, as opposed to presumptive, all-inclusive requirements, are not the proper venue for identifying power factor requirements for wind generators.²⁴ Here, PJM would argue that, given expected variable energy resource level penetration in future delivery years, reliance upon system impact studies to determine the need for system-wide reactive support is shortsighted. A system impact study can identify system needs dependent upon system topology given a pre-supposed future state, but fails to take into consideration larger system needs for reactive support based upon expected conditions on wide-reaching scale. A system impact study is only but a small sub-set of expected system condition at the time of the interconnection based on models provided by project developers, and cannot address possible system operating conditions over the life of the project. An interconnection request that, based upon a system impact study conducted today, is not required to provide reactive support, given its current location and system topology, may have very different results in the ensuing years as the project is actually completed.

²² *California Independent System Operator Corporation*, 132 FERC ¶ 61,196 (August 31, 2010) ("CalISO Order"); *order denying reh'g*, 137 FERC ¶ 61,143 (November 17, 2011).

²³ *See*, CalISO Tariff, section 8.2.3.3, Voltage Support.

²⁴ CalISO Order at P. 46.

B. Voltage/Frequency Ride-Through Requirements

PJM's current interconnection requirements specify that Generation Interconnection Customers shall implement under-frequency and over-frequency relay set points for its facility as required by NERC to ensure "ride through" capability of the Transmission System.²⁵ In addition, PJM's requirements adopted in accordance with Order No. 661-A requires wind generators to have low voltage ride-through capabilities.²⁶

PJM proposes to enhance its existing ride-through requirements to ensure voltage and frequency ride-through capabilities of all wind and non-synchronous units. To this end, this filing proposes amendments to PJM's *pro forma* interconnection agreements to incorporate the Commission's recent approval of NERC Reliability Standard PRC-024-1 in Order No. 796, which requires generator owners to set their generator protective relays such that generating units remain connected during defined frequency and voltage excursions, unless a specified exception applies. While referencing the requirements of PRC-024-1 for this purpose actually expands the applicability of those provisions to non-Bulk Electric System ("BES") generators in some instances (as PJM intends to apply these requirements to all FERC "jurisdictional" units), and, ostensibly, prior to the full effective date of the standard, PJM believes that the changes offered here are just and reasonable as they will serve to provide greater protection against the possibility of losing generation and allowing the transmission system to better withstand disturbances.

Moreover, the application of these provisions to all wind and non-synchronous units, on a prospective basis, is both technically and economically feasible. The minimum requirements and settings proposed by PJM should have little to no impact on prospective customers since these requirements do not require any significant technical redesign of inverter equipment currently available on the market today and, instead, would require a change in inverter settings. A presentation given to PJM stakeholders by a leading inverter manufacture indicated that current inverter technologies available and used commonly throughout the industry today already include support for a variety of "ride-through" scenarios and, as a result, would likely result in no or very little incremental costs for prospective interconnection customers. For this reason, the costs of complying with the enhanced requirements represents little concern for developers and, indeed, already reflect implicit costs of their project overall.

In addition to expanding the applicability of PRC-024-1 requirements beyond Bulk Electric System elements, PJM also proposes to apply those requirements to new service interconnection requests commencing on May 1, 2015, which is earlier than the phased implementation timeline of July 1, 2016 for PRC-024-1. While, arguably, applicable entities would have to comply, by proxy, with the requirements of the approved standard before the implementation deadline of the standard itself, most projects entering the new services queue after May 1, 2015 will likely not be in-service by July 1, 2016, and would need to contemplate compliance with those provisions in any event.

²⁵ See, e.g., PJM Tariff, Attachment O, Appendix 2 § 4.8.

²⁶ Order No. 661-A at PP 31-35.

C. Active Power Control, Ramp Rate Control and Frequency Response

Finally, the package of recommendations approved by PJM stakeholders included three related components of generator power management for new wind and non-synchronous resources: (1) active power control; (2) ramp rate control, and (3) frequency response. Generally, these controls will allow the wind and non-synchronous resource to respond to a dispatch or operating order from PJM to limit power output, ramp rates and reduce or increase active power in response to system frequency events.

Again, the need for enhanced generator power management tools arises from the expected increase in variable energy resources displacing the need for legacy resource equipment in the coming years, and will allow PJM to effectively respond to transmission system events utilizing all available resources. As with large scale, conventional resources, PJM must be able to reduce, or increase, variable energy resource output to respond to a variety of system conditions, including high or low frequency and transmission congestion, and, as we have seen above, those requirements can be supplied by a large range of readily available equipment offered for sale and, indeed, many of these power management requirements are now “baked in” as enhancements to inverter capabilities.²⁷

Currently, PJM’s *pro forma* interconnection agreements obligates the Interconnection Customer to abide by all PJM rules and procedures pertaining to generation and transmission in the PJM Region, including rules and procedures concerning generation dispatch and transmission scheduling as set forth in the PJM Tariff, Operating Agreement and PJM Manuals.²⁸ For large, conventional generating equipment, the requirements to have the capability for real-power control and other associated requirements are set forth in PJM Manual 14D²⁹ and PJM intends to enhance its Manual provisions to establish the requirement for wind and non-synchronous units to have the generator power management capabilities set forth here. As such, PJM does not include any proposed Tariff revisions in this filing to implement these new requirements, but offers them for Commission consideration as they are part of the larger package of requirements approved by PJM stakeholders.

The Commission has previously approved similar requirements, evaluated under the application of an independent entity variation, in the Southwest Power Pool (“SPP”)³⁰, noting that such changes were just and reasonable to ensure the continued reliability of the SPP transmission system. Similarly, PJM maintains that, given the expected increase in wind and other non-synchronous generation, the inability of PJM to incorporate active power management criteria in

²⁷ For example, one leading manufacturer of solar technology equipment, SMA Solar Technology, indicates that its central inverters offer active power control and remote power reduction. *See*, <http://www.sma-america.com/partners/knowledgebase/grid-stability-through-intelligent-pv-management.html>.

²⁸ PJM Tariff, Attachment O § 8.0.

²⁹ PJM Manual 14D § 7.1.

³⁰ *Southwest Power Pool, Inc.*, 135 FERC ¶ 61,148 (May 19, 2011).

its requirements could affect future system reliability as the reliance upon wind and non-synchronous resources becomes greater in the coming years.

III. Stakeholder Support

On January 22, 2015, the PJM Members Committee met and endorsed the proposed revisions with no objections and one abstention.

IV. Effective Date and Waiver

As noted previously, PJM requests a waiver of the Commission's prior notice requirements so as to permit an effective date of May 1, 2015 for the revisions offered in this filing. Good cause exists to grant such waiver. Importantly, allowing an effective date of May 1, 2015 coincides with the beginning of a new interconnection services queue, which permits PJM to implement the new rules in the least administratively burdensome manner possible while, at the same time, ensuring that all prospective Interconnection Customer within a respective interconnection queue are treated similarly.

V. Documents Submitted

Along with this transmittal letter, PJM submits electronic versions of the revisions to the PJM Tariff in both marked (*i.e.* highlighting the proposed changes) and clean forms.

VI. Correspondence and Communication

The following individuals are designated for inclusion on the official service list in this proceeding and for receipt of any communication regarding this filing:

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VII. Service

PJM has served a copy of this filing on all PJM Members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. Electronic service is permitted as of November 3, 2008, under the Commission's regulations³¹ pursuant to Order No. 714³² and the Commission's Notice of Effectiveness of Regulations issued on October 28, 2008,

³¹ See, 18 C.F.R. §§ 35.2, 154.2, 154.208 and 341.2.

³² *Electronic Tariff Filings*, Order No. 714, 124 FERC ¶ 61,270

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in Docket No. RM01-5-000. In compliance with those regulations, PJM will post a copy of this filing to the FERC filings section of the its internet site, located at the following link:

<http://www.pjm.com/documents/ferc-manuals/ferc-filings.aspx> with a specific link to the newly filed document, and will send an e-mail on the same date as this filing to all PJM Members and all state utility regulatory commissions in the PJM Region³³ alerting them that this filing has been made by PJM today and available by following such link. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. Also, a copy of this filing will be available on the Commission's eLibrary website located at the following link: <http://www.ferc.gov/docs-filing/elibrary.asp> in accordance with the Commission's regulations and Order No. 714.

Respectfully submitted,



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³³ PJM already maintains updates and regularly uses e-mail lists for all PJM Members and affected commissions.

Attachment A

Revisions to the PJM Open Access Transmission Tariff

(Marked/Redline Format)

**FORM OF
INTERCONNECTION SERVICE AGREEMENT**

**By and Among
PJM Interconnection, L.L.C.**

**And
[Name of Interconnection Customer]**

**And
[Name of Interconnected Transmission Owner]
(PJM Queue Position #__)**

- 1.0 Parties. This Interconnection Service Agreement (“ISA”) including the Specifications, Schedules and Appendices attached hereto and incorporated herein, is entered into by and between PJM Interconnection, L.L.C., the Regional Transmission Organization for the PJM Region (hereinafter “Transmission Provider” or “PJM”), _____ (“Interconnection Customer” [OPTIONAL: or “[short name]”]) and _____ (“Interconnected Transmission Owner” [OPTIONAL: or “[short name]”]). All capitalized terms herein shall have the meanings set forth in the appended definitions of such terms as stated in Part I of the PJM Open Access Transmission Tariff (“Tariff”). [Use as/when applicable: This ISA supersedes the _____ {insert details to identify the agreement being superseded, such as whether it is an Interim Interconnection Service Agreement, Interconnection Service Agreement, or Interconnection Agreement, the effective date of the agreement, the service agreement number designation, and the FERC docket number, if applicable, for the agreement being superseded.}]]
- 2.0 Authority. This ISA is entered into pursuant to Part VI of the Tariff. Interconnection Customer has requested an Interconnection Service Agreement under the Tariff, and Transmission Provider has determined that Interconnection Customer is eligible under the Tariff to obtain this ISA. The standard terms and conditions for interconnection as set forth in Appendix 2 to this ISA are hereby specifically incorporated as provisions of this ISA. Transmission Provider, Interconnected Transmission Owner and Interconnection Customer agree to and assume all of the rights and obligations of the Transmission Provider, Interconnected Transmission Owner and Interconnection Customer, respectively, as set forth in Appendix 2 to this ISA.
- 3.0 Customer Facility Specifications. Attached are Specifications for the Customer Facility that Interconnection Customer proposes to interconnect with the Transmission System. Interconnection Customer represents and warrants that, upon completion of construction of such facilities, it will own or control the Customer Facility identified in section 1.0 of the Specifications attached hereto and made a part hereof. In the event that Interconnection Customer will not own the Customer Facility, Interconnection Customer represents and warrants that it is authorized by the owner(s) thereof to enter into this ISA and to represent such control.
- 4.0 Effective Date. Subject to any necessary regulatory acceptance, this ISA shall become effective on the date it is executed by all Interconnection Parties, or, if the agreement is

filed with FERC unexecuted, upon the date specified by FERC. This ISA shall terminate on such date as mutually agreed upon by the parties, unless earlier terminated in accordance with the terms set forth in Appendix 2 to this ISA. The term of the ISA shall be as provided in Section 1.3 of Appendix 2 to this ISA. Interconnection Service shall commence as provided in Section 1.2 of Appendix 2 to this ISA.

- 5.0 Security. In accord with Section 212.4 of the Tariff, Interconnection Customer shall provide the Transmission Provider (for the benefit of the Interconnected Transmission Owner) with a letter of credit from an agreed provider or other form of security reasonably acceptable to the Transmission Provider and that names the Transmission Provider as beneficiary (“Security”) in the amount of \$_____. This amount represents the sum of the estimated Costs, determined in accordance with Sections 212 and 217 of the Tariff, for which the Interconnection Customer will be responsible, less any Costs already paid by Interconnection Customer. Interconnection Customer acknowledges that its ultimate cost responsibility in accordance with Section 217 of the Tariff will be based upon the actual Costs of the facilities described in the Specifications, whether greater or lesser than the amount of the payment security provided under this section.

[Include the following if Interconnection Customer requests deferral of the security as provided for in Section 212.4(c) of the Tariff:

For any portion of the security that may be deferred in accordance with Section 212.4(c) of the Tariff, and as requested by Interconnection Customer, Interconnection Customer shall provide the security specified in this Section 5.0 within 120 days after the Interconnection Customer executes this ISA, provided that Interconnection Customer shall pay a deposit of at least \$200,000 or 125% of the estimated costs that will be incurred during the 120-day period, whichever is greater, to fund continued design work and/or procurement activities, with \$100,000 of such deposit being non-refundable.]

Should Interconnection Customer fail to provide security at the time the Interconnection Customer executes this ISA, or, if deferred, by the end of the 120-day period, this ISA shall be terminated.

- 6.0 Project Specific Milestones. In addition to the milestones stated in Section 212.5 of the Tariff, as applicable, during the term of this ISA, Interconnection Customer shall ensure that it meets each of the following development milestones:

[Specify Project Specific Milestones]

[As appropriate include the following standard Milestones, with any revisions necessary for the project at hand:

- 6.1 Substantial Site work completed. On or before _____ Interconnection Customer must demonstrate completion of at least 20% of project site construction. At this time, Interconnection Customer must submit to Interconnected Transmission Owner and Transmission Provider initial drawings, certified by a professional engineer, of the Customer Interconnection Facilities.
- 6.2 Delivery of major electrical equipment. On or before _____, Interconnection Customer must demonstrate that ___ generating units have been delivered to Interconnection Customer's project site.
- 6.3 Commercial Operation. (i) On or before _____, Interconnection Customer must demonstrate commercial operation of ___ generating units; (ii) On or before _____, Interconnection Customer must demonstrate commercial operation of ___ additional generating units. Demonstrating commercial operation includes achieving Initial Operation in accordance with Section 1.4 of Appendix 2 to this ISA and making commercial sales or use of energy, as well as, if applicable, obtaining capacity qualification in accordance with the requirements of the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region.

[if a specific situation requires a CSA by a certain date then use the following: Interconnection Construction Service Agreement. On or before _____, Interconnection Customer must have either (a) executed an Interconnection Construction Service Agreement for Interconnection Facilities for which Interconnection Customer has cost responsibility; (b) requested dispute resolution under Section 12 of the PJM Tariff, or if concerning the Regional Transmission Expansion Plan, consistent with Schedule 5 of the Operating Agreement; or (c) requested that the Transmission Provider file the Interconnection Construction Service Agreement unexecuted with the Commission.]

- 6.4 Within one (1) month following commercial operation of generating unit(s), Interconnection Customer must provide certified documentation demonstrating that "as-built" Customer Facility and Customer Interconnection Facilities are in accordance with applicable PJM studies and agreements. Interconnection Customer must also provide PJM with "as-built" electrical modeling data or confirm that previously submitted data remains valid.

[Add Additional Project Specific Milestones as appropriate]

Interconnection Customer shall demonstrate the occurrence of each of the foregoing milestones to Transmission Provider's reasonable satisfaction. Transmission Provider may reasonably extend any such milestone dates, in the event of delays that Interconnection Customer (i) did not cause and (ii) could not have remedied through the exercise of due diligence. The milestone dates stated in this ISA shall be deemed to be extended coextensively with any suspension of work initiated by Interconnection Customer in accordance with the Interconnection Construction Service Agreement.

- 7.0 Provision of Interconnection Service. Transmission Provider and Interconnected Transmission Owner agree to provide for the interconnection to the Transmission System in the PJM Region of Interconnection Customer's Customer Facility identified in the Specifications in accordance with Part IV and Part VI of the Tariff, the Operating Agreement of PJM Interconnection, L.L.C. ("Operating Agreement"), and this ISA, as they may be amended from time to time.
- 8.0 Assumption of Tariff Obligations. Interconnection Customer agrees to abide by all rules and procedures pertaining to generation and transmission in the PJM Region, including but not limited to the rules and procedures concerning the dispatch of generation or scheduling transmission set forth in the Tariff, the Operating Agreement and the PJM Manuals.
- 9.0 Facilities Study. In analyzing and preparing the [Facilities Study] [System Impact Study {if a Facilities Study was not required}], and in designing and constructing the Attachment Facilities, Local Upgrades and/or Network Upgrades described in the Specifications attached to this ISA, Transmission Provider, the Interconnected Transmission Owner(s), and any other subcontractors employed by Transmission Provider have had to, and shall have to, rely on information provided by Interconnection Customer and possibly by third parties and may not have control over the accuracy of such information. Accordingly, NEITHER TRANSMISSION PROVIDER, THE INTERCONNECTED TRANSMISSION OWNER(S), NOR ANY OTHER SUBCONTRACTORS EMPLOYED BY TRANSMISSION PROVIDER OR INTERCONNECTED TRANSMISSION OWNER MAKES ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER ARISING BY OPERATION OF LAW, COURSE OF PERFORMANCE OR DEALING, CUSTOM, USAGE IN THE TRADE OR PROFESSION, OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE ACCURACY, CONTENT, OR CONCLUSIONS OF THE FACILITIES STUDY OR THE SYSTEM IMPACT STUDY IF A FACILITIES STUDY WAS NOT REQUIRED OR OF THE ATTACHMENT FACILITIES, THE LOCAL UPGRADES AND/OR THE NETWORK UPGRADES, PROVIDED, HOWEVER, that Transmission Provider warrants that the Transmission Owner Interconnection Facilities and any Merchant Transmission Upgrades described in the Specifications will be designed and constructed (to the extent that Interconnected Transmission Owner is responsible for design and construction thereof) and operated in accordance with Good Utility Practice, as such term is defined in the Operating Agreement. Interconnection Customer acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.
- 10.0 Construction of Transmission Owner Interconnection Facilities
- 10.1. Cost Responsibility. Interconnection Customer shall be responsible for and shall pay upon demand all Costs associated with the interconnection of the Customer Facility as specified in the Tariff. These Costs may include, but are not limited to,

an Attachment Facilities charge, a Local Upgrades charge, a Network Upgrades charge and other charges, as well as Costs of any Merchant Network Upgrades constructed on behalf of Interconnection Customer. A description of the facilities required and an estimate of the Costs of these facilities are included in Sections 3.0 and 4.0 of the Specifications to this ISA.

10.2. Billing and Payments. Transmission Provider shall bill the Interconnection Customer for the Costs associated with the facilities contemplated by this ISA, estimates of which are set forth in the Specifications to this ISA, and the Interconnection Customer shall pay such Costs, in accordance with Section 11 of Appendix 2 to this ISA and the applicable Interconnection Construction Service Agreement. Upon receipt of each of Interconnection Customer's payments of such bills, Transmission Provider shall reimburse the applicable Interconnected Transmission Owner. Pursuant to Section 212.4 of the Tariff, Interconnection Customer requests that Transmission Provider provide a quarterly cost reconciliation:

_____ Yes

_____ No

10.3. Contract Option. In the event that the Interconnection Customer and Interconnected Transmission Owner agree to utilize the Negotiated Contract Option provided by the Interconnection Construction Service Agreement to establish, subject to FERC acceptance, non-standard terms regarding cost responsibility, payment, billing and/or financing, the terms of Sections 10.1 and/or 10.2 of this Section 10.0 shall be superseded to the extent required to conform to such negotiated terms, as stated in a schedule attached to the parties' Interconnection Construction Service Agreement relating to interconnection of the Customer Facility.

10.4 In the event that the Interconnection Customer elects to construct some or all of the Transmission Owner Interconnection Facilities and/or of any Merchant Network Upgrades under the Option to Build of the Interconnection Construction Service Agreement, billing and payment for the Costs associated with the facilities contemplated by this ISA shall relate only to such portion of the Interconnection Facilities and/or any Merchant Network Upgrades as the Interconnected Transmission Owner is responsible for building.

11.0 Interconnection Specifications

11.1 Point of Interconnection. The Point of Interconnection shall be as identified on the one-line diagram attached as Schedule B to this ISA.

- 11.2 List and Ownership of Interconnection Facilities. The Interconnection Facilities to be constructed and ownership of the components thereof are identified in Section 3.0 of the Specifications attached to this ISA.
- 11.2A List and Ownership of Merchant Network Upgrades. If applicable, Merchant Network Upgrades to be constructed and ownership of the components thereof are identified in Section 3.0 of the Specifications attached to this ISA.
- 11.3 Ownership and Location of Metering Equipment. The Metering Equipment to be constructed, the capability of the Metering Equipment to be constructed, and the ownership thereof, are identified on the attached Schedule C to this ISA.
- 11.4 Applicable Technical Standards. The Applicable Technical Requirements and Standards that apply to the Customer Facility and the Interconnection Facilities are identified in Schedule D to this ISA.

12.0 Power Factor Requirement.

Consistent with Section 4.7 of Appendix 2 to this ISA, the power factor requirement is as follows:

[For Generation Interconnection Customers]

{The following language should be included for new large and small synchronous generation facilities that will have the Tariff specified power factor. This section does not apply if the Interconnection Request is for an incremental increase in generating capability.}

The Interconnection Customer shall design its Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.90 lagging measured at the [generator's terminals] [Point of Interconnection].

{For all wind or non-synchronous generation facilities which have entered the New Services Queue prior to May 1, 2015, include the appropriate alternative from the language below ~~for new wind or non-synchronous generation facilities~~. This section does not apply if the Interconnection Request is for an incremental increase in generating capability.}

The result of the System Impact Study indicated that, for the safety and reliability of the Transmission System, no power factor requirement is required for the [wind-powered] [non-synchronous] Customer Facility.

{or}

The results of the System Impact Study require that, for the safety or reliability of the Transmission System, the Generation Interconnection Customer shall design its [wind-

powered] [non-synchronous] Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the Point of Interconnection.

{include the following language if the Interconnection Request is for an incremental increase in capacity or energy output to a synchronized generation facility}

The existing ___ MW portion of the Customer Facility shall retain its existing ability to maintain a power factor of at least 0.95 leading to 0.90 lagging measured at the [generator's terminals] [Point of Interconnection].

The increase of ___ MW to the Customer Facility associated with this ISA shall be designed with the ability to maintain a power factor of at least 1.0 (unity) to 0.90 lagging measured at the [generator's terminals] [Point of Interconnection].

{For new wind or non-synchronous generation facilities which have entered the New Service Queue on or after May 1, 2015, the following applies:}

The Generation Interconnection Customer shall design its [wind-powered] [non-synchronous] Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the generator's terminals.

{For all wind or non-synchronous generation facilities that have entered the New Services Queue prior to May 1, 2015, include the appropriate alternative from the language below for Interconnection Requests for an incremental increase in capacity or energy output to all wind or non-synchronized generation facility.}

The results of the System Impact Study indicate that, for the safety or reliability of the Transmission System, no power factor requirement is necessary for the [existing ___ MW or the increase of ___ MW associated with this ISA] [increase of ___ MW associated with this ISA, but that the existing ___ MW of the Customer Facility must retain its ability to retain a power factor of at least 0.95 leading to 0.95 lagging measured at the Point of Interconnection] [existing ___ MW of the Customer Facility but that the increase of ___ MW associated with this ISA must be designed with the ability to maintain a power factor requirement of 1.0 (unity) to 0.90 lagging measured at the Point of Interconnection].

{or}

The results of the System Impact Study indicate that, for the safety or reliability of the Transmission System, (i) the existing ___ MW portion of the Customer Facility shall retain its existing ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the Point of Interconnection and (ii) the increase of ___ MW to the Customer Facility associated with this ISA shall be designed with the ability to maintain a power factor of at least 1.0 (unity) to 0.95 lagging measured at the Point of Interconnection.

{For all wind or non-synchronous generation facilities requesting an incremental increase in capacity or energy output which have entered the New Services Queue on or after May 1, 2015, include the following requirements: }

The existing [wind-powered] [non-synchronous] ___ MW portion of the Customer Facility shall retain the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the generator's terminals.

The increase of ___ MW to the [wind-powered] [non-synchronous] Customer Facility associated with this ISA shall be designed with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the generator's terminals.

[For Transmission Interconnection Customers]

{The following language should be included only for new Merchant Transmission Facilities }

Transmission Interconnection Customer shall design its Merchant D.C. Transmission Facilities and/ or Controllable A.C. Merchant Transmission Facilities, to maintain a power factor at the Point of Interconnection of at least 0.95 leading and 0.95 lagging, when such Customer Facility is operating at any level within its approved operating range.

[Include section 12A.0 only when applicable, i.e., only for a facility for which Transmission Provider and Interconnected Transmission Owner deem an RTU (or equivalent) to be unnecessary]

12A.0 RTU. In accordance with Section 8.5.2 of Appendix 2 to this ISA, that provision's requirement for installation of a remote terminal unit or equivalent data collection and transfer equipment is hereby waived for purposes of this ISA.

13.0 Charges. In accordance with Sections 10 and 11 of Appendix 2 to this ISA, the Interconnection Customer shall pay to the Transmission Provider the charges applicable after Initial Operation, as set forth in Schedule E to this ISA. Promptly after receipt of such payments, the Transmission Provider shall forward such payments to the appropriate Interconnected Transmission Owner.

14.0 Third Party Beneficiaries. No third party beneficiary rights are created under this ISA, except, however, that, subject to modification of the payment terms stated in Section 10 of this ISA pursuant to the Negotiated Contract Option, payment obligations imposed on Interconnection Customer under this ISA are agreed and acknowledged to be for the benefit of the Interconnected Transmission Owner(s). Interconnection Customer expressly agrees that the Interconnected Transmission Owner(s) shall be entitled to take such legal recourse as it deems appropriate against Interconnection Customer for the payment of any Costs or charges authorized under this ISA or the Tariff with respect to

Interconnection Service for which Interconnection Customer fails, in whole or in part, to pay as provided in this ISA, the Tariff and/or the Operating Agreement.

- 15.0 Waiver. No waiver by either party of one or more defaults by the other in performance of any of the provisions of this ISA shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or different character.
- 16.0 Amendment. This ISA or any part thereof, may not be amended, modified, or waived other than by a written document signed by all parties hereto.
- 17.0 Construction With Other Parts Of The Tariff. This ISA shall not be construed as an application for service under Part II or Part III of the Tariff.
- 18.0 Notices. Any notice or request made by either party regarding this ISA shall be made, in accordance with the terms of Appendix 2 to this ISA, to the representatives of the other party and as applicable, to the Interconnected Transmission Owner(s), as indicated below:

Transmission Provider:

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403

Interconnection Customer:

Interconnected Transmission Owner:

- 19.0 Incorporation Of Other Documents. All portions of the Tariff and the Operating Agreement pertinent to the subject matter of this ISA and not otherwise made a part hereof are hereby incorporated herein and made a part hereof.
- 20.0 Addendum of Non-Standard Terms and Conditions for Interconnection Service. Subject to FERC approval, the parties agree that the terms and conditions set forth in Schedule F hereto are hereby incorporated herein by reference and be made a part of this ISA. In the event of any conflict between a provision of Schedule F that FERC has accepted and any provision of Appendix 2 to this ISA that relates to the same subject matter, the pertinent provision of Schedule F shall control.

**SPECIFICATIONS FOR
INTERCONNECTION SERVICE AGREEMENT**

**By and Among
PJM INTERCONNECTION, L.L.C.**

And

[Name of Interconnection Customer]

And

[Name of Interconnected Transmission Owner]

(PJM Queue Position # ____)

1.0 Description of [generating unit(s)] [Merchant Transmission Facilities] (the Customer Facility) to be interconnected with the Transmission System in the PJM Region:

a. Name of Customer Facility:

b. Location of Customer Facility:

c. Size in megawatts of Customer Facility:

{The following language should be included only for generating units

For Generation Interconnection Customer:

Maximum Facility Output of _____MW }

{The following language applies when a Generation Interconnection Request involves an increase of the capacity of an existing generating facility:

The stated size of the generating unit includes an increase in the Maximum Facility Output of the generating unit of __ MW over Interconnection Customer's previous interconnection. This increase is a result of the Interconnection Request associated with this Interconnection Service Agreement. }

{The following language should be included only for Merchant Transmission Facilities

For Transmission Interconnection Customer:

Nominal Rated Capability: _____MW}

d. Description of the equipment configuration:

2.0 Rights

[for Generation Interconnection Customers]

2.1 Capacity Interconnection Rights: {this section will not apply if the Customer Facility is exclusively an Energy Resource and thus is granted no CIRs; see alternate section 2.1 below}

Pursuant to and subject to the applicable terms of the Tariff, the Interconnection Customer shall have Capacity Interconnection Rights at the Point(s) of Interconnection specified in this Interconnection Service Agreement in the amount of ___ MW. {Instructions: this number is the total of the Capacity Interconnection Rights that are granted as a result of the Interconnection Request, plus any prior Capacity Interconnection Rights }

{include the following language to the extent applicable for interconnection of additional generation at an existing generating facility:}

The amount of Capacity Interconnection Rights specified above (___ MW) includes ___ MW of Capacity Interconnection Rights that the Interconnection Customer had at the same Point(s) of Interconnection prior to its Interconnection Request associated with this Interconnection Service Agreement, and ___MW of Capacity Interconnection Rights granted as a result of such Interconnection Request.

{include the following language when the CIRs are only interim and have a termination date or event:}

Interconnection Customer shall have ___ MW of Capacity Interconnection Rights for the time period from ___ to _____. These Capacity Interconnection Rights are interim and will terminate upon {explain circumstances -- e.g. interim agreement; completion of another facility, etc.}

2.1a To the extent that any portion of the Customer Facility described in section 1.0 is not a Capacity Resource with Capacity Interconnection Rights, such portion of the

Customer Facility shall be an Energy Resource. PJM reserves the right to limit total injections to the Maximum Facility Output in the event reliability would be affected by output greater than such quantity.

{this version of section 2.1 will be used in lieu of section 2.1 above when a generating facility will be an Energy Resource and therefore will not be granted any CIRs: }

[2.1 The generating unit(s) described in section 1.0 shall be an Energy Resource. Pursuant to this Interconnection Service Agreement, the generating unit will be permitted to inject ___ MW (nominal) into the system. PJM reserves the right to limit injections to this quantity in the event reliability would be affected by output greater than such quantity.]

[for Transmission Interconnection Customers]

2.1 Transmission Injection Rights: [applicable only to Merchant D.C. Transmission Facilities and/or Controllable A.C. Merchant Transmission Facilities that interconnect with a control area outside PJM]

Pursuant to Section 232 of the Tariff, Interconnection Customer shall have Transmission Injection Rights at each indicated Point of Interconnection in the following quantity(ies):

2.2 Transmission Withdrawal Rights: [applicable only to Merchant D.C. Transmission Facilities and/or Controllable A.C. Merchant Transmission Facilities that interconnect with a control area outside PJM]

Pursuant to Section 232 of the Tariff, Interconnection Customer shall have Transmission Withdrawal Rights at each indicated Point of Interconnection in the following quantity(ies):

[Include Section 2.2A only if customer is interconnecting Controllable A.C. Merchant Transmission Facilities]

2.2A Interconnection Customer is interconnecting Controllable A.C. Merchant Transmission Facilities as defined in the appended Section 1.6B of the Tariff, and has elected, pursuant to the appended Section 41.1 of the Tariff, to receive Transmission Injection Rights and Transmission Withdrawal Rights in lieu of the other applicable rights for which it may be eligible under Subpart C of Part VI of the Tariff. Accordingly, Interconnection Customer hereby agrees that the Transmission Injection Rights and Transmission Withdrawal Rights awarded to it pursuant to the Tariff and this ISA are, and throughout the duration of this ISA shall be, conditioned on Interconnection Customer's continuous operation of its Controllable A.C. Merchant Transmission Facilities in a controllable manner, i.e., in a manner effectively the same as operation of D.C. transmission facilities.

2.3 Incremental Deliverability Rights:

Pursuant to Section 235 of the Tariff, Interconnection Customer shall have Incremental Deliverability Rights at each indicated Point of Interconnection in the following quantity(ies):

2.4 Incremental Available Transfer Capability Revenue Rights:

Pursuant to Section 233 of the Tariff, Interconnection Customer shall have Incremental Available Transfer Capability Revenue Rights at each indicated Point of Interconnection in the following quantities:

2.5 Incremental Auction Revenue Rights:

Pursuant to Section 231 of the Tariff, Interconnection Customer shall have Incremental Auction Revenue Rights in the following quantities:

2.6 Incremental Capacity Transfer Rights:

Pursuant to Section 234 of the Tariff, Interconnection Customer shall have Incremental Capacity Transfer Rights between the following associated source(s) and sink(s) in the indicated quantities:

3.0 Construction Responsibility and Ownership of Interconnection Facilities

a. Interconnection Customer.

(1) Interconnection Customer shall construct and, unless otherwise indicated, shall own, the following Interconnection Facilities:

[Specify Facilities To Be Constructed]

(2) In the event that, in accordance with the Interconnection Construction Service Agreement, Interconnection Customer has exercised the Option to Build, it is hereby permitted to build in accordance with and subject to the conditions and limitations set forth in that Section, the following portions (1) of the Transmission Owner Interconnection Facilities and/or (2) of any Merchant Network Upgrades which constitute or are part of the Customer Facility:

[Specify Facilities To Be Constructed]

Ownership of the facilities built by Interconnection Customer pursuant to the Option to Build shall be as provided in the Interconnection Construction Service Agreement.

b. Interconnected Transmission Owner {or Name of Interconnected Transmission Owner if more than one Interconnected Transmission Owner }

[Specify Facilities To Be Constructed and Owned]

- c. [if applicable, include the following][Name of any additional Transmission Owner constructing facilities with which Interconnection Customer and Transmission Provider will also execute an Interconnection Construction Service Agreement]

[Specify Facilities To Be Constructed and Owned]

4.0 Subject to modification pursuant to the Negotiated Contract Option and/or the Option to Build under the Interconnection Construction Service Agreement, Interconnection Customer shall be subject to the estimated charges detailed below, which shall be billed and paid in accordance with Appendix 2, Section 11 of this ISA and the applicable Interconnection Construction Service Agreement.

4.1 Attachment Facilities Charge: \$_____

[Optional: Provide Charge and Identify Interconnected Transmission Owner]

4.2 Network Upgrades Charge: \$_____

[Optional: Provide Breakdown of Charge Based on Interconnected Transmission Owner responsibilities]

4.3 Local Upgrades Charge: \$_____

[Optional: Provide Breakdown of Charge Based on Interconnected Transmission Owner responsibilities]

4.4 Other Charges: \$_____

[Optional: Provide Breakdown of Charge Based on Interconnected Transmission Owner responsibilities]

4.5 Cost of Merchant Network Upgrades: \$_____

[Optional: Provide Breakdown of Charge Based on Interconnected Transmission Owner responsibilities]

4.6 Cost breakdown:

- \$ Direct Labor
- \$ Direct Material
- \$ Indirect Labor
- \$ Indirect Material

[Additional items for breakdown as necessary]

\$ Total

4.7 Security Amount Breakdown:

\$ Estimated Cost of Non-Direct Connection Local Upgrades and/or
Non-Direct Connection Network Upgrades

plus \$ Estimated Cost of any Merchant Network Upgrades that
Interconnected Transmission Owner is responsible for building

plus \$ Estimated cost of the work (for the first three months) on the
required Attachment Facilities, Direct Connection Local Upgrades, and Direct
Connection Network Upgrades

plus \$ Option to Build Security for Attachment Facilities, Direct
Connection Local Upgrades, and Direct Connection Network Upgrades (including
Cancellation Costs)

less \$ _____ Costs already paid by Interconnection Customer

\$ Total Security required with ISA

APPENDICES:

- **APPENDIX 1 - DEFINITIONS**
- **APPENDIX 2 - STANDARD TERMS AND CONDITIONS FOR INTERCONNECTIONS**

SCHEDULES:

- **SCHEDULE A - CUSTOMER FACILITY LOCATION/SITE PLAN**
- **SCHEDULE B - SINGLE-LINE DIAGRAM**
- **SCHEDULE C - LIST OF METERING EQUIPMENT**
- **SCHEDULE D - APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS**
- **SCHEDULE E - SCHEDULE OF CHARGES**
- **SCHEDULE F - SCHEDULE OF NON-STANDARD TERMS & CONDITIONS**
- **SCHEDULE G - INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS**
- **SCHEDULE H - INTERCONNECTION REQUIREMENTS FOR A WIND GENERATION FACILITY**

4.7 Reactive Power

4.7.1 Reactive Power Design Criteria

4.7.1.1 New Facilities:

For all new generating facilities to be interconnected pursuant to the Tariff, other than wind-powered and other non-synchronous generation facilities, the Generation Interconnection Customer shall design its Customer Facility to maintain a composite power delivery at continuous rated power output at a power factor of at least 0.95 leading to 0.90 lagging. For all new wind-powered and other non-synchronous generation facilities, ~~if determined in the system impact study to be required for the safety or reliability of the Transmission System,~~ the Generation Interconnection Customer shall design its Customer Facility with the ability to maintain a composite power delivery at continuous rated power output at a power factor of at least 0.95 leading to 0.95 lagging. For all wind-powered and other non-synchronous generation facilities entering the New Service Queue on or after May 1, 2015, the power factor requirement shall be measured at the generator's terminals. For new generation resources of more than 20 MW, other than wind-powered and other non-synchronous generating facilities, the power factor requirement shall be measured at the generator's terminals. For new generation resources of 20 MW or less, and all wind-powered and other non-synchronous generation facilities entering the New Service Queue prior to May 1, 2015, the power factor requirement shall be measured at the Point of Interconnection. Any different reactive power design criteria that Transmission Provider determines to be appropriate for a wind-powered or other non-synchronous generation facility shall be stated in the Interconnection Service Agreement. A Transmission Interconnection Customer interconnecting Merchant D.C. Transmission Facilities and/ or Controllable A.C. Merchant Transmission Facilities shall design its Customer Facility to maintain a power factor at the Point of Interconnection of at least 0.95 leading and 0.95 lagging, when the Customer Facility is operating at any level within its approved operating range.

4.7.1.2 Increases in Generating Capacity or Energy Output:

All increases in the capacity or energy output of any generation facility interconnected with the Transmission System, other than wind-powered and other non-synchronous generating facilities, shall be designed with the ability to maintain a composite power delivery at continuous rated power output at a power factor for all incremental MW of capacity or energy output, of at least 1.0 (unity) to 0.90 lagging. Wind-powered generation facilities and other non-synchronous generation facilities entering the New Service Queue on or after May 1, 2015, ~~if determined in the System Impact Study to be required for the safety or reliability of the Transmission System,~~ shall be designed with the ability to maintain a composite power delivery at continuous rated power output at a power factor for all incremental MW of capacity or energy output, of at least 0.95 leading 1.0 (unity) to 0.95 lagging, ~~while those entering the New Service Queue prior to May 1, 2015 shall be designed with the ability to maintain a composite power delivery at continuous rated power out at a power factor for all incremental MW of capacity of energy output of at least 1.0 (unity) to 0.95 lagging.~~ The power factor requirement associated with increases in capacity or energy output of more than 20 MW to synchronous generation facilities interconnected with the Transmission System shall be measured at the generator's terminals. The

power factor requirement associated with increases in capacity or energy output of 20 MW or less to synchronous generation facilities and all increases to wind-powered and non-synchronous generation facilities interconnected to the Transmission System shall be measured at the Point of Interconnection.

4.7.2 Obligation to Supply Reactive Power:

Interconnection Customer agrees, as and when so directed by Transmission Provider or when so directed by the Interconnected Transmission Owner acting on behalf or at the direction of Transmission Provider, to operate the Customer Facility to produce reactive power within the design limitations of the Customer Facility pursuant to voltage schedules, reactive power schedules or power factor schedules established by Transmission Provider or, as appropriate, the Interconnected Transmission Owner. Transmission Provider shall maintain oversight over such schedules to ensure that all sources of reactive power in the PJM Region, as applicable, are treated in an equitable and not unduly discriminatory manner. Interconnection Customer agrees that Transmission Provider and the Interconnected Transmission Owner, acting on behalf or at the direction of Transmission Provider, may make changes to the schedules that they respectively establish as necessary to maintain the reliability of the Transmission System.

4.7.3 Deviations from Schedules:

In the event that operation of the Customer Facility of an Interconnection Customer causes the Transmission System or the Interconnected Transmission Owner's facilities to deviate from appropriate voltage schedules and/or reactive power schedules as specified by Transmission Provider or the Interconnected Transmission Owner's operations control center (acting on behalf or at the direction of Transmission Provider), or that otherwise is inconsistent with Good Utility Practice and results in an unreasonable deterioration of the quality of electric service to other customers of Transmission Provider or the Interconnected Transmission Owner, the Interconnection Customer shall, upon discovery of the problem or upon notice from Transmission Provider or the Interconnected Transmission Owner, acting on behalf or at the direction of Transmission Provider, take whatever steps are reasonably necessary to alleviate the situation at its expense, in accord with Good Utility Practice and within the reactive capability of the Customer Facility. In the event that the Interconnection Customer does not alleviate the situation within a reasonable period of time following Transmission Provider's or the Interconnected Transmission Owner's notice thereof, the Interconnected Transmission Owner, with Transmission Provider's approval, upon notice to the Interconnection Customer and at the Interconnection Customer's expense, may take appropriate action, including installation on the Transmission System of power factor correction or other equipment, as is reasonably required, consistent with Good Utility Practice, to remedy the situation cited in Transmission Provider's or the Interconnected Transmission Owner's notice to the Interconnection Customer under this section.

4.7.4 Payment for Reactive Power:

Any payments to the Interconnection Customer for reactive power shall be in accordance with Schedule 2 of the Tariff.

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

SCHEDULE H

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 H 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 Appendix 2 of this ISA and 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 H 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 H LVRT standard are exempt from meeting the Schedule H LVRT standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule H 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 H LVRT standard are exempt from meeting the Schedule H LVRT Standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule H 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 ISA]

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

SCHEDULE H

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 }

A. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size.

B. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size.

C. 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.

D. 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)
- Atmosphere 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:

[SPECIFY AGREED UPON METEOROLOGICAL AND FORCED OUTAGE DATA REQUIREMENTS]

[OR]

[NOT APPLICABLE FOR THIS ISA]

ATTACHMENT O-1

**FORM OF
INTERIM INTERCONNECTION SERVICE AGREEMENT**

**By and Among
PJM Interconnection, L.L.C.
and**

and

(PJM Queue Position #____)

- 1.0 This Interim Interconnection Service Agreement (“Interim ISA”), including the Specifications attached hereto and incorporated herein, is entered into by and among PJM Interconnection, L.L.C. (“Transmission Provider” or “PJM”), [_____] (“Interconnection Customer” [OPTIONAL: or [“short name”]]), and [_____] (“Interconnected Transmission Owner” [OPTIONAL: or [“short name”]]). [Use as/when applicable: This Interim ISA supersedes the _____ {insert details to identify the agreement being superseded, such as whether it is an Interim Interconnection Service Agreement, Interconnection Service Agreement, or Interconnection Agreement, the effective date of the agreement, the service agreement number designation, and the FERC docket number, if applicable, for the agreement being superseded.}]]
- 2.0 Attached are Specifications for the Customer Facility that Interconnection Customer proposes to interconnect to the Transmission Provider’s Transmission System. Interconnection Customer represents and warrants that, upon completion of their construction, it will own or control the facilities identified in the Specifications attached hereto and made a part hereof. In the event that Interconnection Customer will not own the facilities, Interconnection Customer represents and warrants that it is authorized by the owners of such facilities to enter into this Interim ISA and to represent such control.
- 3.0 In order to advance the completion of its interconnection under the PJM Open Access Transmission Tariff (“Tariff”), Interconnection Customer has requested an Interim ISA and Transmission Provider has determined that Interconnection Customer is eligible under the Tariff to obtain this Interim ISA.
- 4.0 (a) In accord with Section 211 of the Tariff, Interconnection Customer, on or before the effective date of this Interim ISA, shall provide Transmission Provider (for the benefit of the Interconnected Transmission Owner) with a letter of credit from an agreed provider or other form of security reasonably acceptable to Transmission Provider in the amount of \$ _____, which amount equals the estimated costs, determined in

accordance with Section 217 of the Tariff, of acquiring, designing, constructing and/or installing the facilities described in section 3.0 of the Attached Specifications. Should Interconnection Customer fail to provide such security in the amount or form required, this Interim ISA shall be terminated. Interconnection Customer acknowledges (1) that it will be responsible for the actual costs of the facilities described in the Specifications, whether greater or lesser than the amount of the payment security provided under this section, and (2) that the payment security under this section does not include any additional amounts that it will owe in the event that it executes a final Interconnection Service Agreement, as described in section 7.0(a) below.

(b) Interconnection Customer acknowledges (1) that the purpose of this Interim ISA is to expedite, at Interconnection Customer's request, the acquisition, design, construction and/or installation of certain materials and equipment, as described in the Specifications, necessary to interconnect its proposed facilities with Transmission Provider's Transmission System; and (2) that Transmission Provider's Interconnection Studies related to such facilities have not been completed, but that the [identify completed feasibility and/or system impact study(ies)], dated [_____], that included Interconnection Customer's project sufficiently demonstrated, in Interconnection Customer's sole opinion, the necessity of facilities additions to the Transmission System to accommodate Interconnection Customer's project to warrant, in Interconnection Customer's sole judgment, its request that the Interconnected Transmission Owner acquire, design, construct and/or install the equipment indicated in the Specifications for use in interconnecting Interconnection Customer's project with the Transmission System.

5.0 This Interim ISA shall be effective on the date it is executed by all Interconnection Parties and shall terminate upon the execution and delivery by Interconnection Customer and Transmission Provider of the final Interconnection Service Agreement described in section 7.0(a) below, or on such other date as mutually agreed upon by the parties, unless earlier terminated in accordance with the Tariff.

6.0 In addition to the milestones stated in Section 212.5 of the Tariff, during the term of this Interim ISA, Interconnection Customer shall ensure that its generation project meets each of the following development milestones:

[SPECIFY MILESTONES]

OR

[NOT APPLICABLE FOR THIS INTERIM ISA]

OR

[MILESTONE REQUIREMENTS WILL BE SPECIFIED IN THE FURTHER INTERCONNECTION SERVICE AGREEMENT DESCRIBED IN SECTION 7.0(a)]

7.0 (a) Transmission Provider and the Interconnected Transmission Owner agree to provide for the acquisition, design, construction and/or installation of the facilities identified, and to the extent described, in Section 3.0 of the Specifications in accordance with Part IV of the Tariff, as amended from time to time, and this Interim ISA. Except to the extent for which the Specifications provide for interim interconnection rights for the Interconnection Customer, the parties agree that (1) this Interim ISA shall not provide for or authorize Interconnection Service for the Interconnection Customer, and (2) Interconnection Service will commence only after Interconnection Customer has entered into a final Interconnection Service Agreement with Transmission Provider and the Interconnection Transmission Owner (or, alternatively, has exercised its right to initiate dispute resolution or to have the final Interconnection Service Agreement filed with the FERC unexecuted) after completion of the Facilities Study related to Interconnection Customer's Interconnection Request and otherwise in accordance with the Tariff. The final Interconnection Service Agreement may further provide for construction of, and payment for, transmission facilities additional to those identified in the attached Specifications. Should Interconnection Customer fail to enter into such final Interconnection Service Agreement (or, alternatively, to initiate dispute resolution or request that the agreement be filed with the FERC unexecuted) within the time prescribed by the Tariff, Transmission Provider shall have the right, upon providing written notice to Interconnection Customer, to terminate this Interim ISA.

(b) In the event that Interconnection Customer decides not to interconnect its proposed facilities, as described in Section 1.0 of the Specifications to the Transmission System, it shall immediately give Transmission Provider written notice of its determination. Interconnection Customer shall be responsible for the Costs incurred pursuant to this Interim ISA by Transmission Provider and/or by the Interconnected Transmission Owner (1) on or before the date of such notice, and (2) after the date of such notice, if the costs could not reasonably be avoided despite, or were incurred by reason of, Interconnection Customer's determination not to interconnect. Interconnection Customer's liability under the preceding sentence shall include all Cancellation Costs in connection with the acquisition, design, construction and/or installation of the facilities described in section 3.0 of the Specifications. In the event the Interconnected Transmission Owner incurs Cancellation Costs, it shall provide the Transmission Provider, with a copy to the Interconnection Customer, with a written demand for payment and with reasonable documentation of such Cancellation Costs. Within 60 days after the date of Interconnection Customer's notice, Transmission Provider shall provide an accounting of, and the appropriate party shall make any payment to the other that is necessary to resolve, any difference between (i) Interconnection Customer's cost responsibility under this Interim ISA and the Tariff for Costs, including Cancellation Costs, of the facilities described in section 3.0 of the Specifications and (ii) Interconnection Customer's previous payments under this Interim ISA. Notwithstanding the foregoing, however, Transmission Provider shall not be obligated to make any payment that the preceding sentence requires it to make unless and until the Interconnected Transmission Owner has returned to it the portion of Interconnection Customer's previous payments that Transmission Provider must pay under that sentence.

This Interim ISA shall be deemed to be terminated upon completion of all payments required under this paragraph (b).

(c) Disposition of the facilities related to this Interim ISA after receipt of Interconnection Customer's notice of its determination not to interconnect shall be decided in accordance with Section 211.1 of the Tariff.

- 8.0 Interconnection Customer agrees to abide by all rules and procedures pertaining to generation in the PJM Region, including but not limited to the rules and procedures concerning the dispatch of generation set forth in the Operating Agreement and the PJM Manuals.
- 9.0 In analyzing and preparing the Facilities Study or the System Impact Study if no Facilities Study is required, and in designing and constructing the Attachment Facilities, Local Upgrades and/or Network Upgrades described in the Specifications attached to this Interim ISA, Transmission Provider, the Interconnected Transmission Owner(s), and any other subcontractors employed by Transmission Provider have had to, and shall have to, rely on information provided by Interconnection Customer and possibly by third parties and may not have control over the accuracy of such information. Accordingly, NEITHER TRANSMISSION PROVIDER, THE INTERCONNECTED TRANSMISSION OWNER(S), NOR ANY OTHER SUBCONTRACTORS EMPLOYED BY TRANSMISSION PROVIDER OR INTERCONNECTED TRANSMISSION OWNER MAKES ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER ARISING BY OPERATION OF LAW, COURSE OF PERFORMANCE OR DEALING, CUSTOM, USAGE IN THE TRADE OR PROFESSION, OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE ACCURACY, CONTENT, OR CONCLUSIONS OF THE FACILITIES STUDY OR THE SYSTEM IMPACT STUDY IF NO FACILITIES STUDY IS REQUIRED OR OF THE ATTACHMENT FACILITIES, LOCAL UPGRADES AND/OR NETWORK UPGRADES, PROVIDED, HOWEVER, that Transmission Provider warrants that the transmission facilities described in Section 3.0 of the Specifications will be designed, constructed and operated in accordance with Good Utility Practice, as such term is defined in the Operating Agreement. Interconnection Customer acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.
- 10.0 Within 120 days after the Interconnected Transmission Owner completes acquisition, design, construction and/or installation of the facilities described in Section 3.0 of the Specifications, Transmission Provider shall provide Interconnection Customer with an accounting of, and the appropriate party shall make any payment to the other that is necessary to resolve, any difference between (a) Interconnection Customer's responsibility under this Interim ISA and the Tariff for the actual cost of such equipment, and (b) Interconnection Customer's previous aggregate payments to Transmission Provider and the Interconnected Transmission Owner hereunder. Notwithstanding the

foregoing, however, Transmission Provider shall not be obligated to make any payment that the preceding sentence requires it to make unless and until the Interconnected Transmission Owner has returned to it the portion of Interconnection Customer's previous payments that Transmission Provider must pay under that sentence.

- 11.0 No third party beneficiary rights are created under this Interim ISA, provided, however, that payment obligations imposed on Interconnection Customer hereunder are agreed and acknowledged to be for the benefit of the Interconnected Transmission Owner actually performing the services associated with the interconnection of the generating facilities and any associated upgrades of other facilities.
- 12.0 No waiver by either party of one or more defaults by the other in performance of any of the provisions of this Interim ISA shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or different character.
- 13.0 This Interim ISA or any part thereof, may not be amended, modified, assigned, or waived other than by a writing signed by all parties hereto.
- 14.0 This Interim ISA shall be binding upon the parties hereto, their heirs, executors, administrators, successors, and assigns.
- 15.0 This Interim ISA shall not be construed as an application for service under Part II or Part III of the Tariff.
- 16.0 Any notice or request made to or by either Party regarding this Interim ISA shall be made to the representative of the other Party as indicated below.

Transmission Provider

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403

Interconnection Customer

[CONTACT NAME/ADDRESS]

Interconnected Transmission Owner

[CONTACT NAME/ADDRESS]

- 17.0 All portions of the Tariff and the Operating Agreement pertinent to the subject of this Interim ISA are incorporated herein and made a part hereof.
- 18.0 This Interim ISA is entered into pursuant to Part IV of the Tariff.

19.0 Neither party shall be liable for consequential, incidental, special, punitive, exemplary or indirect damages, lost profits or other business interruption damages, by statute, in tort or contract, under any indemnity provision or otherwise with respect to any claim, controversy or dispute arising under this Interim ISA.

20.0 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 20.1, Schedule A to this Interim ISA shall set forth the Interconnection Customer's agreement to conform with the IRS safe harbor provisions for non-taxable status.

20.1 Tax Liability

20.1.1 Safe Harbor Provisions:

This Section 20.1.1 is applicable only to Generation Interconnection Customers. Provided that Interconnection Customer agrees to conform to all requirements of the Internal Revenue Service ("IRS") (e.g., the "safe harbor" provisions of IRS Notices 2001-82 and 88-129) that would confer nontaxable status on some or all of the transfer of property, including money, by Interconnection Customer to the Interconnected Transmission Owner for payment of the Costs of construction of the Transmission Owner Interconnection Facilities, the Interconnected Transmission Owner, based on such agreement and on current law, shall treat such transfer of property to it as nontaxable income and, except as provided in Section 20.1.2 below, shall not include income taxes in the Costs of Transmission Owner Interconnection Facilities that are payable by Interconnection Customer under the Interim Interconnection Service Agreement, the Interconnection Service Agreement or the Interconnection Construction Service Agreement. Interconnection Customer shall document its agreement to conform to IRS requirements for such non-taxable status in the Interconnection Service Agreement, the Interconnection Construction Service Agreement, and/or the Interim Interconnection Service Agreement.

20.1.2 Tax Indemnity:

Interconnection Customer shall indemnify the Interconnected Transmission Owner for any costs that Interconnected Transmission Owner incurs in the event that the IRS and/or a state department of revenue (State) determines that the property, including money, transferred by Interconnection Customer to the Interconnected Transmission Owner with respect to the construction of the Transmission Owner Interconnection Facilities and/or any Merchant Network Upgrades is taxable income to the Interconnected Transmission Owner. Interconnection Customer shall pay to the Interconnected Transmission Owner, on demand, the amount of any income taxes that the IRS or a State assesses to the Interconnected Transmission Owner in connection with such transfer of property and/or money, plus any applicable interest and/or penalty charged to the Interconnected Transmission Owner. In the event that the Interconnected Transmission Owner chooses to contest such assessment, either at the request of Interconnection Customer or on its own behalf, and prevails in reducing or eliminating the tax, interest and/or penalty

assessed against it, the Interconnected Transmission Owner shall refund to Interconnection Customer the excess of its demand payment made to the Interconnected Transmission Owner over the amount of the tax, interest and penalty for which the Interconnected Transmission Owner is finally determined to be liable. Interconnection Customer's tax indemnification obligation under this section shall survive any termination of the Interim Interconnection Service Agreement or Interconnection Construction Service Agreement.

20.1.3 Taxes Other Than Income Taxes:

Upon the timely request by Interconnection Customer, and at Interconnection Customer's sole expense, the Interconnected Transmission Owner shall appeal, protest, seek abatement of, or otherwise contest any tax (other than federal or state income tax) asserted or assessed against the Interconnected Transmission Owner for which Interconnection Customer may be required to reimburse Transmission Provider under the terms of this Interim Interconnection Service Agreement or Part VI of the Tariff. Interconnection Customer shall pay to the Interconnected Transmission Owner on a periodic basis, as invoiced by the Interconnected Transmission Owner, the Interconnected Transmission Owner's documented reasonable costs of prosecuting such appeal, protest, abatement, or other contest. Interconnection Customer and the Interconnected Transmission Owner shall cooperate in good faith with respect to any such contest. Unless the payment of such taxes is a prerequisite to an appeal or abatement or cannot be deferred, no amount shall be payable by Interconnection Customer to the Interconnected Transmission Owner for such contested taxes until they are assessed by a final, non-appealable order by any court or agency of competent jurisdiction. In the event that a tax payment is withheld and ultimately due and payable after appeal, Interconnection Customer will be responsible for all taxes, interest and penalties, other than penalties attributable to any delay caused by the Interconnected Transmission Owner.

20.1.4 Income Tax Gross-Up

20.1.4.1 Additional Security:

In the event that Interconnection Customer does not provide the safe harbor documentation required under Section 20.1.1 prior to execution of this Interim Interconnection Service Agreement, within 15 days after such execution, Transmission Provider shall notify Interconnection Customer in writing of the amount of additional Security that Interconnection Customer must provide. The amount of Security that a Transmission Interconnection Customer must provide initially pursuant to this Interim Interconnection Service Agreement shall include any amounts described as additional Security under this Section 20.1.4 regarding income tax gross-up.

20.1.4.2 Amount:

The required additional Security shall be in an amount equal to the amount necessary to gross up fully for currently applicable federal and state income taxes the estimated Costs of Local Upgrades and Network Upgrades for which Interconnection Customer previously provided

Security. Accordingly, the additional Security shall equal the amount necessary to increase the total Security provided to the amount that would be sufficient to permit the Interconnected Transmission Owner to receive and retain, after the payment of all applicable income taxes (“Current Taxes”) and taking into account the present value of future tax deductions for depreciation that would be available as a result of the anticipated payments or property transfers (the "Present Value Depreciation Amount"), an amount equal to the estimated Costs of Local Upgrades and Network Upgrades for which Interconnection Customer is responsible under the Interconnection Service Agreement. For this purpose, Current Taxes shall be computed based on the composite federal and state income tax rates applicable to the Interconnected Transmission Owner at the time the additional Security is received, determined using the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting the Interconnected Transmission Owner’s anticipated tax depreciation deductions associated with such payments or property transfers by its current weighted average cost of capital.

20.1.4.3 Time for Payment:

Interconnection Customer must provide the additional Security, in a form and with terms as required by Sections 212.4 of the Tariff, within 15 days after its receipt of Transmission Provider’s notice under this section. The requirement for additional Security under this section shall be treated as a milestone included in the Interconnection Service Agreement pursuant to Section 212.5 of the Tariff.

20.1.5 Tax Status:

Each Party shall cooperate with the other to maintain the other Party’s tax status. Nothing in this Interim Interconnection Service Agreement or the Tariff is intended to adversely affect any Interconnected Transmission Owner’s tax exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

21.0 Addendum of Interconnection Requirement for all Wind or Non-synchronous Generation Facilities~~iesy~~. To the extent required, Schedule B to this Interim ISA sets forth interconnection requirements for all wind or non-synchronous generation facilities~~iesy~~ and is hereby incorporated by reference and made a part of this Interim ISA.

22.0 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.

IN WITNESS WHEREOF, Transmission Provider, Interconnection Customer and Interconnected Transmission Owner have caused this Interim ISA to be executed by their respective authorized officials.

(PJM Queue Position #___)

Transmission Provider: PJM Interconnection, L.L.C.

By: _____
Name Title Date

Printed name of signer: _____

Interconnection Customer: [Name of Party]

By: _____
Name Title Date

Printed name of signer: _____

Interconnected Transmission Owner: [Name of Party]

By: _____
Name Title Date

Printed name of signer: _____

**SPECIFICATIONS FOR
INTERIM INTERCONNECTION SERVICE AGREEMENT**

**By and Among
PJM INTERCONNECTION, L.L.C.**

And

And

(PJM Queue Position #___)

1.0 Description of Customer Facility to be interconnected with the Transmission System in the PJM Region:

a. Name of Customer Facility:

b. Location of Customer Facility:

c. Size in megawatts of Customer Facility:

{The following language should be included only for generating units

For Generation Interconnection Customer:

Maximum Facility Output of _____MW }

{The following language applies when a Generation Interconnection Request involves an increase of the capacity of an existing generating facility: The stated size of the generating unit includes an increase in the Maximum Facility Output of the generating unit of ___ MW over Interconnection Customer's previous interconnection. This increase is a result of the Interconnection Request associated with this Interim Interconnection Service Agreement. }

{The following language should be included only for Merchant Transmission Facilities for Transmission Interconnection Customer:

Nominal Rated Capability: _____MW }

2.0 Interconnection Rights: Interconnection Customer shall obtain Capacity Interconnection Rights in accordance with Subpart C of Part VI of the Tariff at the location specified in section 1.0b upon its execution of the final Interconnection Service Agreement described in section 7.0(a) of this Interim ISA. **[if applicable, add: ,** provided, however, that pending execution of the final Interconnection Service Agreement, Interconnection Customer shall be entitled to the following interim rights:

Pursuant to and subject to the applicable terms of the Tariff, Interconnection Customer shall have Capacity Interconnection Rights as a Capacity Resource at the Point of Interconnection specified in this Interim ISA in the amount of __ MW, for the time period of _____ to _____. To the extent that the Customer Facility described in section 1.0 is not a Capacity Resource with Capacity Interconnection Rights, such Customer Facility shall be an Energy Resource. Pursuant to this Interim ISA, the Customer Facility will be permitted to inject __ MW (nominal) into the system. PJM reserves the right to limit injections to this quantity in the event reliability would be affected by output greater than such quantity.]

3.0.A Facilities to be acquired, designed, constructed and/or installed by the Interconnected Transmission Owner under this Interim ISA:

3.0.B Facilities to be acquired, designed, constructed and/or installed by the Interconnection Customer under this Interim ISA:

4.0 Interconnection Customer shall be subject to the charges detailed below:

4.1 Attachment Facilities Charge:

4.2 Local Upgrades Charge:

4.3 Network Upgrades Charge:

4.4 Cost Breakdown:

\$	Direct Labor
\$	Direct Material
\$	Indirect Labor
\$	Indirect Material
\$	Total

SCHEDULES: {Note: Schedules A and B are required, others are optional; add if applicable and desirable for clarity.}

SCHEDULE A – INTERCONNECTION CUSTOMER’S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS

SCHEDULE B - INTERCONNECTION REQUIREMENTS FOR A WIND GENERATION FACILITY

SCHEDULE ___ - CUSTOMER FACILITY LOCATION/SITE PLAN

SCHEDULE ___ - SINGLE-LINE DIAGRAM

SCHEDULE A

INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS

{Include the appropriate language from the alternatives below:}

{Include the following language if not required:}
Not Required.

[OR]

{Include the following language if applicable to Interconnection Customer:}

As provided in Section 20.1 of this Interim ISA and subject to the requirements thereof, Interconnection Customer represents that it meets all qualifications and requirements as set forth in Section 118(a) and 118(b) of the Internal Revenue Code of 1986, as amended and interpreted by Notice 88-129, 1988-2 C.B. 541, and as amplified and modified in Notices 90-60, 1990-2 C.B. 345, and 2001-82, 2001-2 C.B. 619 (the "IRS Notices"). Interconnection Customer agrees to conform with all requirements of the safe harbor provisions specified in the IRS Notices, as they may be amended, as required to confer non-taxable status on some or all of the transfer of property, including money, by Interconnection Customer to Interconnected Transmission Owner with respect to the payment of the Costs of construction and installation of the Transmission Owner Interconnection Facilities and/or Merchant Network Upgrades specified in this Interim ISA.

Nothing in Interconnection Customer's agreement pursuant to this Schedule A shall change Interconnection Customer's indemnification obligations under Section 20.1 of this Interim ISA.

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

SCHEDULE B

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 B 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 B 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 pre-fault 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 B LVRT standard are exempt from meeting the Schedule B LVRT standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule B 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 B LVRT standard are exempt from meeting the Schedule B LVRT Standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule B LVRT Standard.

ii. Power Factor Design Criteria (Reactive Power)

The power factor requirements for wind generation facilities set forth in section 4.7.1 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 INTERIM ISA]

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

SCHEDULE B

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}

A. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size.

B. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size.

C. 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.

D. 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)
- Atmosphere 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:

[SPECIFY AGREED UPON METEOROLOGICAL AND FORCED OUTAGE DATA REQUIREMENTS]

[OR]

[NOT APPLICABLE FOR THIS INTERIM ISA]

ATTACHMENT P

**FORM OF
INTERCONNECTION CONSTRUCTION SERVICE AGREEMENT**

**By and Among
PJM Interconnection, L.L.C.**

And

[Name of Interconnection Customer]

And

[Name of Interconnected Transmission Owner]

(PJM Queue Position #____)

- 1.0 Parties. This Interconnection Construction Service Agreement (“CSA”) including the Schedules and Appendices attached hereto and incorporated herein, is entered into by and between PJM Interconnection, L.L.C. (“Transmission Provider” or “PJM”) and the following Interconnection Customer and Interconnected Transmission Owner:

Interconnection Customer:

[full name] [OPTIONAL: (also referred to as “[short name”])]_____

Interconnected Transmission Owner:

[full name] [OPTIONAL: (also referred to as “[short name”])]_____

All capitalized terms herein shall have the meanings set forth in the appended definitions of such terms as stated in Part I of the Tariff.

- 2.0 Authority. This CSA is entered into pursuant to Part VI of the Tariff. The standard terms and conditions for construction are attached at Appendix 2 to this CSA and are hereby specifically incorporated as provisions of this agreement. Transmission Provider, the Interconnection Customer and the Interconnected Transmission Owner agree to and assume all of their respective rights and obligations as set forth in the standard terms and conditions for construction in Appendix 2 to this CSA. Further, Interconnection Customer and the Interconnected Transmission Owner each agrees to and assumes all of the rights and obligations of a Constructing Entity with respect to the facilities that each of them is responsible for constructing, as set forth in this CSA.

- 3.0 Customer Facility. This CSA specifically relates to the following Customer Facility at the following location:

a. Name of Customer Facility:

b. Location of Customer Facility:

4.0 Effective Date and Term.

4.1 Effective Date. This CSA shall become effective on the later of (i) the date the agreement has been executed by all Construction Parties, or (ii) the date of Interconnection Customer's delivery of Security to the Transmission Provider, provided, however, that if the CSA is filed with the FERC unexecuted, the Effective Date shall be the date specified by the FERC. The Interconnected Transmission Owner shall have no obligation to begin construction of the Transmission Owner Interconnection Facilities prior to the Effective Date. Construction shall commence as provided in the Schedule of Work set forth in Schedule J to this CSA.

4.2 Term. This CSA shall continue in full force and effect from the Effective Date until the termination thereof pursuant to Section 14 of Appendix 2 to this CSA.

4.3 Survival. This CSA shall continue in effect after termination to the extent necessary to provide for final billings and payments, including billings and payments pursuant to Section 9 and/or Section 14 of Appendix 2 to this CSA, and to permit the determination and enforcement of liability and indemnification obligations arising from acts or events that occurred while the CSA was in effect.

5.0 Construction Responsibility for

a. Customer Interconnection Facilities. Interconnection Customer is responsible for designing and constructing the Customer Interconnection Facilities described on the attached Schedule G to this CSA.

b. Construction of Transmission Owner Interconnection Facilities.

1. The Transmission Owner Interconnection Facilities regarding which Interconnected Transmission Owner shall be the Constructing Entity are described on the attached Schedule C to this CSA.

2. Election of Construction Option. Specify below whether the Constructing Entities have mutually agreed to construction of the Transmission Owner Interconnection Facilities that will be built by the Interconnected Transmission Owner pursuant to the Standard Option or the Negotiated Contract Option. (See Section 3.2 of the Appendix 2 to this CSA.)

_____Standard Option.

_____Negotiated Contract Option.

If the parties have mutually agreed to use the Negotiated Contract Option, the permitted, negotiated terms on which they have agreed and which are not already set forth as part of the Scope of Work and/or Schedule of Work attached to this CSA as Schedules I and J, respectively, shall be as set forth in Schedule H attached to this CSA.

3. Exercise of Option to Build. Has Interconnection Customer timely exercised the Option to Build in accordance with Section 3.2.3 of Appendix 2 to this CSA with respect to some or all of the Transmission Owner Interconnection Facilities?

_____ Yes

_____ No

If Yes is indicated, Interconnection Customer shall build, in accordance with and subject to the conditions and limitations set forth in Section 3.2.3 of Appendix 2 to this CSA, those portions of the Transmission Owner Interconnection Facilities described on Schedule D attached to this CSA.

[include c. below only if applicable to a Merchant Transmission interconnection:]

- c. Construction of Merchant Network Upgrades.

1. The Merchant Network Upgrades regarding which Interconnected Transmission Owner shall be the Constructing Entity are described on the attached Schedule E to this CSA.

2. Election of Construction Option. Specify below whether the Constructing Entities have mutually agreed to construction of the Merchant Network Upgrades that will be built by the Interconnected Transmission Owner pursuant to the Standard Option or the Negotiated Contract Option. (See Section 3.2 of Appendix 2 to this CSA.)

_____ Standard Option.

_____ Negotiated Contract Option.

If the parties have mutually agreed to use the Negotiated Contract Option, the permitted, negotiated terms on which they have agreed and which are not already set forth as part of the Scope of Work and/or Schedule of Work attached to this CSA as Schedules I and J, respectively, shall be as set forth in Schedule H attached to this CSA.

3. Exercise of Option to Build. Has Interconnection Customer timely exercised the Option to Build in accordance with Section 3.2.3 of Appendix 2 to this CSA with respect to some or all of the Merchant Network Upgrades?

_____ Yes

_____ No

If Yes is indicated, Interconnection Customer shall build, in accordance with and subject to the conditions and limitations set forth in Section 3.2.3 of Appendix 2 to this CSA, those portions of the Merchant Network Upgrades described on Schedule F attached to this CSA.

6.0 [Reserved].

7.0 Scope of Work. The Scope of Work for all construction pursuant to this CSA shall be as set forth in the attached Schedule I, provided, however, that the scope of work is subject to change in accordance with Transmission Provider's scope change process for interconnection projects as set forth in the PJM Manuals.

8.0 Schedule of Work. The Schedule of Work for all construction pursuant to this CSA shall be as set forth in the attached Schedule J, provided, however, that such schedule is subject to change in accordance with Section 3.3 of Appendix 2 to this CSA.

9.0 [Reserved.]

10.0 Notices. Any notice or request made to or by any party regarding this CSA shall be made in accordance with the standard terms and conditions for construction set forth in Appendix 2 to this CSA to the representatives of the other parties, as indicated below:

Transmission Provider:

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403

Interconnection Customer:

Interconnected Transmission Owner:

11.0 Waiver. No waiver by any party of one or more defaults by another in performance of any of the provisions of this CSA shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or different character.

Interconnection Customer: [Name of Party]

By: _____
Name Title Date

Printed name of signer: _____

Interconnected Transmission Owner: [Name of Party]

By: _____
Name Title Date

Printed name of signer: _____

APPENDICES:

- **APPENDIX 1 - DEFINITIONS**
- **APPENDIX 2 - STANDARD CONSTRUCTION TERMS AND CONDITIONS**

SCHEDULES:

- **SCHEDULE A - SITE PLAN**
- **SCHEDULE B - SINGLE-LINE DIAGRAM OF INTERCONNECTION FACILITIES**
- **SCHEDULE C - TRANSMISSION OWNER INTERCONNECTION**

FACILITIES TO BE BUILT BY INTERCONNECTED TRANSMISSION OWNER

- **SCHEDULE D - TRANSMISSION OWNER INTERCONNECTION FACILITIES TO BE BUILT BY INTERCONNECTION CUSTOMER PURSUANT TO OPTION TO BUILD**
- **SCHEDULE E - MERCHANT NETWORK UPGRADES TO BE BUILT BY INTERCONNECTED TRANSMISSION OWNER**
- **SCHEDULE F - MERCHANT NETWORK UPGRADES TO BE BUILT BY INTERCONNECTION CUSTOMER PURSUANT TO OPTION TO BUILD**
- **SCHEDULE G - CUSTOMER INTERCONNECTION FACILITIES**

- **SCHEDULE H - NEGOTIATED CONTRACT OPTION TERMS**
- **SCHEDULE I - SCOPE OF WORK**
- **SCHEDULE J - SCHEDULE OF WORK**
- **SCHEDULE K - APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS**
- **SCHEDULE L - INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS**
- **SCHEDULE M - SCHEDULE OF NON-STANDARD TERMS AND CONDITIONS**
- **SCHEDULE N - INTERCONNECTION REQUIREMENTS FOR A WIND GENERATION FACILITY**

{Include the following Schedule N, as applicable, 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 pre-fault 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 N, as applicable, 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}

A. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size.

B. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size.

C. 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.

D. 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)
- Atmosphere 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:

[SPECIFY AGREED UPON METEOROLOGICAL AND FORCED OUTAGE DATA REQUIREMENTS]

[OR]

[NOT APPLICABLE FOR THIS CSA]

Attachment B

Revisions to the PJM Open Access Transmission Tariff

(Clean Format)

**FORM OF
INTERCONNECTION SERVICE AGREEMENT**

**By and Among
PJM Interconnection, L.L.C.**

**And
[Name of Interconnection Customer]**

**And
[Name of Interconnected Transmission Owner]
(PJM Queue Position #__)**

- 1.0 Parties. This Interconnection Service Agreement (“ISA”) including the Specifications, Schedules and Appendices attached hereto and incorporated herein, is entered into by and between PJM Interconnection, L.L.C., the Regional Transmission Organization for the PJM Region (hereinafter “Transmission Provider” or “PJM”), _____ (“Interconnection Customer” [OPTIONAL: or “[short name]”]) and _____ (“Interconnected Transmission Owner” [OPTIONAL: or “[short name]”]). All capitalized terms herein shall have the meanings set forth in the appended definitions of such terms as stated in Part I of the PJM Open Access Transmission Tariff (“Tariff”). [Use as/when applicable: This ISA supersedes the _____ {insert details to identify the agreement being superseded, such as whether it is an Interim Interconnection Service Agreement, Interconnection Service Agreement, or Interconnection Agreement, the effective date of the agreement, the service agreement number designation, and the FERC docket number, if applicable, for the agreement being superseded.}]]
- 2.0 Authority. This ISA is entered into pursuant to Part VI of the Tariff. Interconnection Customer has requested an Interconnection Service Agreement under the Tariff, and Transmission Provider has determined that Interconnection Customer is eligible under the Tariff to obtain this ISA. The standard terms and conditions for interconnection as set forth in Appendix 2 to this ISA are hereby specifically incorporated as provisions of this ISA. Transmission Provider, Interconnected Transmission Owner and Interconnection Customer agree to and assume all of the rights and obligations of the Transmission Provider, Interconnected Transmission Owner and Interconnection Customer, respectively, as set forth in Appendix 2 to this ISA.
- 3.0 Customer Facility Specifications. Attached are Specifications for the Customer Facility that Interconnection Customer proposes to interconnect with the Transmission System. Interconnection Customer represents and warrants that, upon completion of construction of such facilities, it will own or control the Customer Facility identified in section 1.0 of the Specifications attached hereto and made a part hereof. In the event that Interconnection Customer will not own the Customer Facility, Interconnection Customer represents and warrants that it is authorized by the owner(s) thereof to enter into this ISA and to represent such control.
- 4.0 Effective Date. Subject to any necessary regulatory acceptance, this ISA shall become effective on the date it is executed by all Interconnection Parties, or, if the agreement is

filed with FERC unexecuted, upon the date specified by FERC. This ISA shall terminate on such date as mutually agreed upon by the parties, unless earlier terminated in accordance with the terms set forth in Appendix 2 to this ISA. The term of the ISA shall be as provided in Section 1.3 of Appendix 2 to this ISA. Interconnection Service shall commence as provided in Section 1.2 of Appendix 2 to this ISA.

- 5.0 Security. In accord with Section 212.4 of the Tariff, Interconnection Customer shall provide the Transmission Provider (for the benefit of the Interconnected Transmission Owner) with a letter of credit from an agreed provider or other form of security reasonably acceptable to the Transmission Provider and that names the Transmission Provider as beneficiary (“Security”) in the amount of \$_____. This amount represents the sum of the estimated Costs, determined in accordance with Sections 212 and 217 of the Tariff, for which the Interconnection Customer will be responsible, less any Costs already paid by Interconnection Customer. Interconnection Customer acknowledges that its ultimate cost responsibility in accordance with Section 217 of the Tariff will be based upon the actual Costs of the facilities described in the Specifications, whether greater or lesser than the amount of the payment security provided under this section.

[Include the following if Interconnection Customer requests deferral of the security as provided for in Section 212.4(c) of the Tariff:

For any portion of the security that may be deferred in accordance with Section 212.4(c) of the Tariff, and as requested by Interconnection Customer, Interconnection Customer shall provide the security specified in this Section 5.0 within 120 days after the Interconnection Customer executes this ISA, provided that Interconnection Customer shall pay a deposit of at least \$200,000 or 125% of the estimated costs that will be incurred during the 120-day period, whichever is greater, to fund continued design work and/or procurement activities, with \$100,000 of such deposit being non-refundable.]

Should Interconnection Customer fail to provide security at the time the Interconnection Customer executes this ISA, or, if deferred, by the end of the 120-day period, this ISA shall be terminated.

- 6.0 Project Specific Milestones. In addition to the milestones stated in Section 212.5 of the Tariff, as applicable, during the term of this ISA, Interconnection Customer shall ensure that it meets each of the following development milestones:

[Specify Project Specific Milestones]

[As appropriate include the following standard Milestones, with any revisions necessary for the project at hand:

- 6.1 Substantial Site work completed. On or before _____ Interconnection Customer must demonstrate completion of at least 20% of project site construction. At this time, Interconnection Customer must submit to Interconnected Transmission Owner and Transmission Provider initial drawings, certified by a professional engineer, of the Customer Interconnection Facilities.
- 6.2 Delivery of major electrical equipment. On or before _____, Interconnection Customer must demonstrate that ___ generating units have been delivered to Interconnection Customer's project site.
- 6.3 Commercial Operation. (i) On or before _____, Interconnection Customer must demonstrate commercial operation of ___ generating units; (ii) On or before _____, Interconnection Customer must demonstrate commercial operation of ___ additional generating units. Demonstrating commercial operation includes achieving Initial Operation in accordance with Section 1.4 of Appendix 2 to this ISA and making commercial sales or use of energy, as well as, if applicable, obtaining capacity qualification in accordance with the requirements of the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region.

[if a specific situation requires a CSA by a certain date then use the following: Interconnection Construction Service Agreement. On or before _____, Interconnection Customer must have either (a) executed an Interconnection Construction Service Agreement for Interconnection Facilities for which Interconnection Customer has cost responsibility; (b) requested dispute resolution under Section 12 of the PJM Tariff, or if concerning the Regional Transmission Expansion Plan, consistent with Schedule 5 of the Operating Agreement; or (c) requested that the Transmission Provider file the Interconnection Construction Service Agreement unexecuted with the Commission.]

- 6.4 Within one (1) month following commercial operation of generating unit(s), Interconnection Customer must provide certified documentation demonstrating that "as-built" Customer Facility and Customer Interconnection Facilities are in accordance with applicable PJM studies and agreements. Interconnection Customer must also provide PJM with "as-built" electrical modeling data or confirm that previously submitted data remains valid.

[Add Additional Project Specific Milestones as appropriate]

Interconnection Customer shall demonstrate the occurrence of each of the foregoing milestones to Transmission Provider's reasonable satisfaction. Transmission Provider may reasonably extend any such milestone dates, in the event of delays that Interconnection Customer (i) did not cause and (ii) could not have remedied through the exercise of due diligence. The milestone dates stated in this ISA shall be deemed to be extended coextensively with any suspension of work initiated by Interconnection Customer in accordance with the Interconnection Construction Service Agreement.

- 7.0 Provision of Interconnection Service. Transmission Provider and Interconnected Transmission Owner agree to provide for the interconnection to the Transmission System in the PJM Region of Interconnection Customer's Customer Facility identified in the Specifications in accordance with Part IV and Part VI of the Tariff, the Operating Agreement of PJM Interconnection, L.L.C. ("Operating Agreement"), and this ISA, as they may be amended from time to time.
- 8.0 Assumption of Tariff Obligations. Interconnection Customer agrees to abide by all rules and procedures pertaining to generation and transmission in the PJM Region, including but not limited to the rules and procedures concerning the dispatch of generation or scheduling transmission set forth in the Tariff, the Operating Agreement and the PJM Manuals.
- 9.0 Facilities Study. In analyzing and preparing the [Facilities Study] [System Impact Study {if a Facilities Study was not required}], and in designing and constructing the Attachment Facilities, Local Upgrades and/or Network Upgrades described in the Specifications attached to this ISA, Transmission Provider, the Interconnected Transmission Owner(s), and any other subcontractors employed by Transmission Provider have had to, and shall have to, rely on information provided by Interconnection Customer and possibly by third parties and may not have control over the accuracy of such information. Accordingly, NEITHER TRANSMISSION PROVIDER, THE INTERCONNECTED TRANSMISSION OWNER(S), NOR ANY OTHER SUBCONTRACTORS EMPLOYED BY TRANSMISSION PROVIDER OR INTERCONNECTED TRANSMISSION OWNER MAKES ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER ARISING BY OPERATION OF LAW, COURSE OF PERFORMANCE OR DEALING, CUSTOM, USAGE IN THE TRADE OR PROFESSION, OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE ACCURACY, CONTENT, OR CONCLUSIONS OF THE FACILITIES STUDY OR THE SYSTEM IMPACT STUDY IF A FACILITIES STUDY WAS NOT REQUIRED OR OF THE ATTACHMENT FACILITIES, THE LOCAL UPGRADES AND/OR THE NETWORK UPGRADES, PROVIDED, HOWEVER, that Transmission Provider warrants that the Transmission Owner Interconnection Facilities and any Merchant Transmission Upgrades described in the Specifications will be designed and constructed (to the extent that Interconnected Transmission Owner is responsible for design and construction thereof) and operated in accordance with Good Utility Practice, as such term is defined in the Operating Agreement. Interconnection Customer acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.
- 10.0 Construction of Transmission Owner Interconnection Facilities
- 10.1. Cost Responsibility. Interconnection Customer shall be responsible for and shall pay upon demand all Costs associated with the interconnection of the Customer Facility as specified in the Tariff. These Costs may include, but are not limited to,

an Attachment Facilities charge, a Local Upgrades charge, a Network Upgrades charge and other charges, as well as Costs of any Merchant Network Upgrades constructed on behalf of Interconnection Customer. A description of the facilities required and an estimate of the Costs of these facilities are included in Sections 3.0 and 4.0 of the Specifications to this ISA.

10.2. Billing and Payments. Transmission Provider shall bill the Interconnection Customer for the Costs associated with the facilities contemplated by this ISA, estimates of which are set forth in the Specifications to this ISA, and the Interconnection Customer shall pay such Costs, in accordance with Section 11 of Appendix 2 to this ISA and the applicable Interconnection Construction Service Agreement. Upon receipt of each of Interconnection Customer's payments of such bills, Transmission Provider shall reimburse the applicable Interconnected Transmission Owner. Pursuant to Section 212.4 of the Tariff, Interconnection Customer requests that Transmission Provider provide a quarterly cost reconciliation:

_____ Yes

_____ No

10.3. Contract Option. In the event that the Interconnection Customer and Interconnected Transmission Owner agree to utilize the Negotiated Contract Option provided by the Interconnection Construction Service Agreement to establish, subject to FERC acceptance, non-standard terms regarding cost responsibility, payment, billing and/or financing, the terms of Sections 10.1 and/or 10.2 of this Section 10.0 shall be superseded to the extent required to conform to such negotiated terms, as stated in a schedule attached to the parties' Interconnection Construction Service Agreement relating to interconnection of the Customer Facility.

10.4 In the event that the Interconnection Customer elects to construct some or all of the Transmission Owner Interconnection Facilities and/or of any Merchant Network Upgrades under the Option to Build of the Interconnection Construction Service Agreement, billing and payment for the Costs associated with the facilities contemplated by this ISA shall relate only to such portion of the Interconnection Facilities and/or any Merchant Network Upgrades as the Interconnected Transmission Owner is responsible for building.

11.0 Interconnection Specifications

11.1 Point of Interconnection. The Point of Interconnection shall be as identified on the one-line diagram attached as Schedule B to this ISA.

- 11.2 List and Ownership of Interconnection Facilities. The Interconnection Facilities to be constructed and ownership of the components thereof are identified in Section 3.0 of the Specifications attached to this ISA.
- 11.2A List and Ownership of Merchant Network Upgrades. If applicable, Merchant Network Upgrades to be constructed and ownership of the components thereof are identified in Section 3.0 of the Specifications attached to this ISA.
- 11.3 Ownership and Location of Metering Equipment. The Metering Equipment to be constructed, the capability of the Metering Equipment to be constructed, and the ownership thereof, are identified on the attached Schedule C to this ISA.
- 11.4 Applicable Technical Standards. The Applicable Technical Requirements and Standards that apply to the Customer Facility and the Interconnection Facilities are identified in Schedule D to this ISA.

12.0 Power Factor Requirement.

Consistent with Section 4.7 of Appendix 2 to this ISA, the power factor requirement is as follows:

[For Generation Interconnection Customers]

{The following language should be included for new large and small synchronous generation facilities that will have the Tariff specified power factor. This section does not apply if the Interconnection Request is for an incremental increase in generating capability.}

The Interconnection Customer shall design its Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.90 lagging measured at the [generator's terminals] [Point of Interconnection].

{For all wind or non-synchronous generation facilities which have entered the New Services Queue prior to May 1, 2015, include the appropriate alternative from the language below. This section does not apply if the Interconnection Request is for an incremental increase in generating capability.}

The result of the System Impact Study indicated that, for the safety and reliability of the Transmission System, no power factor requirement is required for the [wind-powered] [non-synchronous] Customer Facility.

{or}

The results of the System Impact Study require that, for the safety or reliability of the Transmission System, the Generation Interconnection Customer shall design its [wind-

powered] [non-synchronous] Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the Point of Interconnection.

{include the following language if the Interconnection Request is for an incremental increase in capacity or energy output to a synchronized generation facility}

The existing ___ MW portion of the Customer Facility shall retain its existing ability to maintain a power factor of at least 0.95 leading to 0.90 lagging measured at the [generator's terminals] [Point of Interconnection].

The increase of ___ MW to the Customer Facility associated with this ISA shall be designed with the ability to maintain a power factor of at least 1.0 (unity) to 0.90 lagging measured at the [generator's terminals] [Point of Interconnection].

{For new wind or non-synchronous generation facilities which have entered the New Service Queue on or after May 1, 2015, the following applies:}

The Generation Interconnection Customer shall design its [wind-powered] [non-synchronous] Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the generator's terminals.

{For all wind or non-synchronous generation facilities that have entered the New Services Queue prior to May 1, 2015, include the appropriate alternative from the language below for Interconnection Requests for an incremental increase in capacity or energy output to all wind or non-synchronized generation facility.}

The results of the System Impact Study indicate that, for the safety or reliability of the Transmission System, no power factor requirement is necessary for the [existing ___ MW or the increase of ___ MW associated with this ISA] [increase of ___ MW associated with this ISA, but that the existing ___ MW of the Customer Facility must retain its ability to retain a power factor of at least 0.95 leading to 0.95 lagging measured at the Point of Interconnection] [existing ___ MW of the Customer Facility but that the increase of ___ MW associated with this ISA must be designed with the ability to maintain a power factor requirement of 1.0 (unity) to 0.90 lagging measured at the Point of Interconnection].

{or}

The results of the System Impact Study indicate that, for the safety or reliability of the Transmission System, (i) the existing ___ MW portion of the Customer Facility shall retain its existing ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the Point of Interconnection and (ii) the increase of ___ MW to the Customer Facility associated with this ISA shall be designed with the ability to maintain a power factor of at least 1.0 (unity) to 0.95 lagging measured at the Point of Interconnection.

{For all wind or non-synchronous generation facilities requesting an incremental increase in capacity or energy output which have entered the New Services Queue on or after May 1, 2015, include the following requirements: }

The existing [wind-powered] [non-synchronous] __ MW portion of the Customer Facility shall retain the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the generator's terminals.

The increase of __ MW to the [wind-powered] [non-synchronous] Customer Facility associated with this ISA shall be designed with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the generator's terminals.

[For Transmission Interconnection Customers]

{The following language should be included only for new Merchant Transmission Facilities }

Transmission Interconnection Customer shall design its Merchant D.C. Transmission Facilities and/ or Controllable A.C. Merchant Transmission Facilities, to maintain a power factor at the Point of Interconnection of at least 0.95 leading and 0.95 lagging, when such Customer Facility is operating at any level within its approved operating range.

[Include section 12A.0 only when applicable, i.e., only for a facility for which Transmission Provider and Interconnected Transmission Owner deem an RTU (or equivalent) to be unnecessary]

12A.0 RTU. In accordance with Section 8.5.2 of Appendix 2 to this ISA, that provision's requirement for installation of a remote terminal unit or equivalent data collection and transfer equipment is hereby waived for purposes of this ISA.

13.0 Charges. In accordance with Sections 10 and 11 of Appendix 2 to this ISA, the Interconnection Customer shall pay to the Transmission Provider the charges applicable after Initial Operation, as set forth in Schedule E to this ISA. Promptly after receipt of such payments, the Transmission Provider shall forward such payments to the appropriate Interconnected Transmission Owner.

14.0 Third Party Beneficiaries. No third party beneficiary rights are created under this ISA, except, however, that, subject to modification of the payment terms stated in Section 10 of this ISA pursuant to the Negotiated Contract Option, payment obligations imposed on Interconnection Customer under this ISA are agreed and acknowledged to be for the benefit of the Interconnected Transmission Owner(s). Interconnection Customer expressly agrees that the Interconnected Transmission Owner(s) shall be entitled to take such legal recourse as it deems appropriate against Interconnection Customer for the payment of any Costs or charges authorized under this ISA or the Tariff with respect to

Interconnection Service for which Interconnection Customer fails, in whole or in part, to pay as provided in this ISA, the Tariff and/or the Operating Agreement.

- 15.0 Waiver. No waiver by either party of one or more defaults by the other in performance of any of the provisions of this ISA shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or different character.
- 16.0 Amendment. This ISA or any part thereof, may not be amended, modified, or waived other than by a written document signed by all parties hereto.
- 17.0 Construction With Other Parts Of The Tariff. This ISA shall not be construed as an application for service under Part II or Part III of the Tariff.
- 18.0 Notices. Any notice or request made by either party regarding this ISA shall be made, in accordance with the terms of Appendix 2 to this ISA, to the representatives of the other party and as applicable, to the Interconnected Transmission Owner(s), as indicated below:

Transmission Provider:

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403

Interconnection Customer:

Interconnected Transmission Owner:

- 19.0 Incorporation Of Other Documents. All portions of the Tariff and the Operating Agreement pertinent to the subject matter of this ISA and not otherwise made a part hereof are hereby incorporated herein and made a part hereof.
- 20.0 Addendum of Non-Standard Terms and Conditions for Interconnection Service. Subject to FERC approval, the parties agree that the terms and conditions set forth in Schedule F hereto are hereby incorporated herein by reference and be made a part of this ISA. In the event of any conflict between a provision of Schedule F that FERC has accepted and any provision of Appendix 2 to this ISA that relates to the same subject matter, the pertinent provision of Schedule F shall control.

**SPECIFICATIONS FOR
INTERCONNECTION SERVICE AGREEMENT**

**By and Among
PJM INTERCONNECTION, L.L.C.**

And

[Name of Interconnection Customer]

And

[Name of Interconnected Transmission Owner]

(PJM Queue Position # ____)

1.0 Description of [generating unit(s)] [Merchant Transmission Facilities] (the Customer Facility) to be interconnected with the Transmission System in the PJM Region:

a. Name of Customer Facility:

b. Location of Customer Facility:

c. Size in megawatts of Customer Facility:

{The following language should be included only for generating units

For Generation Interconnection Customer:

Maximum Facility Output of _____MW }

{The following language applies when a Generation Interconnection Request involves an increase of the capacity of an existing generating facility:

The stated size of the generating unit includes an increase in the Maximum Facility Output of the generating unit of __ MW over Interconnection Customer's previous interconnection. This increase is a result of the Interconnection Request associated with this Interconnection Service Agreement. }

{The following language should be included only for Merchant Transmission Facilities

For Transmission Interconnection Customer:

Nominal Rated Capability: _____MW}

d. Description of the equipment configuration:

2.0 Rights

[for Generation Interconnection Customers]

2.1 Capacity Interconnection Rights: {this section will not apply if the Customer Facility is exclusively an Energy Resource and thus is granted no CIRs; see alternate section 2.1 below}

Pursuant to and subject to the applicable terms of the Tariff, the Interconnection Customer shall have Capacity Interconnection Rights at the Point(s) of Interconnection specified in this Interconnection Service Agreement in the amount of ___ MW. {Instructions: this number is the total of the Capacity Interconnection Rights that are granted as a result of the Interconnection Request, plus any prior Capacity Interconnection Rights}

{include the following language to the extent applicable for interconnection of additional generation at an existing generating facility:}

The amount of Capacity Interconnection Rights specified above (___ MW) includes ___ MW of Capacity Interconnection Rights that the Interconnection Customer had at the same Point(s) of Interconnection prior to its Interconnection Request associated with this Interconnection Service Agreement, and ___MW of Capacity Interconnection Rights granted as a result of such Interconnection Request.

{include the following language when the CIRs are only interim and have a termination date or event:}

Interconnection Customer shall have ___ MW of Capacity Interconnection Rights for the time period from ___ to _____. These Capacity Interconnection Rights are interim and will terminate upon {explain circumstances -- e.g. interim agreement; completion of another facility, etc.}

2.1a To the extent that any portion of the Customer Facility described in section 1.0 is not a Capacity Resource with Capacity Interconnection Rights, such portion of the

Customer Facility shall be an Energy Resource. PJM reserves the right to limit total injections to the Maximum Facility Output in the event reliability would be affected by output greater than such quantity.

{this version of section 2.1 will be used in lieu of section 2.1 above when a generating facility will be an Energy Resource and therefore will not be granted any CIRs: }

[2.1 The generating unit(s) described in section 1.0 shall be an Energy Resource. Pursuant to this Interconnection Service Agreement, the generating unit will be permitted to inject ___ MW (nominal) into the system. PJM reserves the right to limit injections to this quantity in the event reliability would be affected by output greater than such quantity.]

[for Transmission Interconnection Customers]

2.1 Transmission Injection Rights: [applicable only to Merchant D.C. Transmission Facilities and/or Controllable A.C. Merchant Transmission Facilities that interconnect with a control area outside PJM]

Pursuant to Section 232 of the Tariff, Interconnection Customer shall have Transmission Injection Rights at each indicated Point of Interconnection in the following quantity(ies):

2.2 Transmission Withdrawal Rights: [applicable only to Merchant D.C. Transmission Facilities and/or Controllable A.C. Merchant Transmission Facilities that interconnect with a control area outside PJM]

Pursuant to Section 232 of the Tariff, Interconnection Customer shall have Transmission Withdrawal Rights at each indicated Point of Interconnection in the following quantity(ies):

[Include Section 2.2A only if customer is interconnecting Controllable A.C. Merchant Transmission Facilities]

2.2A Interconnection Customer is interconnecting Controllable A.C. Merchant Transmission Facilities as defined in the appended Section 1.6B of the Tariff, and has elected, pursuant to the appended Section 41.1 of the Tariff, to receive Transmission Injection Rights and Transmission Withdrawal Rights in lieu of the other applicable rights for which it may be eligible under Subpart C of Part VI of the Tariff. Accordingly, Interconnection Customer hereby agrees that the Transmission Injection Rights and Transmission Withdrawal Rights awarded to it pursuant to the Tariff and this ISA are, and throughout the duration of this ISA shall be, conditioned on Interconnection Customer's continuous operation of its Controllable A.C. Merchant Transmission Facilities in a controllable manner, i.e., in a manner effectively the same as operation of D.C. transmission facilities.

2.3 Incremental Deliverability Rights:

Pursuant to Section 235 of the Tariff, Interconnection Customer shall have Incremental Deliverability Rights at each indicated Point of Interconnection in the following quantity(ies):

2.4 Incremental Available Transfer Capability Revenue Rights:

Pursuant to Section 233 of the Tariff, Interconnection Customer shall have Incremental Available Transfer Capability Revenue Rights at each indicated Point of Interconnection in the following quantities:

2.5 Incremental Auction Revenue Rights:

Pursuant to Section 231 of the Tariff, Interconnection Customer shall have Incremental Auction Revenue Rights in the following quantities:

2.6 Incremental Capacity Transfer Rights:

Pursuant to Section 234 of the Tariff, Interconnection Customer shall have Incremental Capacity Transfer Rights between the following associated source(s) and sink(s) in the indicated quantities:

3.0 Construction Responsibility and Ownership of Interconnection Facilities

a. Interconnection Customer.

(1) Interconnection Customer shall construct and, unless otherwise indicated, shall own, the following Interconnection Facilities:

[Specify Facilities To Be Constructed]

(2) In the event that, in accordance with the Interconnection Construction Service Agreement, Interconnection Customer has exercised the Option to Build, it is hereby permitted to build in accordance with and subject to the conditions and limitations set forth in that Section, the following portions (1) of the Transmission Owner Interconnection Facilities and/or (2) of any Merchant Network Upgrades which constitute or are part of the Customer Facility:

[Specify Facilities To Be Constructed]

Ownership of the facilities built by Interconnection Customer pursuant to the Option to Build shall be as provided in the Interconnection Construction Service Agreement.

b. Interconnected Transmission Owner {or Name of Interconnected Transmission Owner if more than one Interconnected Transmission Owner }

[Specify Facilities To Be Constructed and Owned]

- c. [if applicable, include the following][Name of any additional Transmission Owner constructing facilities with which Interconnection Customer and Transmission Provider will also execute an Interconnection Construction Service Agreement]

[Specify Facilities To Be Constructed and Owned]

4.0 Subject to modification pursuant to the Negotiated Contract Option and/or the Option to Build under the Interconnection Construction Service Agreement, Interconnection Customer shall be subject to the estimated charges detailed below, which shall be billed and paid in accordance with Appendix 2, Section 11 of this ISA and the applicable Interconnection Construction Service Agreement.

4.1 Attachment Facilities Charge: \$_____

[Optional: Provide Charge and Identify Interconnected Transmission Owner]

4.2 Network Upgrades Charge: \$_____

[Optional: Provide Breakdown of Charge Based on Interconnected Transmission Owner responsibilities]

4.3 Local Upgrades Charge: \$_____

[Optional: Provide Breakdown of Charge Based on Interconnected Transmission Owner responsibilities]

4.4 Other Charges: \$_____

[Optional: Provide Breakdown of Charge Based on Interconnected Transmission Owner responsibilities]

4.5 Cost of Merchant Network Upgrades: \$_____

[Optional: Provide Breakdown of Charge Based on Interconnected Transmission Owner responsibilities]

4.6 Cost breakdown:

- \$ Direct Labor
- \$ Direct Material
- \$ Indirect Labor
- \$ Indirect Material

[Additional items for breakdown as necessary]

\$ Total

4.7 Security Amount Breakdown:

\$ Estimated Cost of Non-Direct Connection Local Upgrades and/or
Non-Direct Connection Network Upgrades

plus \$ Estimated Cost of any Merchant Network Upgrades that
Interconnected Transmission Owner is responsible for building

plus \$ Estimated cost of the work (for the first three months) on the
required Attachment Facilities, Direct Connection Local Upgrades, and Direct
Connection Network Upgrades

plus \$ Option to Build Security for Attachment Facilities, Direct
Connection Local Upgrades, and Direct Connection Network Upgrades (including
Cancellation Costs)

less \$ _____ Costs already paid by Interconnection Customer

\$ Total Security required with ISA

APPENDICES:

- **APPENDIX 1 - DEFINITIONS**
- **APPENDIX 2 - STANDARD TERMS AND CONDITIONS FOR INTERCONNECTIONS**

SCHEDULES:

- **SCHEDULE A - CUSTOMER FACILITY LOCATION/SITE PLAN**
- **SCHEDULE B - SINGLE-LINE DIAGRAM**
- **SCHEDULE C - LIST OF METERING EQUIPMENT**
- **SCHEDULE D - APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS**
- **SCHEDULE E - SCHEDULE OF CHARGES**
- **SCHEDULE F - SCHEDULE OF NON-STANDARD TERMS & CONDITIONS**
- **SCHEDULE G - INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS**
- **SCHEDULE H - INTERCONNECTION REQUIREMENTS FOR A WIND GENERATION FACILITY**

4.7 Reactive Power

4.7.1 Reactive Power Design Criteria

4.7.1.1 New Facilities:

For all new generating facilities to be interconnected pursuant to the Tariff, other than wind-powered and other non-synchronous generation facilities, the Generation Interconnection Customer shall design its Customer Facility to maintain a composite power delivery at continuous rated power output at a power factor of at least 0.95 leading to 0.90 lagging. For all new wind-powered and other non-synchronous generation facilities the Generation Interconnection Customer shall design its Customer Facility with the ability to maintain a composite power delivery at continuous rated power output at a power factor of at least 0.95 leading to 0.95 lagging. For all wind-powered and other non-synchronous generation facilities entering the New Service Queue on or after May 1, 2015, the power factor requirement shall be measured at the generator's terminals. For new generation resources of more than 20 MW, other than wind-powered and other non-synchronous generating facilities, the power factor requirement shall be measured at the generator's terminals. For new generation resources of 20 MW or less, and all wind-powered and other non-synchronous generation facilities entering the New Service Queue prior to May 1, 2015, the power factor requirement shall be measured at the Point of Interconnection. Any different reactive power design criteria that Transmission Provider determines to be appropriate for a wind-powered or other non-synchronous generation facility shall be stated in the Interconnection Service Agreement. A Transmission Interconnection Customer interconnecting Merchant D.C. Transmission Facilities and/ or Controllable A.C. Merchant Transmission Facilities shall design its Customer Facility to maintain a power factor at the Point of Interconnection of at least 0.95 leading and 0.95 lagging, when the Customer Facility is operating at any level within its approved operating range.

4.7.1.2 Increases in Generating Capacity or Energy Output:

All increases in the capacity or energy output of any generation facility interconnected with the Transmission System, other than wind-powered and other non-synchronous generating facilities, shall be designed with the ability to maintain a composite power delivery at continuous rated power output at a power factor for all incremental MW of capacity or energy output, of at least 1.0 (unity) to 0.90 lagging. Wind-powered generation facilities and other non-synchronous generation facilities entering the New Service Queue on or after May 1, 2015, shall be designed with the ability to maintain a composite power delivery at continuous rated power output at a power factor for all incremental MW of capacity or energy output, of at least 0.95 leading to 0.95 lagging, while those entering the New Service Queue prior to May 1, 2015 shall be designed with the ability to maintain a composite power delivery at continuous rated power out at a power factor for all incremental MW of capacity of energy output of at least 1.0 (unity) to 0.95 lagging. The power factor requirement associated with increases in capacity or energy output of more than 20 MW to synchronous generation facilities interconnected with the Transmission System shall be measured at the generator's terminals. The power factor requirement associated with increases in capacity or energy output of 20 MW or less to synchronous generation facilities and

all increases to wind-powered and non-synchronous generation facilities interconnected to the Transmission System shall be measured at the Point of Interconnection.

4.7.2 Obligation to Supply Reactive Power:

Interconnection Customer agrees, as and when so directed by Transmission Provider or when so directed by the Interconnected Transmission Owner acting on behalf or at the direction of Transmission Provider, to operate the Customer Facility to produce reactive power within the design limitations of the Customer Facility pursuant to voltage schedules, reactive power schedules or power factor schedules established by Transmission Provider or, as appropriate, the Interconnected Transmission Owner. Transmission Provider shall maintain oversight over such schedules to ensure that all sources of reactive power in the PJM Region, as applicable, are treated in an equitable and not unduly discriminatory manner. Interconnection Customer agrees that Transmission Provider and the Interconnected Transmission Owner, acting on behalf or at the direction of Transmission Provider, may make changes to the schedules that they respectively establish as necessary to maintain the reliability of the Transmission System.

4.7.3 Deviations from Schedules:

In the event that operation of the Customer Facility of an Interconnection Customer causes the Transmission System or the Interconnected Transmission Owner's facilities to deviate from appropriate voltage schedules and/or reactive power schedules as specified by Transmission Provider or the Interconnected Transmission Owner's operations control center (acting on behalf or at the direction of Transmission Provider), or that otherwise is inconsistent with Good Utility Practice and results in an unreasonable deterioration of the quality of electric service to other customers of Transmission Provider or the Interconnected Transmission Owner, the Interconnection Customer shall, upon discovery of the problem or upon notice from Transmission Provider or the Interconnected Transmission Owner, acting on behalf or at the direction of Transmission Provider, take whatever steps are reasonably necessary to alleviate the situation at its expense, in accord with Good Utility Practice and within the reactive capability of the Customer Facility. In the event that the Interconnection Customer does not alleviate the situation within a reasonable period of time following Transmission Provider's or the Interconnected Transmission Owner's notice thereof, the Interconnected Transmission Owner, with Transmission Provider's approval, upon notice to the Interconnection Customer and at the Interconnection Customer's expense, may take appropriate action, including installation on the Transmission System of power factor correction or other equipment, as is reasonably required, consistent with Good Utility Practice, to remedy the situation cited in Transmission Provider's or the Interconnected Transmission Owner's notice to the Interconnection Customer under this section.

4.7.4 Payment for Reactive Power:

Any payments to the Interconnection Customer for reactive power shall be in accordance with Schedule 2 of the Tariff.

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

SCHEDULE H

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 H 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 Appendix 2 of this ISA and 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 H 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 H LVRT standard are exempt from meeting the Schedule H LVRT standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule H 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 H LVRT standard are exempt from meeting the Schedule H LVRT Standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule H 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 FOR THIS ISA]

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

SCHEDULE H

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}

A. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size.

B. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size.

C. 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.

D. 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)
- Atmosphere 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:

[SPECIFY AGREED UPON METEOROLOGICAL AND FORCED OUTAGE DATA REQUIREMENTS]

[OR]

[NOT APPLICABLE FOR THIS ISA]

ATTACHMENT O-1

**FORM OF
INTERIM INTERCONNECTION SERVICE AGREEMENT**

**By and Among
PJM Interconnection, L.L.C.
and**

and

(PJM Queue Position #____)

- 1.0 This Interim Interconnection Service Agreement (“Interim ISA”), including the Specifications attached hereto and incorporated herein, is entered into by and among PJM Interconnection, L.L.C. (“Transmission Provider” or “PJM”), [_____] (“Interconnection Customer” [OPTIONAL: or [“short name”]]), and [_____] (“Interconnected Transmission Owner” [OPTIONAL: or [“short name”]]). [Use as/when applicable: This Interim ISA supersedes the _____ {insert details to identify the agreement being superseded, such as whether it is an Interim Interconnection Service Agreement, Interconnection Service Agreement, or Interconnection Agreement, the effective date of the agreement, the service agreement number designation, and the FERC docket number, if applicable, for the agreement being superseded.}]]
- 2.0 Attached are Specifications for the Customer Facility that Interconnection Customer proposes to interconnect to the Transmission Provider’s Transmission System. Interconnection Customer represents and warrants that, upon completion of their construction, it will own or control the facilities identified in the Specifications attached hereto and made a part hereof. In the event that Interconnection Customer will not own the facilities, Interconnection Customer represents and warrants that it is authorized by the owners of such facilities to enter into this Interim ISA and to represent such control.
- 3.0 In order to advance the completion of its interconnection under the PJM Open Access Transmission Tariff (“Tariff”), Interconnection Customer has requested an Interim ISA and Transmission Provider has determined that Interconnection Customer is eligible under the Tariff to obtain this Interim ISA.
- 4.0 (a) In accord with Section 211 of the Tariff, Interconnection Customer, on or before the effective date of this Interim ISA, shall provide Transmission Provider (for the benefit of the Interconnected Transmission Owner) with a letter of credit from an agreed provider or other form of security reasonably acceptable to Transmission Provider in the amount of \$ _____, which amount equals the estimated costs, determined in

accordance with Section 217 of the Tariff, of acquiring, designing, constructing and/or installing the facilities described in section 3.0 of the Attached Specifications. Should Interconnection Customer fail to provide such security in the amount or form required, this Interim ISA shall be terminated. Interconnection Customer acknowledges (1) that it will be responsible for the actual costs of the facilities described in the Specifications, whether greater or lesser than the amount of the payment security provided under this section, and (2) that the payment security under this section does not include any additional amounts that it will owe in the event that it executes a final Interconnection Service Agreement, as described in section 7.0(a) below.

(b) Interconnection Customer acknowledges (1) that the purpose of this Interim ISA is to expedite, at Interconnection Customer's request, the acquisition, design, construction and/or installation of certain materials and equipment, as described in the Specifications, necessary to interconnect its proposed facilities with Transmission Provider's Transmission System; and (2) that Transmission Provider's Interconnection Studies related to such facilities have not been completed, but that the [identify completed feasibility and/or system impact study(ies)], dated [_____], that included Interconnection Customer's project sufficiently demonstrated, in Interconnection Customer's sole opinion, the necessity of facilities additions to the Transmission System to accommodate Interconnection Customer's project to warrant, in Interconnection Customer's sole judgment, its request that the Interconnected Transmission Owner acquire, design, construct and/or install the equipment indicated in the Specifications for use in interconnecting Interconnection Customer's project with the Transmission System.

5.0 This Interim ISA shall be effective on the date it is executed by all Interconnection Parties and shall terminate upon the execution and delivery by Interconnection Customer and Transmission Provider of the final Interconnection Service Agreement described in section 7.0(a) below, or on such other date as mutually agreed upon by the parties, unless earlier terminated in accordance with the Tariff.

6.0 In addition to the milestones stated in Section 212.5 of the Tariff, during the term of this Interim ISA, Interconnection Customer shall ensure that its generation project meets each of the following development milestones:

[SPECIFY MILESTONES]

OR

[NOT APPLICABLE FOR THIS INTERIM ISA]

OR

[MILESTONE REQUIREMENTS WILL BE SPECIFIED IN THE FURTHER INTERCONNECTION SERVICE AGREEMENT DESCRIBED IN SECTION 7.0(a)]

7.0 (a) Transmission Provider and the Interconnected Transmission Owner agree to provide for the acquisition, design, construction and/or installation of the facilities identified, and to the extent described, in Section 3.0 of the Specifications in accordance with Part IV of the Tariff, as amended from time to time, and this Interim ISA. Except to the extent for which the Specifications provide for interim interconnection rights for the Interconnection Customer, the parties agree that (1) this Interim ISA shall not provide for or authorize Interconnection Service for the Interconnection Customer, and (2) Interconnection Service will commence only after Interconnection Customer has entered into a final Interconnection Service Agreement with Transmission Provider and the Interconnection Transmission Owner (or, alternatively, has exercised its right to initiate dispute resolution or to have the final Interconnection Service Agreement filed with the FERC unexecuted) after completion of the Facilities Study related to Interconnection Customer's Interconnection Request and otherwise in accordance with the Tariff. The final Interconnection Service Agreement may further provide for construction of, and payment for, transmission facilities additional to those identified in the attached Specifications. Should Interconnection Customer fail to enter into such final Interconnection Service Agreement (or, alternatively, to initiate dispute resolution or request that the agreement be filed with the FERC unexecuted) within the time prescribed by the Tariff, Transmission Provider shall have the right, upon providing written notice to Interconnection Customer, to terminate this Interim ISA.

(b) In the event that Interconnection Customer decides not to interconnect its proposed facilities, as described in Section 1.0 of the Specifications to the Transmission System, it shall immediately give Transmission Provider written notice of its determination. Interconnection Customer shall be responsible for the Costs incurred pursuant to this Interim ISA by Transmission Provider and/or by the Interconnected Transmission Owner (1) on or before the date of such notice, and (2) after the date of such notice, if the costs could not reasonably be avoided despite, or were incurred by reason of, Interconnection Customer's determination not to interconnect. Interconnection Customer's liability under the preceding sentence shall include all Cancellation Costs in connection with the acquisition, design, construction and/or installation of the facilities described in section 3.0 of the Specifications. In the event the Interconnected Transmission Owner incurs Cancellation Costs, it shall provide the Transmission Provider, with a copy to the Interconnection Customer, with a written demand for payment and with reasonable documentation of such Cancellation Costs. Within 60 days after the date of Interconnection Customer's notice, Transmission Provider shall provide an accounting of, and the appropriate party shall make any payment to the other that is necessary to resolve, any difference between (i) Interconnection Customer's cost responsibility under this Interim ISA and the Tariff for Costs, including Cancellation Costs, of the facilities described in section 3.0 of the Specifications and (ii) Interconnection Customer's previous payments under this Interim ISA. Notwithstanding the foregoing, however, Transmission Provider shall not be obligated to make any payment that the preceding sentence requires it to make unless and until the Interconnected Transmission Owner has returned to it the portion of Interconnection Customer's previous payments that Transmission Provider must pay under that sentence.

This Interim ISA shall be deemed to be terminated upon completion of all payments required under this paragraph (b).

(c) Disposition of the facilities related to this Interim ISA after receipt of Interconnection Customer's notice of its determination not to interconnect shall be decided in accordance with Section 211.1 of the Tariff.

- 8.0 Interconnection Customer agrees to abide by all rules and procedures pertaining to generation in the PJM Region, including but not limited to the rules and procedures concerning the dispatch of generation set forth in the Operating Agreement and the PJM Manuals.
- 9.0 In analyzing and preparing the Facilities Study or the System Impact Study if no Facilities Study is required, and in designing and constructing the Attachment Facilities, Local Upgrades and/or Network Upgrades described in the Specifications attached to this Interim ISA, Transmission Provider, the Interconnected Transmission Owner(s), and any other subcontractors employed by Transmission Provider have had to, and shall have to, rely on information provided by Interconnection Customer and possibly by third parties and may not have control over the accuracy of such information. Accordingly, NEITHER TRANSMISSION PROVIDER, THE INTERCONNECTED TRANSMISSION OWNER(S), NOR ANY OTHER SUBCONTRACTORS EMPLOYED BY TRANSMISSION PROVIDER OR INTERCONNECTED TRANSMISSION OWNER MAKES ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER ARISING BY OPERATION OF LAW, COURSE OF PERFORMANCE OR DEALING, CUSTOM, USAGE IN THE TRADE OR PROFESSION, OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE ACCURACY, CONTENT, OR CONCLUSIONS OF THE FACILITIES STUDY OR THE SYSTEM IMPACT STUDY IF NO FACILITIES STUDY IS REQUIRED OR OF THE ATTACHMENT FACILITIES, LOCAL UPGRADES AND/OR NETWORK UPGRADES, PROVIDED, HOWEVER, that Transmission Provider warrants that the transmission facilities described in Section 3.0 of the Specifications will be designed, constructed and operated in accordance with Good Utility Practice, as such term is defined in the Operating Agreement. Interconnection Customer acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.
- 10.0 Within 120 days after the Interconnected Transmission Owner completes acquisition, design, construction and/or installation of the facilities described in Section 3.0 of the Specifications, Transmission Provider shall provide Interconnection Customer with an accounting of, and the appropriate party shall make any payment to the other that is necessary to resolve, any difference between (a) Interconnection Customer's responsibility under this Interim ISA and the Tariff for the actual cost of such equipment, and (b) Interconnection Customer's previous aggregate payments to Transmission Provider and the Interconnected Transmission Owner hereunder. Notwithstanding the

foregoing, however, Transmission Provider shall not be obligated to make any payment that the preceding sentence requires it to make unless and until the Interconnected Transmission Owner has returned to it the portion of Interconnection Customer's previous payments that Transmission Provider must pay under that sentence.

- 11.0 No third party beneficiary rights are created under this Interim ISA, provided, however, that payment obligations imposed on Interconnection Customer hereunder are agreed and acknowledged to be for the benefit of the Interconnected Transmission Owner actually performing the services associated with the interconnection of the generating facilities and any associated upgrades of other facilities.
- 12.0 No waiver by either party of one or more defaults by the other in performance of any of the provisions of this Interim ISA shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or different character.
- 13.0 This Interim ISA or any part thereof, may not be amended, modified, assigned, or waived other than by a writing signed by all parties hereto.
- 14.0 This Interim ISA shall be binding upon the parties hereto, their heirs, executors, administrators, successors, and assigns.
- 15.0 This Interim ISA shall not be construed as an application for service under Part II or Part III of the Tariff.
- 16.0 Any notice or request made to or by either Party regarding this Interim ISA shall be made to the representative of the other Party as indicated below.

Transmission Provider

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403

Interconnection Customer

[CONTACT NAME/ADDRESS]

Interconnected Transmission Owner

[CONTACT NAME/ADDRESS]

- 17.0 All portions of the Tariff and the Operating Agreement pertinent to the subject of this Interim ISA are incorporated herein and made a part hereof.
- 18.0 This Interim ISA is entered into pursuant to Part IV of the Tariff.

19.0 Neither party shall be liable for consequential, incidental, special, punitive, exemplary or indirect damages, lost profits or other business interruption damages, by statute, in tort or contract, under any indemnity provision or otherwise with respect to any claim, controversy or dispute arising under this Interim ISA.

20.0 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 20.1, Schedule A to this Interim ISA shall set forth the Interconnection Customer's agreement to conform with the IRS safe harbor provisions for non-taxable status.

20.1 Tax Liability

20.1.1 Safe Harbor Provisions:

This Section 20.1.1 is applicable only to Generation Interconnection Customers. Provided that Interconnection Customer agrees to conform to all requirements of the Internal Revenue Service ("IRS") (e.g., the "safe harbor" provisions of IRS Notices 2001-82 and 88-129) that would confer nontaxable status on some or all of the transfer of property, including money, by Interconnection Customer to the Interconnected Transmission Owner for payment of the Costs of construction of the Transmission Owner Interconnection Facilities, the Interconnected Transmission Owner, based on such agreement and on current law, shall treat such transfer of property to it as nontaxable income and, except as provided in Section 20.1.2 below, shall not include income taxes in the Costs of Transmission Owner Interconnection Facilities that are payable by Interconnection Customer under the Interim Interconnection Service Agreement, the Interconnection Service Agreement or the Interconnection Construction Service Agreement. Interconnection Customer shall document its agreement to conform to IRS requirements for such non-taxable status in the Interconnection Service Agreement, the Interconnection Construction Service Agreement, and/or the Interim Interconnection Service Agreement.

20.1.2 Tax Indemnity:

Interconnection Customer shall indemnify the Interconnected Transmission Owner for any costs that Interconnected Transmission Owner incurs in the event that the IRS and/or a state department of revenue (State) determines that the property, including money, transferred by Interconnection Customer to the Interconnected Transmission Owner with respect to the construction of the Transmission Owner Interconnection Facilities and/or any Merchant Network Upgrades is taxable income to the Interconnected Transmission Owner. Interconnection Customer shall pay to the Interconnected Transmission Owner, on demand, the amount of any income taxes that the IRS or a State assesses to the Interconnected Transmission Owner in connection with such transfer of property and/or money, plus any applicable interest and/or penalty charged to the Interconnected Transmission Owner. In the event that the Interconnected Transmission Owner chooses to contest such assessment, either at the request of Interconnection Customer or on its own behalf, and prevails in reducing or eliminating the tax, interest and/or penalty

assessed against it, the Interconnected Transmission Owner shall refund to Interconnection Customer the excess of its demand payment made to the Interconnected Transmission Owner over the amount of the tax, interest and penalty for which the Interconnected Transmission Owner is finally determined to be liable. Interconnection Customer's tax indemnification obligation under this section shall survive any termination of the Interim Interconnection Service Agreement or Interconnection Construction Service Agreement.

20.1.3 Taxes Other Than Income Taxes:

Upon the timely request by Interconnection Customer, and at Interconnection Customer's sole expense, the Interconnected Transmission Owner shall appeal, protest, seek abatement of, or otherwise contest any tax (other than federal or state income tax) asserted or assessed against the Interconnected Transmission Owner for which Interconnection Customer may be required to reimburse Transmission Provider under the terms of this Interim Interconnection Service Agreement or Part VI of the Tariff. Interconnection Customer shall pay to the Interconnected Transmission Owner on a periodic basis, as invoiced by the Interconnected Transmission Owner, the Interconnected Transmission Owner's documented reasonable costs of prosecuting such appeal, protest, abatement, or other contest. Interconnection Customer and the Interconnected Transmission Owner shall cooperate in good faith with respect to any such contest. Unless the payment of such taxes is a prerequisite to an appeal or abatement or cannot be deferred, no amount shall be payable by Interconnection Customer to the Interconnected Transmission Owner for such contested taxes until they are assessed by a final, non-appealable order by any court or agency of competent jurisdiction. In the event that a tax payment is withheld and ultimately due and payable after appeal, Interconnection Customer will be responsible for all taxes, interest and penalties, other than penalties attributable to any delay caused by the Interconnected Transmission Owner.

20.1.4 Income Tax Gross-Up

20.1.4.1 Additional Security:

In the event that Interconnection Customer does not provide the safe harbor documentation required under Section 20.1.1 prior to execution of this Interim Interconnection Service Agreement, within 15 days after such execution, Transmission Provider shall notify Interconnection Customer in writing of the amount of additional Security that Interconnection Customer must provide. The amount of Security that a Transmission Interconnection Customer must provide initially pursuant to this Interim Interconnection Service Agreement shall include any amounts described as additional Security under this Section 20.1.4 regarding income tax gross-up.

20.1.4.2 Amount:

The required additional Security shall be in an amount equal to the amount necessary to gross up fully for currently applicable federal and state income taxes the estimated Costs of Local Upgrades and Network Upgrades for which Interconnection Customer previously provided

Security. Accordingly, the additional Security shall equal the amount necessary to increase the total Security provided to the amount that would be sufficient to permit the Interconnected Transmission Owner to receive and retain, after the payment of all applicable income taxes ("Current Taxes") and taking into account the present value of future tax deductions for depreciation that would be available as a result of the anticipated payments or property transfers (the "Present Value Depreciation Amount"), an amount equal to the estimated Costs of Local Upgrades and Network Upgrades for which Interconnection Customer is responsible under the Interconnection Service Agreement. For this purpose, Current Taxes shall be computed based on the composite federal and state income tax rates applicable to the Interconnected Transmission Owner at the time the additional Security is received, determined using the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting the Interconnected Transmission Owner's anticipated tax depreciation deductions associated with such payments or property transfers by its current weighted average cost of capital.

20.1.4.3 Time for Payment:

Interconnection Customer must provide the additional Security, in a form and with terms as required by Sections 212.4 of the Tariff, within 15 days after its receipt of Transmission Provider's notice under this section. The requirement for additional Security under this section shall be treated as a milestone included in the Interconnection Service Agreement pursuant to Section 212.5 of the Tariff.

20.1.5 Tax Status:

Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Interim Interconnection Service Agreement or the Tariff is intended to adversely affect any Interconnected Transmission Owner's tax exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

21.0 Addendum of Interconnection Requirement for all Wind or Non-synchronous Generation Facilities. To the extent required, Schedule B to this Interim ISA sets forth interconnection requirements for all wind or non-synchronous generation facilities and is hereby incorporated by reference and made a part of this Interim ISA.

22.0 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.

IN WITNESS WHEREOF, Transmission Provider, Interconnection Customer and Interconnected Transmission Owner have caused this Interim ISA to be executed by their respective authorized officials.

(PJM Queue Position #___)

Transmission Provider: PJM Interconnection, L.L.C.

By: _____
Name Title Date

Printed name of signer: _____

Interconnection Customer: [Name of Party]

By: _____
Name Title Date

Printed name of signer: _____

Interconnected Transmission Owner: [Name of Party]

By: _____
Name Title Date

Printed name of signer: _____

**SPECIFICATIONS FOR
INTERIM INTERCONNECTION SERVICE AGREEMENT**

**By and Among
PJM INTERCONNECTION, L.L.C.
And**

And

(PJM Queue Position #___)

1.0 Description of Customer Facility to be interconnected with the Transmission System in the PJM Region:

a. Name of Customer Facility:

b. Location of Customer Facility:

c. Size in megawatts of Customer Facility:

{The following language should be included only for generating units

For Generation Interconnection Customer:

Maximum Facility Output of _____MW }

{The following language applies when a Generation Interconnection Request involves an increase of the capacity of an existing generating facility: The stated size of the generating unit includes an increase in the Maximum Facility Output of the generating unit of ___ MW over Interconnection Customer's previous interconnection. This increase is a result of the Interconnection Request associated with this Interim Interconnection Service Agreement.}

{The following language should be included only for Merchant Transmission Facilities for Transmission Interconnection Customer:

Nominal Rated Capability: _____MW }

2.0 Interconnection Rights: Interconnection Customer shall obtain Capacity Interconnection Rights in accordance with Subpart C of Part VI of the Tariff at the location specified in section 1.0b upon its execution of the final Interconnection Service Agreement described in section 7.0(a) of this Interim ISA. **[if applicable, add: ,** provided, however, that pending execution of the final Interconnection Service Agreement, Interconnection Customer shall be entitled to the following interim rights:

Pursuant to and subject to the applicable terms of the Tariff, Interconnection Customer shall have Capacity Interconnection Rights as a Capacity Resource at the Point of Interconnection specified in this Interim ISA in the amount of __ MW, for the time period of _____ to _____. To the extent that the Customer Facility described in section 1.0 is not a Capacity Resource with Capacity Interconnection Rights, such Customer Facility shall be an Energy Resource. Pursuant to this Interim ISA, the Customer Facility will be permitted to inject __ MW (nominal) into the system. PJM reserves the right to limit injections to this quantity in the event reliability would be affected by output greater than such quantity.]

3.0.A Facilities to be acquired, designed, constructed and/or installed by the Interconnected Transmission Owner under this Interim ISA:

3.0.B Facilities to be acquired, designed, constructed and/or installed by the Interconnection Customer under this Interim ISA:

4.0 Interconnection Customer shall be subject to the charges detailed below:

4.1 Attachment Facilities Charge:

4.2 Local Upgrades Charge:

4.3 Network Upgrades Charge:

4.4 Cost Breakdown:

\$	Direct Labor
\$	Direct Material
\$	Indirect Labor
\$	Indirect Material
\$	Total

SCHEDULES: {Note: Schedules A and B are required, others are optional; add if applicable and desirable for clarity.}

SCHEDULE A – INTERCONNECTION CUSTOMER’S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS

SCHEDULE B - INTERCONNECTION REQUIREMENTS FOR A WIND GENERATION FACILITY

SCHEDULE ___ - CUSTOMER FACILITY LOCATION/SITE PLAN

SCHEDULE ___ - SINGLE-LINE DIAGRAM

SCHEDULE A

INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS

{Include the appropriate language from the alternatives below: }

{Include the following language if not required:}
Not Required.

[OR]

{Include the following language if applicable to Interconnection Customer: }

As provided in Section 20.1 of this Interim ISA and subject to the requirements thereof, Interconnection Customer represents that it meets all qualifications and requirements as set forth in Section 118(a) and 118(b) of the Internal Revenue Code of 1986, as amended and interpreted by Notice 88-129, 1988-2 C.B. 541, and as amplified and modified in Notices 90-60, 1990-2 C.B. 345, and 2001-82, 2001-2 C.B. 619 (the "IRS Notices"). Interconnection Customer agrees to conform with all requirements of the safe harbor provisions specified in the IRS Notices, as they may be amended, as required to confer non-taxable status on some or all of the transfer of property, including money, by Interconnection Customer to Interconnected Transmission Owner with respect to the payment of the Costs of construction and installation of the Transmission Owner Interconnection Facilities and/or Merchant Network Upgrades specified in this Interim ISA.

Nothing in Interconnection Customer's agreement pursuant to this Schedule A shall change Interconnection Customer's indemnification obligations under Section 20.1 of this Interim ISA.

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

SCHEDULE B

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 B 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 B 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 pre-fault 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 B LVRT standard are exempt from meeting the Schedule B LVRT standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule B 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 B LVRT standard are exempt from meeting the Schedule B LVRT Standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Schedule B LVRT Standard.

ii. Power Factor Design Criteria (Reactive Power)

The power factor requirements for wind generation facilities set forth in section 4.7.1 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 FOR THIS INTERIM ISA]

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

SCHEDULE B

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}

A. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size.

B. 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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size.

C. 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.

D. 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)
- Atmosphere 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:

[SPECIFY AGREED UPON METEOROLOGICAL AND FORCED OUTAGE DATA REQUIREMENTS]

[OR]

[NOT APPLICABLE FOR THIS INTERIM ISA]

ATTACHMENT P

**FORM OF
INTERCONNECTION CONSTRUCTION SERVICE AGREEMENT**

**By and Among
PJM Interconnection, L.L.C.**

And

[Name of Interconnection Customer]

And

[Name of Interconnected Transmission Owner]

(PJM Queue Position #___)

- 1.0 Parties. This Interconnection Construction Service Agreement (“CSA”) including the Schedules and Appendices attached hereto and incorporated herein, is entered into by and between PJM Interconnection, L.L.C. (“Transmission Provider” or “PJM”) and the following Interconnection Customer and Interconnected Transmission Owner:

Interconnection Customer:

[full name] [OPTIONAL: (also referred to as “[short name”])]_____

Interconnected Transmission Owner:

[full name] [OPTIONAL: (also referred to as “[short name”])]_____

All capitalized terms herein shall have the meanings set forth in the appended definitions of such terms as stated in Part I of the Tariff.

- 2.0 Authority. This CSA is entered into pursuant to Part VI of the Tariff. The standard terms and conditions for construction are attached at Appendix 2 to this CSA and are hereby specifically incorporated as provisions of this agreement. Transmission Provider, the Interconnection Customer and the Interconnected Transmission Owner agree to and assume all of their respective rights and obligations as set forth in the standard terms and conditions for construction in Appendix 2 to this CSA. Further, Interconnection Customer and the Interconnected Transmission Owner each agrees to and assumes all of the rights and obligations of a Constructing Entity with respect to the facilities that each of them is responsible for constructing, as set forth in this CSA.

- 3.0 Customer Facility. This CSA specifically relates to the following Customer Facility at the following location:

a. Name of Customer Facility:

b. Location of Customer Facility:

4.0 Effective Date and Term.

4.1 Effective Date. This CSA shall become effective on the later of (i) the date the agreement has been executed by all Construction Parties, or (ii) the date of Interconnection Customer's delivery of Security to the Transmission Provider, provided, however, that if the CSA is filed with the FERC unexecuted, the Effective Date shall be the date specified by the FERC. The Interconnected Transmission Owner shall have no obligation to begin construction of the Transmission Owner Interconnection Facilities prior to the Effective Date. Construction shall commence as provided in the Schedule of Work set forth in Schedule J to this CSA.

4.2 Term. This CSA shall continue in full force and effect from the Effective Date until the termination thereof pursuant to Section 14 of Appendix 2 to this CSA.

4.3 Survival. This CSA shall continue in effect after termination to the extent necessary to provide for final billings and payments, including billings and payments pursuant to Section 9 and/or Section 14 of Appendix 2 to this CSA, and to permit the determination and enforcement of liability and indemnification obligations arising from acts or events that occurred while the CSA was in effect.

5.0 Construction Responsibility for

a. Customer Interconnection Facilities. Interconnection Customer is responsible for designing and constructing the Customer Interconnection Facilities described on the attached Schedule G to this CSA.

b. Construction of Transmission Owner Interconnection Facilities.

1. The Transmission Owner Interconnection Facilities regarding which Interconnected Transmission Owner shall be the Constructing Entity are described on the attached Schedule C to this CSA.

2. Election of Construction Option. Specify below whether the Constructing Entities have mutually agreed to construction of the Transmission Owner Interconnection Facilities that will be built by the Interconnected Transmission Owner pursuant to the Standard Option or the Negotiated Contract Option. (See Section 3.2 of the Appendix 2 to this CSA.)

_____Standard Option.

_____Negotiated Contract Option.

If the parties have mutually agreed to use the Negotiated Contract Option, the permitted, negotiated terms on which they have agreed and which are not already set forth as part of the Scope of Work and/or Schedule of Work attached to this CSA as Schedules I and J, respectively, shall be as set forth in Schedule H attached to this CSA.

3. Exercise of Option to Build. Has Interconnection Customer timely exercised the Option to Build in accordance with Section 3.2.3 of Appendix 2 to this CSA with respect to some or all of the Transmission Owner Interconnection Facilities?

_____ Yes

_____ No

If Yes is indicated, Interconnection Customer shall build, in accordance with and subject to the conditions and limitations set forth in Section 3.2.3 of Appendix 2 to this CSA, those portions of the Transmission Owner Interconnection Facilities described on Schedule D attached to this CSA.

[include c. below only if applicable to a Merchant Transmission interconnection:]

- c. Construction of Merchant Network Upgrades.

1. The Merchant Network Upgrades regarding which Interconnected Transmission Owner shall be the Constructing Entity are described on the attached Schedule E to this CSA.

2. Election of Construction Option. Specify below whether the Constructing Entities have mutually agreed to construction of the Merchant Network Upgrades that will be built by the Interconnected Transmission Owner pursuant to the Standard Option or the Negotiated Contract Option. (See Section 3.2 of Appendix 2 to this CSA.)

_____ Standard Option.

_____ Negotiated Contract Option.

If the parties have mutually agreed to use the Negotiated Contract Option, the permitted, negotiated terms on which they have agreed and which are not already set forth as part of the Scope of Work and/or Schedule of Work attached to this CSA as Schedules I and J, respectively, shall be as set forth in Schedule H attached to this CSA.

3. Exercise of Option to Build. Has Interconnection Customer timely exercised the Option to Build in accordance with Section 3.2.3 of Appendix 2 to this CSA with respect to some or all of the Merchant Network Upgrades?

_____ Yes

_____ No

If Yes is indicated, Interconnection Customer shall build, in accordance with and subject to the conditions and limitations set forth in Section 3.2.3 of Appendix 2 to this CSA, those portions of the Merchant Network Upgrades described on Schedule F attached to this CSA.

6.0 [Reserved].

7.0 Scope of Work. The Scope of Work for all construction pursuant to this CSA shall be as set forth in the attached Schedule I, provided, however, that the scope of work is subject to change in accordance with Transmission Provider's scope change process for interconnection projects as set forth in the PJM Manuals.

8.0 Schedule of Work. The Schedule of Work for all construction pursuant to this CSA shall be as set forth in the attached Schedule J, provided, however, that such schedule is subject to change in accordance with Section 3.3 of Appendix 2 to this CSA.

9.0 [Reserved.]

10.0 Notices. Any notice or request made to or by any party regarding this CSA shall be made in accordance with the standard terms and conditions for construction set forth in Appendix 2 to this CSA to the representatives of the other parties, as indicated below:

Transmission Provider:

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403

Interconnection Customer:

Interconnected Transmission Owner:

11.0 Waiver. No waiver by any party of one or more defaults by another in performance of any of the provisions of this CSA shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or different character.

Interconnection Customer: [Name of Party]

By: _____
Name Title Date

Printed name of signer: _____

Interconnected Transmission Owner: [Name of Party]

By: _____
Name Title Date

Printed name of signer: _____

APPENDICES:

- **APPENDIX 1 - DEFINITIONS**
- **APPENDIX 2 - STANDARD CONSTRUCTION TERMS AND CONDITIONS**

SCHEDULES:

- **SCHEDULE A - SITE PLAN**
- **SCHEDULE B - SINGLE-LINE DIAGRAM OF INTERCONNECTION FACILITIES**
- **SCHEDULE C - TRANSMISSION OWNER INTERCONNECTION**

FACILITIES TO BE BUILT BY INTERCONNECTED TRANSMISSION OWNER

- **SCHEDULE D - TRANSMISSION OWNER INTERCONNECTION FACILITIES TO BE BUILT BY INTERCONNECTION CUSTOMER PURSUANT TO OPTION TO BUILD**
- **SCHEDULE E - MERCHANT NETWORK UPGRADES TO BE BUILT BY INTERCONNECTED TRANSMISSION OWNER**
- **SCHEDULE F - MERCHANT NETWORK UPGRADES TO BE BUILT BY INTERCONNECTION CUSTOMER PURSUANT TO OPTION TO BUILD**
- **SCHEDULE G - CUSTOMER INTERCONNECTION FACILITIES**

- **SCHEDULE H - NEGOTIATED CONTRACT OPTION TERMS**
- **SCHEDULE I - SCOPE OF WORK**
- **SCHEDULE J - SCHEDULE OF WORK**
- **SCHEDULE K - APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS**
- **SCHEDULE L - INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS**
- **SCHEDULE M - SCHEDULE OF NON-STANDARD TERMS AND CONDITIONS**
- **SCHEDULE N - INTERCONNECTION REQUIREMENTS FOR A WIND GENERATION FACILITY**

{Include the following Schedule N, as applicable, 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 pre-fault 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 FOR THIS CSA]

{Include the following Schedule N, as applicable, 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}

A. **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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size.

B. **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 Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size.

C. **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.

D. **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)
- Atmosphere 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:

[SPECIFY AGREED UPON METEOROLOGICAL AND FORCED OUTAGE DATA REQUIREMENTS]

[OR]

[NOT APPLICABLE FOR THIS CSA]