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August 30, 2011

Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1-A
Washington, D.C. 20426-0001

Re: *PJM Interconnection, L.L.C.*, Docket No. ER11- 4402 -000

Dear Ms. Bose:

Pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d and the Federal Energy Regulatory Commission's ("FERC" or the "Commission") Regulations, 18 C.F.R. Part 35, PJM Interconnection, L.L.C. ("PJM") hereby submits for filing revised tariff sheets of the PJM Open Access Transmission Tariff ("PJM Tariff").¹ The purpose of the proposed revisions is to provide additional means for black start service providers to recover incremental costs associated with providing black start service, particularly those associated with compliance to mandatory North American Electric Reliability Corporation ("NERC") Critical Infrastructure Protection ("CIP") Reliability Standards. In addition, the offered revisions provide for the ability of a black start service provider to elect an alternate capital cost recovery factor which is tied to the life span of the capital improvements being made, as opposed to the life of the unit which is being improved. PJM respectfully requests that the Commission accept the proposed revisions for filing, allowing them to become effective November 1, 2011.

I. Background

Schedule 6A of PJM's Tariff sets forth the details necessary for identifying generators to provide black start service² that are included in each Transmission Owner's system restoration plans and are critical for restoration of the Transmission System in the event of a de-energizing event. Importantly, the provisions of Schedule 6A also set forth the annual black start service

¹ Capitalized terms not otherwise defined herein have the meaning specified in the PJM Operating Agreement or the PJM Open Access Transmission Tariff, as appropriate.

² Black start service represents the capability of generating units to start without an external (system) electrical supply or possess the demonstrated ability to automatically remain operating at reduced levels when disconnected from the electrical grid. See, *PJM Tariff Schedule 6A* ¶ 2.

revenue requirements for the PJM Region, which is the sum of the annual black start service revenue requirements for each generator that is designated as providing black start service and has provided PJM with a calculation of its annual revenue requirements; calculated based upon the formulas as set forth in Paragraph 18 of Schedule 6A. In turn, Transmission Customers are charged for black start service in accordance with the allocation set forth further in Schedule 6A.

Schedule 6A, and the associated revenue requirements, was originally rooted in the concept that generators would be inclined to provide needed black start service on a more consistent basis when they are given the opportunity to include in their black start service revenue requirements the capital and operating costs associated with providing black start service, plus an incentive factor. The legacy Schedule 6A provisions required owners of black start units to commit to providing black start service for a rolling two-year period, until terminated either by PJM, the transmission owner or the black start service provider. In return, the Schedule 6A revenue requirements formula included an incentive factor designed to provide compensation for black start service, including reimbursement for the actual out of pocket costs of providing black start service plus an incentive payment to encourage provision of the service.³ Subsequently, the Tariff provisions were refined to address the ability to recover the fixed costs associated with providing black start service so as to encourage existing and new generation to provide this service.⁴

More recently, recognizing that the establishment of mandatory NERC Reliability Standards could subject black start service providers to increasing costs, PJM's Market Implementation Committee ("MIC") chartered the former Black Start Services Working Group ("BSSWG").⁵ The BSSWG was directed to discuss and recommend courses of action to address additional black start issues, specifically as those related to black start cost recovery. Ultimately, early in 2009, PJM submitted proposed revisions to Schedule 6A designed to allow black start service providers to recover incremental costs necessary to provide black start service.⁶ In particular, these provisions were designed to: 1) establish a tiered level of commitment for a

³ While the legacy revenue requirements formula provided the opportunity for black start service providers to receive reimbursement for documented operation and maintenance costs, it did not require documentation, or provide for a "one to one" return, of capital, or fixed, costs. Instead, fixed costs were reimbursed based upon application of the now defunct Capacity Deficiency Rate multiplied by the black start unit capacity. In other words, a pure "black box" rate that was crafted to provide an appropriate return to black start providers based upon an approximation of fixed costs.

⁴ In 2004, a change to the "Black Start Allocation Factor," used to determine the "Fixed Black Start Service Costs," was made to allow Black Start Service providers the opportunity to recover capital investments expended to replace retired Black Start resources or install Black Start capability on new units with better controls, and to address any significant, major equipment failures on existing resources. *See, PJM Interconnection, L.L.C.*, Docket No. ER04-598-000 (2004).

⁵ Earlier this year, the Black Start Service Working Group was re-titled as the Black Start Service Task Force. However, for the balance of this submittal, it will be referred to as the "BSSWG."

⁶ *See, PJM Interconnection, L.L.C.*, Docket No. ER09-730-000 (the "2009 Filing").

black start unit to provide black start service based upon whether the provider sought to recover new or additional capital costs; 2) allow black start providers to recover justified and reasonable costs necessary to maintain their black start units in compliance with NERC Reliability Standards, and; 3) establish an alternative capital cost recovery mechanism under which black start providers could seek Commission-approved cost recovery in lieu of the proposed Schedule 6A formula rate.

In summary, the 2009 Filing contemplated two commitment periods for a black start unit provider depending upon its election to either forego or recover new or additional “Black Start Capital Costs.”⁷ Generally, under that proposal, a black start service provider who elected to forego the recovery of new or additional Black Start Capital Costs was still required to provide black start service on a rolling, two-year basis. However, a new provision allowed a black start service provider to elect to recover new or additional Black Start Capital Costs in return for a commitment to provide black start service for a term based upon the age of the black start unit which was set forth in a Cost Recovery Factor (“CRF”) table in paragraph 18 of Schedule 6A. Moreover, the 2009 Filing considered that a black start service provider could base its revenue requirement on either a Commission-approved rate or the formula rate in Schedule 6A.

Thus, the 2009 Filing contemplated that a black start service provider would be afforded three avenues of revenue recovery under Schedule 6A: (a) it could establish a two-year rolling commitment pursuant to paragraph 5, forego recovery of any new or additional Black Start Capital Costs, and obtain its revenue requirements under the formula rate set forth in paragraph 18 of Schedule 6A (the “Base Formula Rate”); (b) it could establish a longer commitment period as provided in the CRF table, elect to recover new or additional Black Start Capital Costs, and obtain its revenue requirements under the formula rate set forth in paragraph 18 of Schedule 6A (the “Capital Cost Recovery Rate”); or (c) it could elect to establish either a two-year rolling commitment or a “CRF table” commitment, but establish its revenue requirements based on a Commission-approved rate for the recovery of the cost of providing such service for the duration of the applicable commitment period (the “FERC-approved Rate”).

While an overwhelming majority of stakeholders supported the proposal as outlined in the 2009 Filing, a few parties requested that the Commission consider an alternative approach that would allow those black start service providers that were using the then current formulaic rate (*i.e.* the Base Formula Rate), the option to recover NERC-CIP-related capital costs without the added requirement that they document the historic capital costs as required by the then-proposed Capital Cost Recovery Rate.⁸ In this regard, these parties argued that many existing

⁷ “Black Start Capital Costs” are considered a sub-set of “Fixed Black Start Service Costs” and are currently defined in Schedule 6A as the capital costs documented by the owner or accepted by the Commission for the incremental equipment solely necessary to enable a unit to provide black start service in addition to whatever other products or services such unit may provide. Black Start Capital Costs include those costs incurred by the black start owner to meet applicable NERC Reliability Standards.

⁸ See, *e.g.*, Limited Protest of Reliant Energy, Inc. and the Mirant Parties, Docket No. ER09-730-000 (filed March 26, 2009); Protest of Tenaska Parties, Docket No. ER09-730-000 (filed March 26, 2009).

black start units had historically recovered fixed black start service costs pursuant to the historic “black box” methodology and would be required to spend substantial time and effort to calculate, and document, the non-NERC related capital costs for these units. In many cases, it was alleged, the units had changed owners in the ensuing years, thereby complicating the discovery of detailed cost information. As such, while the Capital Cost Recovery Rate was a just and reasonable mechanism to compensate black start service providers for their non-NERC related capital costs, it was burdensome and unwarranted to require all black start service providers to document capital costs (even historical capital costs) when they simply were seeking an opportunity to recover incremental NERC-related capital costs. Ultimately, the Commission accepted the PJM proposed position, noting that while the alternative approach may be just and reasonable, the opposing parties did not claim that PJM’s proposal was unjust and unreasonable.⁹

Following the approval of those provisions by the Commission in the May 29 Order, and recognizing the issues raised by various parties in that proceeding, PJM stakeholders directed the BSSWG to discuss and recommend consensus solutions on various proposals to develop further incentives to provide black start service. In particular, in addition to an exploratory discussion of various, minor enhancements to Schedule 6A, the work group was tasked with an analysis of whether black start unit owners should have the opportunity to recover CIP-specific NERC-related capital improvements as an additive to the Base Formula Rate, as opposed to requiring them to document costs under the newly-approved Capital Cost Recovery Rate (*i.e.* the position of the opposing parties in the 2009 Filing).

Since that time, the BSSWG met and discussed various proposals designed to address the desired goals. The following proposed revisions to Schedule 6A represent the collective work of the BSSWG members and, in turn, PJM stakeholder consultation and consideration and are, broadly, designed to address the following purposes:

- (1) allow black start service providers the opportunity to recover CIP-specific NERC-related capital costs as an additive to the existing formula rate without requiring them to document historic capital costs (*i.e.*, additive to the Base Formula Rate);
- (2) provide the option for those black start unit owners electing to recover new or additional Black Start Capital Costs to commit to providing Black Start Service for a term based upon the age of the applicable Black Start Unit or the longest expected life of the incremental capital improvements;
- (3) provide the opportunity for black start units currently providing black start service pursuant to a FERC-approved Capital Cost Recovery Rate to recover incremental capital improvements under Schedule 6A, including CIP-specific NERC related costs.

⁹ See, *PJM Interconnection, L.L.C.*, 127 FERC ¶ 61,197 at P. 38 (May 29, 2009)(“May 29 Order”).

II. The Proposed Revisions

The changes tendered in this, and all preceding black start filings are primarily grounded in the recognition that black start services are a key element in reliability and promptly restoring power to the PJM Region in the event of a power system restoration event. The need for adequate black start service and the obligation of an ISO/RTO to compensate those entities that provide black start service in order to ensure reliable operation of the transmission system has been routinely recognized by the Commission¹⁰ and the proposed revisions here represent an attempt to encourage the provision of new and existing black start service by ensuring that black start service providers are afforded opportunities to recover their true costs of service, plus reasonable incentives.

A. Addition of NERC CIP-related Capital Cost Recovery to Base Formula Rate

Broadly, with respect to cost recovery, Schedule 6A is divided into three distinct, but related, determinations: (i) whether the unit owner will seek to recover new or additional Black Start Capital Costs; (ii) the applicable commitment period to provide those services, and (iii) the appropriate formulaic rate that will be used to recoup the provider's cost of service.

As such, Schedule 6A begins with a selection by the unit owner of whether it will seek to recover new or additional Black Start Capital Costs. Those unit owners that forego the recovery of new or additional Black Start Capital Costs must provide black start service on a rolling, two year commitment. On the other hand, those that choose otherwise will commit to provide black start service for a term based upon, either (as discussed further below), the reasonable estimate of the expected life of the black start unit or the longest expected life of the incremental capital improvements.

Calculation of appropriate revenue requirements for Black Start Service is through application of a formula set forth in Paragraph 18 of Schedule 6A which is comprised of five distinct factors: (i) Fixed Black Start Service Costs ("Fixed BSSC"); (ii) Variable Black Start Service Costs ("Variable BSSC"); (iii) Training Costs; (iv) Fuel Storage Costs and Carrying Costs, and; (v) 1 + an Incentive Factor.¹¹

¹⁰ See, e.g., *PJM Interconnection, L.L.C.*, 109 FERC ¶ 61,368 at P.1(2004).

¹¹ The formula for calculating a generator's annual Black Start Service revenue requirement is: **{(Fixed BSSC) + (Variable BSSC) + (Training Costs) + (Fuel Storage Costs)} * (1 + Z)**, with each component comprised of additional calculations which are used to derive the overall formula component (e.g., Variable BSSC = Black Start Unit O&M * Y). For units that operate at reduced levels when automatically disconnected from the grid, the formula is revised to remove Fixed Black Start Service Costs, Variable Black Start Service Costs and Fuel Storage and Carrying Costs since these components are not necessary as these units do not have qualifying incremental expenses associated with providing black start service and do not keep an inventory of fuel specifically for black start service.

In this proposal, as in the 2009 filing, it is the first formulaic factor – Fixed BSSC – which has been revised to allow for an additional calculation of Fixed BSSC based upon whether the unit owner has elected to solely document its CIP-specific NERC-related capital costs for recovery.

Thus, changes to what constitutes the formulaic rate component have been made so as to, generally, provide for three methodologies to derive Fixed BSSC:

- **Base Formula Rate** (for those units that forego new or additional Black Start Capital Cost recovery): **Fixed BSSC = Net CONE * Black Start Unit Capacity * X.**
- **Capital Cost Recovery Rate – NERC-CIP Specific Recovery** (for those units electing to recover only those incremental costs necessary for a unit to maintain compliance with NERC-CIP Reliability Standards: **Fixed BSSC = Net CONE * Black Start NERC-CIP Unit Capacity * X) + (Incremental Black Start NERC-CIP Capital Cost * CRF).**
- **Capital Cost Recovery Rate** (for those units electing to recover new or additional Black Start Capital Costs for the incremental equipment necessary to provide black start service): **(FERC approved rate) + (Incremental Black Start Capital Cost * CRF).**

i. Base Formula Rate

There are no substantive revisions to the Base Formula Rate proposed in this filing, other than a modification to clarify that CONE (Cost of New Entry) is expressed as a net value, instead of a gross value. Additionally, Net CONE has been more accurately defined for this purpose as the current installed capacity (“ICAP”) net Cost of New Entry (expressed in \$/MW year) for the CONE area where the black start unit is located. Prior application of this rate component led to some confusion as to what constituted CONE as a rate determinant for black start service and this clarification ensures that the right value is applied to the determination.

Moreover, the “365” multiplier has been removed from formulaic determination because the definition of Net CONE in the Tariff already includes this multiplier. Its inclusion in the Base Formula Rate could lead to double calculation.

ii. Capital Cost Recovery Rate – NERC-CIP Specific Recovery

Where a black start unit owner elects to recoup those incremental costs specific to its NERC-CIP compliance capital improvements, while maintaining recovery of its legacy Fixed BSSC through the Base Formula Rate, the proposed Fixed BSSC formulaic factor shall be **(Net CONE * Black Start NERC-CIP Unit Capacity * X) + (Incremental Black Start NERC-CIP Capital Cost * CRF).** Black Start NERC-CIP Unit Capacity has been defined as the black start unit’s installed capacity expressed in megawatts, but, as part of a compromise proposal, the

recovery is limited to the first 100 MW for hydro units and 50 MW for diesel and CT units for the reasons outlined below.

The Base Formula Rate included provisions for ongoing capital cost recovery, but were developed before CIP-specific NERC Reliability Standards existed and, therefore, were not inclusive of those costs. Through the stakeholder process, it was determined that, rather than re-setting the Base Formula Rate higher for all black start units (regardless of whether they actually incurred such expenses), it was preferable to maintain the existing formula rates and require each unit owner to document and seek recovery of their CIP-specific NERC Reliability Standards related costs.

In addition, through the stakeholder process, it was identified that larger black start units applying the Base Formula Rate have greater incentives to undertake capital investment given the MW multiplier embedded in the formula and, therefore, a MW limitation was imposed for unit owners that desired to use the formula rate and recover CIP-specific NERC Reliability Standards. The larger black start unit owners could either accept the current Base Formula Rate and absorb the CIP-specific costs within that rate or accept a MW limitation to the Base Formula Rate and seek recovery for their actual CIP-specific costs.

Importantly, in this calculation, Black Start NERC-CIP Capital Costs are defined and limited to only those incremental costs incurred by the generator owner to maintain compliance to the applicable NERC-CIP Reliability Standards in its provision of black start service. All other capital costs, including those incurred by the generator owner to comply with the operational NERC Reliability Standards or undocumented capital costs may not be recovered pursuant to this proposed methodology. However, at any time, the black start resource owner may elect to terminate cost recovery pursuant to this formulaic methodology, and seek recovery under the general Capital Cost Recovery Rate, by documenting all of its applicable capital costs.

As noted above, this proposed formulaic calculation is, essentially, the Base Formula Rate with the added ability to document, and recoup, incremental NERC-CIP specific capital costs. However, the Base Formula Rate only requires that the unit owner provide black start service on a two year rolling commitment. In the 2009 Filing, PJM had expressed concern with a similar proposal advocated by parties that failed to tie the opportunity to recoup the NERC-specific capital costs to a commitment period beyond the base, two year rolling commitment.¹² However, in this proposal, while the unit owner maintains the opportunity to recoup its undocumented Fixed BSSC by application of the Base Formula Rate, the ability to recoup documented NERC-CIP specific capital costs requires that the unit owner commit to providing black start service for the term specified in the applicable Paragraph 18 CRF Table. Thus, full recovery of the unit owner's applicable capital costs are tied to a commitment period to provide black start service which is linked to, either, the life of the unit being improved, or the longest expected life of the capital improvement.

¹² See, May 29 Order at P. 36-39.

While those capital improvements which qualify as solely necessary to meet NERC-CIP Reliability Standards have not been defined in Schedule 6A, it is important to point out that existing Schedule 6A requires that the unit owner document, and that PJM's Independent Market Monitor ("IMM") validate, those costs that have been claimed by the unit owner in all circumstances. Specifically, the unit owner must document those costs, affirms that the costs being submitted for recovery were required to satisfy applicable CIP-specific NERC Reliability Standards, and have those costs validated by the IMM. In the event that that the unit owner and the IMM cannot agree on the level of these rate components, the unit owner may submit them to PJM, which will determine whether it will accept such values or not. Ultimately, if the unit owner does not agree with these determinations, it may submit those values to the Commission for approval.

In addition to these proposed changes, another process has been included at Paragraph 20 to provide for PJM Member review of any additive NERC-CIP costs submitted by a unit owner for recovery under the Paragraph 18 Capital Cost Recovery Rates. As set forth therein, when a unit owner submits NERC-CIP specific capital costs for recovery, PJM shall notify its Members 30 days prior to the effective date of the proposed increase in black start charges. In turn, a Member may submit a written request, to PJM and the IMM, to review the documentation supporting the requested incremental costs.

Moreover, as set forth in proposed Paragraph 21, the IMM will now include a black start service summary in its annual State of the Market report. This additional summary will be comprised of the a descriptive summary of the NERC-CIP specific capital costs documented by black start unit owners, including an overview of the types of expenses documented and the overall cost of those expenses on an aggregate basis.

Taken together, these oversight proposals minimize the potential for a black start unit owner to otherwise seek recovery of non-NERC-CIP specific capital improvements without documenting those costs as would be required under the general Capital Cost Recovery Rate. Moreover, the additional transparency provided to the Members by proposed Paragraph 20 addresses concerns expressed by stakeholders that they are afforded an opportunity to review such costs to assure that they are not inadvertently misapplied.

iii. Capital Cost Recovery Rate

Conceptually, the Capital Cost Recovery Rate maintains the same primary purpose – to allow black start unit owners the opportunity to document, and recoup, capital costs necessary for it to provide black start service. However, in this filing a change has been proposed that would acknowledge, and allow, those black start unit owners that are recouping legacy costs pursuant to a bi-lateral agreement or FERC approved rate, may also seek recovery, under Schedule 6A, of any new incremental capital improvements made that are solely related to providing black start capabilities to their units. The existing provisions of Schedule 6A would have required the unit owner to forego any of its previously approved cost recovery in favor of documenting its legacy, and incremental, costs.

As such, the Capital Cost Recovery Rate has been modified so as to calculate Fixed BSSC as **(FERC approved rate) + (Incremental Black Start Capital Cost * CRF)**. This maintains the current recovery rate through its remaining terms and then adds only those incremental capital costs. Since the Capital Cost Recovery Rates are all calculated as levelized payments, additive treatment of the incremental costs in the applicable years provides the correct recovery to the black start unit. The corresponding definition of “Incremental Black Start Capital Cost” has also been changed slightly to clarify that such costs are those new or additional capital costs documented by owner to provide black start service, but does not include those costs that are already being recouped by the unit owner pursuant to a Commission approved rate.

B. Election to Revert to Base Formula Rate

An additional aspect offered in this filing clarifies that a black start unit owner, who seeks to recoup its capital costs pursuant to a Capital Cost Recovery Rate may, at any time, forego any future compensation it would have otherwise been entitled and revert to cost recovery under the Base Formula Rate. As a consequence, that unit owner will forfeit any future payments established under the original Capital Cost Recovery Rate and, instead, accept the Base Formula Rate. Ultimately, a black start unit owner may return to a Capital Cost Recovery Rate to recoup any additional incremental capital costs it incurs following this election, however, it may not include any of those capital costs that it had otherwise foregone by its previous election to return to the Base Formula Rate.

This provision was added to clarify that a unit owner could return to the Base Formula Rate and was necessitated by the use of the actual life span of the black start improvement in determining its incremental capital recovery for new capital improvements, or CIP-specific capital improvements. For example, in the case where the original black start unit was subject to a 15 year Capital Cost Recovery Rate, and decided in year 13 to install required CIP-specific equipment with a 5 year recovery period, the unit owner, upon reaching the initial 15 year maturity, would be face with accepting a *de minimis* payment that could be insufficient to maintain the unit in black start service. Therefore, this provision allows the unit owner to forfeit outstanding future capital recovery on the remaining 2 year period and continue providing black start under the Base Formula Rate.

Also, a unit owner that fully reaches its capital recovery term could agree to continue to provide black start service and receive compensation through the Base Formula Rate. Without such a provision, it is possible that the unit owner would not have any allowance for ongoing expenses and, therefore, would have no incentive to continue to provide black start service.

C. Election to Apply the Capital Cost Recovery Rate

Conversely, a black start unit owner that is recovering its costs under Schedule 6A formula rate provisions may request to move from the Base Formula Rate, or the NERC-CIP specific Capital Cost Recovery Rate, to the full Capital Cost Recovery Rate. The purpose of this provision is to allow a black start unit owner, that is receiving black start revenue payments

pursuant to the Base Formula Rate, the opportunity to fully document their costs of service and request compensation pursuant to the Capital Cost Recovery Rate.

D. Applicable Commitment Period

One of the primary foundations for the changes presented in the 2009 Filing was the inclusion of the CRF table which defined the applicable black start commitment period, and levelized cost recovery, based upon the age of the black start unit. Application of the CRF to any newly incurred fixed BSSC was, and is, designed to ensure that the recovery of the new improvements are recovered in a manner commensurate with the age of the black start unit at the time of improvement and, concomitantly, establish a commitment to provide black start service on a forward basis. Thus, if a unit owner documented that it had made capital improvements to a seven year old black start unit, it would be required to provide black start service, and recoup its costs, for fifteen years.¹³

However, black start unit owners may only need to make minor modifications to their resources to ensure compliance with mandatory Reliability Standards, or make only slight improvements to ensure black start capability. In those cases where minor modifications are made to newer units, the black start unit owner could be forced to recoup relatively inconsiderable expenditures, and provide black start service, over a discordant amount of time based upon the life of the unit as opposed to the life of the improvement itself. Ultimately, this could deter improvements and lead to a deficiency of available black start resources.

To alleviate this concern, the revisions offered in this filing contemplate the creation of a secondary, capital improvement-based (*i.e.*, component based) CRF table to be applied, at the election of the black start unit owner, in lieu of the unit-based CRF table. While the premise is the same – provide, both, an applicable commitment period and levelized cost recovery - the optional CRF table would allow a black start unit owner the opportunity to recoup its costs based upon the expected life (as established by the applicable U.S. Internal Revenue Service (“IRS”) depreciation period) of the capital improvements. In the event that a unit owner seeks recovery of capital improvements that are included in more than one category capital improvement lifespan, the applicable commitment period, and associated recovery for each category, will be the longest expected life of those improvements.

Additionally, a provision has been added here to clarify that the applicable commitment period for those black start unit owners that have elected to recoup Incremental Black Start Capital Costs as part of the Capital Recovery Rate, in addition to any FERC-approved rate, shall be required to provide black start service for a term which is the greater of the FERC-approved recovery period or the applicable term of commitment as established by either CRF table.

¹³

See, Schedule 6A, Paragraph 18 – CRF Table.

E. Miscellaneous Revisions

Additional, minor revisions have been proposed to the remaining sections of Schedule 6A to correct words and punctuation, where applicable.

III. Stakeholder Support

On March 31, 2011, the PJM Members Committee met and endorsed the proposed Tariff revisions by acclamation with none opposed and two Members abstaining.

IV. Effective Date

Consistent with the Commission's notice requirements, PJM requests an effective date of November 1, 2011, which is at least 60 days from the date of this filing.

V. Documents Submitted

Along with this transmittal letter, PJM submits electronic versions of the revisions to the PJM Tariff and Operating Agreement in both marked (showing the 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 regulations¹⁴ pursuant to Order No. 714¹⁵ and the Commission's Notice of Effectiveness of Regulations issued on October 28, 2008, in Docket No. RM01-5-000. In compliance with those regulations, PJM will post a

¹⁴ See, 18 C.F.R. §§ 35.2, 154.2, 154.208 and 341.2.

¹⁵ *Electronic Tariff Filings*, Order No. 714, 124 FERC ¶ 61,270

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 Region¹⁶ 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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¹⁶ PJM already maintains updates and regularly uses e-mail lists for all PJM Members and affected commissions.

Marked Version
of the
PJM Tariff Sections

SCHEDULE 6A

Black Start Service

References to section numbers in this Schedule 6A refer to sections of this Schedule 6A, unless otherwise specified.

To ensure the reliable restoration following a shut down of the PJM transmission system, Black Start Service is necessary to facilitate the goal of complete system restoration. Black Start Service enables Transmission Provider and Transmission Owners to designate specific generators called Black Start Units whose location and capabilities are required to re-energize the transmission system following a system-wide blackout. The Transmission Provider shall administer the provision of Black Start Service. PJMSettlement shall be the Counterparty to the purchases and sales of Black Start Service.

TRANSMISSION CUSTOMERS

1. All Transmission Customers and Network Customers must obtain Black Start Service through the Transmission Provider, with PJMSettlement as the Counterparty, pursuant to this Schedule 6A.

PROVISION OF BLACK START SERVICE

2. A Black Start Unit is a generating unit that has equipment enabling it to start without an outside electrical supply or a generating unit with a high operating factor (subject to Transmission Provider concurrence) with the demonstrated ability to automatically remain operating, at reduced levels, when disconnected from the grid. A Black Start Unit shall be considered capable of providing Black Start Service only when it meets the criteria set forth in the PJM manuals. For the purposes of this Schedule 6A, the expected life of the Black Start Unit shall take into consideration expectations regarding both the enabling equipment and the generation unit itself.

3. A Black Start Plant is a generating plant that includes one or more Black Start Units. A generating plant with Black Start Units electrically separated at different voltage levels will be considered multiple Black Start Plants.

4. The Transmission Provider, in conjunction with the Transmission Owners, are responsible for developing a coordinated and efficient system restoration plan that identifies all of the locations where Black Start Units are needed. The PJM Manuals shall set forth the criteria and process for selecting or identifying the Black Start Units necessary to commit to providing Black Start Service at the identified locations.. No more than three Black Start Units at a Black Start Plant will be eligible for compensation under this Schedule 6A, unless specifically approved by the Transmission Provider as an exception. No Black Start Unit shall be eligible to recover the costs of providing Black Start Service in the PJM Region unless it agrees to provide such service for a term of commitment established under section 5 or 6 below.

5. Owners of Black Start Units selected to provide Black Start Service in accordance with section 4 and electing to forego any recovery of new or additional Black Start Capital Costs shall

commit to provide Black Start Service from such Black Start Units for an initial term of no less than two years and authorize the Transmission Provider to resell Black Start Service from its Black Start Units. The term commitment shall continue to extend until the Black Start Unit owner, or the Transmission Owner, with the consent of the Transmission Provider, or the Transmission Provider, with the consent of the Transmission Owner, provides written, one-year advance notice of its intention to terminate the commitment.

6. Owners of Black Start Units selected to provide Black Start Service in accordance with section 4 and electing to recover new or additional Black Start Capital Costs shall commit to provide Black Start Service from such Black Start Units for a term based upon the age of a reasonable estimate of the expected life of the Black Start Unit or the longest expected life of the Incremental Black Start Capital Cost, as set forth in the applicable CRF Factor Tables in section Paragraph 18. For those Black Start Units that elect to recover new or additional Black Start Capital Costs in addition to a prior, FERC-approved cost recovery rate, the applicable commitment period shall be the longer of the FERC-approved recovery period or the applicable term of commitment as set forth in the CRF Tables in Paragraph 18., and authorize the Transmission Provider to resell Black Start Service from its Black Start Units. Either the Transmission Provider, with the consent of the Transmission Owner, or the Transmission Owner, with the consent of the Transmission Provider, may terminate the commitment with one year advance notice of its intention to the Black Start Unit owner, but the Transmission Owner shall reimburse the Black Start Unit owner for any amount of unrecovered Fixed Black Start Service Costs over a period not to exceed five years. A Black Start Unit owner may terminate the provision of Black Start Service with one year advance notice (or its commitment period may be involuntarily terminated pursuant to the section 15 below). Such Black Start Unit shall forego any otherwise existing entitlement to future revenues collected pursuant to this Schedule 6A and fully refund any amount of the Black Start Capital Costs recovered under a FERC-approved rate (recovered on an accelerated basis pursuant to the provisions of section 17(i)) in excess of the amount that would have been recovered pursuant to section 18 during the same period. At the conclusion of the term of commitment established under this section 6, a Black Start Unit shall commence a new term of commitment under either section 5 or 6, as applicable.

6A. In the event that a Black Start Unit fails to fulfill its commitment established under section 5 to provide Black Start Service, receipt of any Black Start Service revenues associated with the non-performing Black Start Unit shall cease and, for the period of the unit's non-performance, the Black Start Unit owner shall forfeit the Black Start Service revenues associated with the non-performing Black Start Unit that it received or would have received had the Black Start Unit performed, not to exceed revenues for a maximum of one year.

In the event that a Black Start Unit fails to fulfill its commitment established under section 6 above, such unit shall forego any otherwise existing entitlement to future revenues collected pursuant to this Schedule 6A and fully refund any amount of the Black Start Capital Costs recovered under a FERC-approved rate (recovered on an accelerated basis pursuant to the provisions of section 17(i)) in excess of the amount that would have been recovered pursuant to section 18 during the same period, but such unit remains eligible to establish a new commitment under section 5 or 6.

Performance Standards and Outage Restrictions

7. Black Start Units must have the capabilities listed below. These capabilities must be demonstrated in accordance with the criteria set forth in the PJM manuals and will remain in effect for the duration of the commitment to provide Black Start Service.
 - a. A Black Start Unit must be able to close its output circuit breaker to a dead (de-energized) bus within 90 minutes of a request from the Transmission Owner or the Transmission Provider.
 - b. A Black Start Unit must be capable of maintaining frequency and voltage under varying load.
 - c. A Black Start Unit must be able to maintain rated output for a period of time identified by each Transmission Owner's system restoration requirements, in conjunction with the Transmission Provider.
8. Each owner of Black Start Units or Black Start Plants must maintain procedures for the start-up of the Black Start Units.
9. If a Black Start Unit is a generating unit with a high operating factor (subject to Transmission Provider concurrence) with the ability to automatically remain operating at reduced levels when disconnected from the grid, this ability must be demonstrated in accordance with the criteria set forth in the PJM manuals.
10. No more than one Black Start Unit at a Black Start Plant may be subject to planned maintenance at any one time. This restriction excludes outages on common plant equipment that may make all units unavailable. A Black Start Unit not currently designated as critical and on the same voltage level may be substituted for a Black Start Unit that is subject to a planned outage to permit a concurrent planned outage of another critical Black Start Unit at the Black Start Plant to begin. The Black Start Unit used as a substitute must have had a valid annual test within the previous 12 months.
11. Concurrent planned outages at multiple Black Start Plants within a zone may be restricted based on Transmission Owner requirements for Black Start Service availability. Such restrictions must be predefined and approved by Transmission Provider in accordance with the PJM manuals.

Testing

12. To verify that they can be started and operated without being connected to the Transmission System, Black Start Units designated as critical shall be tested annually in accordance with the PJM manuals. The Black Start Unit owner shall determine the time of the annual test.

13. Compensation for energy output delivered to the Transmission System during the annual test shall be provided for the Black Start Unit's minimum run time at the higher of the unit's cost-capped offer or real-time Locational Marginal Price plus start-up and no-load costs for up to two start attempts, if necessary. For Black Start Units that are generating units with a high operating factor (subject to Transmission Provider's concurrence) with the ability to automatically remain operating at reduced levels when disconnected from the grid, an opportunity cost will be provided to compensate the unit for lost revenues during testing.

14. To receive Black Start Service revenues, a Black Start Unit must have a successful annual test on record with the Transmission Provider within the preceding 13 months.

15. If a Black Start Unit fails the annual test, the unit may be re-tested within a ten-day period without financial penalty. If the Black Start Unit does not successfully re-test within that ten-day period, monthly Black Start Service revenues will be forfeited by that unit from the time of the first unsuccessful test until such time as the unit passes an annual test. If the Black Start Unit owner determines not to make the necessary repairs to enable the Black Start Unit to pass the annual test, the Black Start Unit owner will have failed to fulfill its commitment pursuant to section 5 or section 6, whichever is applicable, of this Schedule 6A and will be subject to the additional forfeiture of revenues set forth in section 6A.

Revenue Requirements

16. The annual Black Start Service revenue requirement shall be the sum of the annual Black Start Service revenue requirements for each generator that is designated as providing Black Start Service and has provided the Transmission Provider with a calculation of its annual Black Start Service revenue requirements. A separate line item shall appear on the participants' Transmission Provider bill for Black Start Service charges and credits.

17. Black Start Service revenue requirements for each Black Start Unit shall be based, at the election of the owner, on either (i) a FERC-approved rate for the recovery of the cost of providing such service for the entire duration of the commitment term set forth in either section 5 or 6, as applicable, or (ii) the formulas rates set forth in section 18 of this Schedule 6A for the commitment term set forth in sectionParagraph 5 or 6 as applicable. Each generator's Black Start Service revenue requirements shall be an annual calculation. Requests for changes to the Black Start Service revenue requirements must be submitted to the Market Monitoring Unit for review and analysis, with supporting data and documentation, pursuant to section III of Attachment M – Appendix and the PJM Manuals. The Market Monitoring Unit and the generator owner shall attempt to come to agreement on the level of each component included in the Black Start Service revenue requirements. The Black Start Service generator owner may submit Black Start Service revenue requirements that it chooses, provided that (i) it has participated in good faith with the process described in this section and in section III of Attachment M - Appendix, (ii) the Black Start Service revenue requirements are no higher than the level defined in any agreement reached by the Black Start Service generator owner and the Market Monitoring Unit that resulted from the foregoing process, and (iii) the Black Start Service revenue requirements are accepted by the Office of the Interconnection subject to the criteria set forth in the Tariff.

In the event that the Black Start Service generator owner and Market Monitoring Unit cannot agree on the level of each component included in the calculation of the Black Start Service revenue requirements, and the Black Start Service generator owner submits its own values to the Office of the Interconnection that are inconsistent with the Market Monitoring Unit's determination, the Office of the Interconnection shall determine whether to accept such values subject to the requirements of the Tariff and the PJM Manuals. If the Office of the Interconnection does not accept the values submitted by the Black Start Service generator owner in such case, the Black Start Service generator owner may file its proposed values with the Commission for approval. Pursuant to section III of Attachment M - Appendix, if the Office of the Interconnection accepts the Black Start Service revenue requirements submitted by the Black Start Service generator owner in such case, the Market Monitoring Unit may petition the Commission for an order that would require the Black Start Service generator to utilize the values determined by the Market Monitoring Unit or such other values as determined by the Commission. No change to a Black Start Service revenue requirement shall become effective until the existing revenue requirement has been effective for at least twelve months. ~~The Transmission Provider will presume that any FERC-approved cost recovery plan would be the exclusive basis for the recovery of a Black Start Unit's recovery of its costs during the applicable term.~~

18. The formula for calculating a generator's annual Black Start Service revenue requirement is:

$$\{(Fixed\ BSSC) + (Variable\ BSSC) + (Training\ Costs) + (Fuel\ Storage\ Costs)\} * (1 + Z)$$

For units that have the demonstrated ability to operate at reduced levels when automatically disconnected from the grid, the formula is revised to:

$$(Training\ Costs) * (1 + Z)$$

where:

Fixed BSSC

Black Start Units with a commitment established under ~~section-Paragraph~~ 5 shall calculate Fixed BSSC or "Fixed Black Start Service Costs" in accordance with the following Base Formula Rate ~~formula~~:

Base Formula Rate:

$$\underline{Net}\ CONE * \underline{365} * Black\ Start\ Unit\ Capacity * X$$

Where:

“Net CONE” is the then current installed capacity (“ICAP”) net Cost of New Entry (expressed in \$/MW year) for the CONE Area ———where the Black Start Unit is located, as set forth in Section 5.10 of Attachment DD.

“Black Start Unit Capacity” is the Black Start Unit’s installed capacity, expressed in MW.

“X” is the Black Start Service allocation factor unless a higher or lower value is supported by the documentation of the actual costs of providing Black Start Service. For such units qualifying as Black Start Units on the basis of demonstrated ability to operate at reduced levels when automatically disconnected from the grid, X shall be zero. For Black Start Units with a commitment established under section 5, X shall be .01 for Hydro units, .02 for Diesel or CT units.

Black Start Units with a commitment established under ~~section~~Paragraph 6 above shall calculate Fixed BSSC or “Fixed Black Start Service Costs” in accordance with one of the following formulas, as applicable:

Capital Cost Recovery Rate – NERC-CIP Specific Recovery

(Net Cone * Black Start NERC-CIP Unit Capacity * X) + (Incremental Black Start NERC-CIP Capital Costs * CRF)

Where:

“Net Cone” is the then current installed capacity (“ICAP”) net Cost of New Entry (expressed in \$/MW year) for the CONE are where the Black Start Unit is located.

“Black Start NERC-CIP Unit Capacity” is the Black Start Unit’s installed capacity, expressed in MW, but, for purposes of this calculation, capped at 100 MW for Hydro units, or 50 MW for Diesel or CT units.

“Incremental Black Start NERC-CIP Capital Cost” are those capital costs documented by the owner or accepted by the Commission for the incremental equipment solely necessary to enable a Black Start Unit to maintain compliance with mandatory Critical Infrastructure Protection Reliability Standards (as approved by the Commission and administered by the applicable Electric Reliability Organization).

“CRF” or “Capital Recovery Factor” is equal to the levelized CRF as set forth in the applicable CRF Table set forth below.

A Black Start Unit may elect to terminate forward cost recovery under this Capital Cost Recovery Rate – NERC-CIP Specific Recovery at any time and seek cost recovery under the Capital Cost Recovery Rate, pursuant to the terms and conditions set forth below.

Capital Cost Recovery Rate

(FERC-approved rate) + (Incremental Black Start Capital Costs * CRF)

~~Black Start Capital Cost * CRF~~

Where:

“FERC-approved rate” is the Black Start Unit’s current FERC-approved recovery of costs to provide Black Start Service, if applicable.

“Incremental Black Start Capital Costs” isare the new or additional capital costs documented by the owner or accepted by the Commission for the incremental equipment solely necessary to enable a unit to provide Black Start Service in addition to whatever other product or services such unit may provide. Such costs shall include those incurred by a Black Start Owner in order to meet NERC Reliability Standards that apply to Black Start Units solely on the basis of the provision of Black Start Service by such unit. However, Incremental Black Start Capital Costs shall not include any capital costs that the Black Start Unit owner is recovering for that unit pursuant to a FERC-approved recovery rate.

“CRF” or “Capital Recovery Factor “ is equal to the levelized CRF based on the age of the Black Start Unit, which is modified to provide Black Start Service, as present in the CRF Table below:

Age of Black Start Unit	Years of Remaining Life of <u>Black Start UnitTerm of Black Start Commitment</u>	Levelized CRF
1 to 5	20	0.125
6 to 10	15	0.146
11 to 15	10	0.198
16+	5	0.363

Or:

Optionally, a Black Start Unit owner may elect to apply an alternative Capital Recovery Factor, in lieu of the age-based CRF Table listed above, which is based upon to the expected Capital Improvement Lifespan of the new or additional capital improvements (as determined by the applicable depreciation period of the capital

improvement, as published from time to time by the US Internal Revenue Service). The applicable term of Black Start Service commitment shall be equal to the Capital Improvement Lifespan. In the event that the Black Start Unit seeks recovery of capital improvements that are included in more than one category of Capital Improvement Lifespan (as set forth below), its applicable commitment to provide black start service for such Black Start Unit shall be the longest expected life of those new or additional capital improvements.

<u>Capital Improvement Lifespan (Years)</u>	<u>Levelized CRF</u>
<u>16-20</u>	<u>0.125</u>
<u>11-15</u>	<u>0.146</u>
<u>6-10</u>	<u>0.198</u>
<u>1-5</u>	<u>0.363</u>

In those circumstances where a Black Start Unit owner has elected to recover Incremental Black Start Capital Costs, in addition to a FERC-approved recovery rate, its applicable term of commitment shall be the greater of: (i) the FERC-approved recovery period, or; (ii) the applicable term of commitment as established by the CRF Tables above.

A Black Start Unit may make a non-revocable election to forego calculation of its Fixed BSSC, and surrender any forward compensation that it otherwise would have been entitled to, in accordance with either Capital Cost Recovery Rate set forth above. In this case, the Black Start Unit shall calculate its Fixed BSSC in accordance with the Base Formula Rate (and provide the applicable term of commitment established in Paragraph 5 above). In the event that the Black Start Unit seeks to recover further new or additional Black Start Capital Costs, it may not seek to recover any portion of those Black Start Capital Costs as its Fixed BSSC that it had previously forfeited.

After a Black Start Unit has recovered its allowable Incremental Black Start Capital Costs or Incremental Black Start NERC-CIP Capital Costs, as provided by the applicable Capital Cost Recovery Rate, and has satisfied its applicable commitment period required under Paragraph 6, the Black Start Unit shall be committed to providing black start in accordance with Paragraph 5 of this Schedule 6A and calculate its Fixed BSSC in accordance with the Base Formula Rate.

Variable BSSC

All Black Start Units shall calculate Variable BSSC or “Variable Black Start Service Costs” in accordance with the following formula:

$$\text{Black Start Unit O\&M} * Y$$

Where:

“Black Start Unit O&M” are the operations and maintenance costs attributable to supporting Black Start Service and must equal the annual variable O&M outlined in the

PJM Cost Development ~~Task Force Manual~~ Guidelines set forth in the PJM Manuals. Such costs shall include those incurred by a Black Start Owner in order to meet NERC Reliability Standards that apply to the Black Start Unit solely on the basis of the provision of Black Start Service by unit.

“Y” is 0.01, unless a higher or lower value is supported by the documentation of costs. If a value of Y is submitted for this cost, a (1-Y) factor must be applied to the Black Start Unit’s O&M costs on the unit’s cost-based energy schedule, calculated based on the Cost of Element Development Guidelines in the PJM ~~Manuals~~ Manuals.

For units qualifying as Black Start Units on the basis of a demonstrated ability to operate at reduced levels when automatically disconnected from the grid, there are no variable costs associated with providing Black Start Service and the value for Variable BSSC shall be zero.

Training Costs:

All Black Start Units shall calculate Training Costs in accordance with the following formula:

50 staff hours/year/plant*75/hour

Fuel Storage Costs:

Black Start Units that cannot use oil for fuel shall ~~each~~ calculate Fuel Storage Costs or “FSC” as zero. Black Start Units that can use oil for fuel shall calculate Fuel Storage Costs in accordance with the following formula:

$$\{ \text{MTSL} + [(\# \text{ Run Hours}) * (\text{Fuel Burn Rate})] \} * \\ (12 \text{ Month Forward Strip} + \text{Basis}) * (\text{Bond Rate})$$

Where:

Run Hours are the actual number of hours a Transmission Provider requires a Black Start Unit to run. Run Hours shall be at least 16 hours or as defined by the Transmission Owner restoration plan, whichever is less.

“Fuel Burn Rate” is actual fuel burn rate for the Black Start Unit.

“12-Month Forward Strip” is the average of forward prices for the fuel burned in the Black Start Unit.

“Basis” is the transportation costs from the location referenced in the forward price data to the Black Start Unit plus any variable taxes.

“Bond rate” is the value determined with reference to the Moody's Utility Index for bonds rated Baa1.

“MTSL” is the “minimum tank suction level” and shall apply where no direct current pumps are available for the Black Start Unit.

For units qualifying as Black Start Units on the basis of a demonstrated ability to operate at reduced levels when automatically disconnected from the grid, there are no associated fuel storage costs and the value for FSC shall be zero.

Z

Z shall be an incentive factor for Black Start Units with a commitment established under section 5 above and shall be ten percent.

At least every two years, PJM shall review the formula and its costs components set forth in this section, and report on the results of that review to stakeholders.

19. Transmission Provider or its agent shall have the right to independently audit the accounts and records of each Black Start Unit that is receiving payments for providing Black Start Service.

20. PJM shall notify its Members when a Black Start Unit seeks to recover new or additional Black Start NERC-CIP Capital Costs under Paragraph 18 no later than thirty (30) days prior to the effective date of the recovery. At the written request of any PJM Member, made simultaneously to the Market Monitoring Unit and PJM, with notice to the Black Start Unit owner, the Market Monitoring Unit shall make available to the PJM Member for inspection at the offices of the Market Monitoring Unit, all data supporting the requested new or additional NERC-CIP specific Capital Costs. The Black Start Unit owner may elect to attend this review. In all cases, the supporting data is to be held confidential and may not be distributed.

21. The Market Monitoring Unit shall include a Black Start Service summary in its annual State of the Market report which will set forth a descriptive summary of the new or additional Black Start NERC-CIP Capital Costs requested by Black Start Units, and include a list of the types of capital costs requested and the overall cost of such capital improvements on an aggregate basis such that no data is attributable to an individual Black Start Unit.

Credits

~~20~~2. Monthly credits are provided to generators that submit to the Transmission Provider their annual revenue requirements established pursuant to section 17 of this Schedule 6A. The generator's monthly credit is equal to 1/12 of its annual Black Start Service revenue requirement for eligible critical Black Start Units.

~~21~~3. Revenue requirements for jointly owned Black Start Units will be allocated to the owners based on ownership percentage.

~~22~~4. Transmission Provider shall not compensate generators for Black Start Service unless they meet the Transmission Provider and Applicable Regional Reliability Council criteria for Black Start Service and provide Transmission Provider with all necessary data in accordance with this Schedule 6A and the PJM manuals.

Charges

| 235. Zonal rates will be based on Black Start Service capability of generation units nominated by each transmission zone and allocated to network service customers and point-to-point reservations.

| 246. Revenue requirements for Black Start Units nominated by a Transmission Owner as critical (regardless of zonal location) will be allocated to the nominating Transmission Owner's zone.

| 257. Purchasers of Black Start Service shall be charged for such service in accordance with the following formulae.

Monthly Charge for a purchaser receiving Network Integration Transmission Service or Point-to-Point Transmission Service to serve Non-Zone Load = Allocation Factor * Total Generation Owner Monthly Black Start Service Revenue Requirement

Monthly Charge for a purchaser receiving Network Integration Transmission Service or Point-to-Point Transmission Service to serve Zone Load = Allocation Factor * Zonal Generation Owner Monthly Black Start Service Revenue Requirement * Adjustment Factor

Where:

Purchaser serving Non-Zone Load is a Network Customer serving Non-Zone Network Load or a Transmission Customer where the Point of Delivery is at the boundary of the PJM Region.

Zonal Generation Owner Monthly Black Start Service Revenue Requirement is the sum of the monthly Black Start Service revenue requirements for each generator nominated by the Transmission Owners in that zone.

Total Generation Owner Monthly Black Start Service Revenue Requirement is the sum of the Zonal Generation Owner Monthly Black Start Service Revenue Requirements for all Zones in the PJM Region.

Allocation Factor is the monthly transmission use of each Network Customer or Transmission Customer per Zone or Non-Zone, as applicable, on a megawatt basis divided by the total transmission use in the Zone or in the PJM Region, as applicable, on a megawatt basis.

For Network Customers, monthly transmission use on a megawatt basis is the sum of a Network Customer's daily values of DCPZ or DCPNZ (as those terms are defined in Section 34.1) as applicable, for all days of the month.

For Transmission Customers, monthly transmission use on a megawatt basis is the sum of the Transmission Customer's hourly amounts of Reserved Capacity in the month (not curtailed by PJM) divided by 24.

Adjustment Factor is determined as the sum of the total monthly transmission use in the PJM Region on a megawatt basis, exclusive of such use by Network Customers and Transmission Customers serving Non-Zone Load, divided by the total monthly transmission use in the PJM Region on a megawatt basis.

In the event that a single customer is serving load in more than one Zone, or serving Non-Zone Load as well as load in one or more Zones, or is both a Network Customer and a Transmission Customer, the Monthly Charge for such a customer shall be the sum of the Monthly Charges determined by applying the appropriate formulae set forth in this Schedule 6A.

Clean Version
of the
PJM Tariff Sections

SCHEDULE 6A

Black Start Service

References to section numbers in this Schedule 6A refer to sections of this Schedule 6A, unless otherwise specified.

To ensure the reliable restoration following a shut down of the PJM transmission system, Black Start Service is necessary to facilitate the goal of complete system restoration. Black Start Service enables Transmission Provider and Transmission Owners to designate specific generators called Black Start Units whose location and capabilities are required to re-energize the transmission system following a system-wide blackout. The Transmission Provider shall administer the provision of Black Start Service. PJMSettlement shall be the Counterparty to the purchases and sales of Black Start Service.

TRANSMISSION CUSTOMERS

1. All Transmission Customers and Network Customers must obtain Black Start Service through the Transmission Provider, with PJMSettlement as the Counterparty, pursuant to this Schedule 6A.

PROVISION OF BLACK START SERVICE

2. A Black Start Unit is a generating unit that has equipment enabling it to start without an outside electrical supply or a generating unit with a high operating factor (subject to Transmission Provider concurrence) with the demonstrated ability to automatically remain operating, at reduced levels, when disconnected from the grid. A Black Start Unit shall be considered capable of providing Black Start Service only when it meets the criteria set forth in the PJM manuals. For the purposes of this Schedule 6A, the expected life of the Black Start Unit shall take into consideration expectations regarding both the enabling equipment and the generation unit itself.

3. A Black Start Plant is a generating plant that includes one or more Black Start Units. A generating plant with Black Start Units electrically separated at different voltage levels will be considered multiple Black Start Plants.

4. The Transmission Provider, in conjunction with the Transmission Owners, are responsible for developing a coordinated and efficient system restoration plan that identifies all of the locations where Black Start Units are needed. The PJM Manuals shall set forth the criteria and process for selecting or identifying the Black Start Units necessary to commit to providing Black Start Service at the identified locations.. No more than three Black Start Units at a Black Start Plant will be eligible for compensation under this Schedule 6A, unless specifically approved by the Transmission Provider as an exception. No Black Start Unit shall be eligible to recover the costs of providing Black Start Service in the PJM Region unless it agrees to provide such service for a term of commitment established under section 5 or 6 below.

5. Owners of Black Start Units selected to provide Black Start Service in accordance with section 4 and electing to forego any recovery of new or additional Black Start Capital Costs shall

commit to provide Black Start Service from such Black Start Units for an initial term of no less than two years and authorize the Transmission Provider to resell Black Start Service from its Black Start Units. The term commitment shall continue to extend until the Black Start Unit owner, or the Transmission Owner, with the consent of the Transmission Provider, or the Transmission Provider, with the consent of the Transmission Owner, provides written, one-year advance notice of its intention to terminate the commitment.

6. Owners of Black Start Units selected to provide Black Start Service in accordance with section 4 and electing to recover new or additional Black Start Capital Costs shall commit to provide Black Start Service from such Black Start Units for a term based upon the age of the Black Start Unit or the longest expected life of the Incremental Black Start Capital Cost, as set forth in the applicable CRF Tables in Paragraph 18. For those Black Start Units that elect to recover new or additional Black Start Capital Costs in addition to a prior, FERC-approved cost recovery rate, the applicable commitment period shall be the longer of the FERC-approved recovery period or the applicable term of commitment as set forth in the CRF Tables in Paragraph 18. Either the Transmission Provider, with the consent of the Transmission Owner, or the Transmission Owner, with the consent of the Transmission Provider, may terminate the commitment with one year advance notice of its intention to the Black Start Unit owner, but the Transmission Owner shall reimburse the Black Start Unit owner for any amount of unrecovered Fixed Black Start Service Costs over a period not to exceed five years. A Black Start Unit owner may terminate the provision of Black Start Service with one year advance notice (or its commitment period may be involuntarily terminated pursuant to the section 15 below). Such Black Start Unit shall forego any otherwise existing entitlement to future revenues collected pursuant to this Schedule 6A and fully refund any amount of the Black Start Capital Costs recovered under a FERC-approved rate (recovered on an accelerated basis pursuant to the provisions of section 17(i)) in excess of the amount that would have been recovered pursuant to section 18 during the same period. At the conclusion of the term of commitment established under this section 6, a Black Start Unit shall commence a new term of commitment under either section 5 or 6, as applicable.

6A. In the event that a Black Start Unit fails to fulfill its commitment established under section 5 to provide Black Start Service, receipt of any Black Start Service revenues associated with the non-performing Black Start Unit shall cease and, for the period of the unit's non-performance, the Black Start Unit owner shall forfeit the Black Start Service revenues associated with the non-performing Black Start Unit that it received or would have received had the Black Start Unit performed, not to exceed revenues for a maximum of one year.

In the event that a Black Start Unit fails to fulfill its commitment established under section 6 above, such unit shall forego any otherwise existing entitlement to future revenues collected pursuant to this Schedule 6A and fully refund any amount of the Black Start Capital Costs recovered under a FERC-approved rate (recovered on an accelerated basis pursuant to the provisions of section 17(i)) in excess of the amount that would have been recovered pursuant to section 18 during the same period, but such unit remains eligible to establish a new commitment under section 5 or 6.

Performance Standards and Outage Restrictions

7. Black Start Units must have the capabilities listed below. These capabilities must be demonstrated in accordance with the criteria set forth in the PJM manuals and will remain in effect for the duration of the commitment to provide Black Start Service.

- a. A Black Start Unit must be able to close its output circuit breaker to a dead (de-energized) bus within 90 minutes of a request from the Transmission Owner or the Transmission Provider.
- b. A Black Start Unit must be capable of maintaining frequency and voltage under varying load.
- c. A Black Start Unit must be able to maintain rated output for a period of time identified by each Transmission Owner's system restoration requirements, in conjunction with the Transmission Provider.

8. Each owner of Black Start Units or Black Start Plants must maintain procedures for the start-up of the Black Start Units.

9. If a Black Start Unit is a generating unit with a high operating factor (subject to Transmission Provider concurrence) with the ability to automatically remain operating at reduced levels when disconnected from the grid, this ability must be demonstrated in accordance with the criteria set forth in the PJM manuals.

10. No more than one Black Start Unit at a Black Start Plant may be subject to planned maintenance at any one time. This restriction excludes outages on common plant equipment that may make all units unavailable. A Black Start Unit not currently designated as critical and on the same voltage level may be substituted for a Black Start Unit that is subject to a planned outage to permit a concurrent planned outage of another critical Black Start Unit at the Black Start Plant to begin. The Black Start Unit used as a substitute must have had a valid annual test within the previous 12 months.

11. Concurrent planned outages at multiple Black Start Plants within a zone may be restricted based on Transmission Owner requirements for Black Start Service availability. Such restrictions must be predefined and approved by Transmission Provider in accordance with the PJM manuals.

Testing

12. To verify that they can be started and operated without being connected to the Transmission System, Black Start Units designated as critical shall be tested annually in accordance with the PJM manuals. The Black Start Unit owner shall determine the time of the annual test.

13. Compensation for energy output delivered to the Transmission System during the annual test shall be provided for the Black Start Unit's minimum run time at the higher of the unit's

cost-capped offer or real-time Locational Marginal Price plus start-up and no-load costs for up to two start attempts, if necessary. For Black Start Units that are generating units with a high operating factor (subject to Transmission Provider's concurrence) with the ability to automatically remain operating at reduced levels when disconnected from the grid, an opportunity cost will be provided to compensate the unit for lost revenues during testing.

14. To receive Black Start Service revenues, a Black Start Unit must have a successful annual test on record with the Transmission Provider within the preceding 13 months.

15. If a Black Start Unit fails the annual test, the unit may be re-tested within a ten-day period without financial penalty. If the Black Start Unit does not successfully re-test within that ten-day period, monthly Black Start Service revenues will be forfeited by that unit from the time of the first unsuccessful test until such time as the unit passes an annual test. If the Black Start Unit owner determines not to make the necessary repairs to enable the Black Start Unit to pass the annual test, the Black Start Unit owner will have failed to fulfill its commitment pursuant to section 5 or section 6, whichever is applicable, of this Schedule 6A and will be subject to the additional forfeiture of revenues set forth in section 6A.

Revenue Requirements

16. The annual Black Start Service revenue requirement shall be the sum of the annual Black Start Service revenue requirements for each generator that is designated as providing Black Start Service and has provided the Transmission Provider with a calculation of its annual Black Start Service revenue requirements. A separate line item shall appear on the participants' Transmission Provider bill for Black Start Service charges and credits.

17. Black Start Service revenue requirements for each Black Start Unit shall be based, at the election of the owner, on either (i) a FERC-approved rate for the recovery of the cost of providing such service for the entire duration of the commitment term set forth in either section 5 or 6, as applicable, or (ii) the formula rates set forth in section 18 of this Schedule 6A for the commitment term set forth in Paragraph 5 or 6 as applicable. Each generator's Black Start Service revenue requirements shall be an annual calculation. Requests for changes to the Black Start Service revenue requirements must be submitted to the Market Monitoring Unit for review and analysis, with supporting data and documentation, pursuant to section III of Attachment M – Appendix and the PJM Manuals. The Market Monitoring Unit and the generator owner shall attempt to come to agreement on the level of each component included in the Black Start Service revenue requirements. The Black Start Service generator owner may submit Black Start Service revenue requirements that it chooses, provided that (i) it has participated in good faith with the process described in this section and in section III of Attachment M - Appendix, (ii) the Black Start Service revenue requirements are no higher than the level defined in any agreement reached by the Black Start Service generator owner and the Market Monitoring Unit that resulted from the foregoing process, and (iii) the Black Start Service revenue requirements are accepted by the Office of the Interconnection subject to the criteria set forth in the Tariff.

In the event that the Black Start Service generator owner and Market Monitoring Unit cannot agree on the level of each component included in the calculation of the Black Start Service

revenue requirements, and the Black Start Service generator owner submits its own values to the Office of the Interconnection that are inconsistent with the Market Monitoring Unit's determination, the Office of the Interconnection shall determine whether to accept such values subject to the requirements of the Tariff and the PJM Manuals. If the Office of the Interconnection does not accept the values submitted by the Black Start Service generator owner in such case, the Black Start Service generator owner may file its proposed values with the Commission for approval. Pursuant to section III of Attachment M - Appendix, if the Office of the Interconnection accepts the Black Start Service revenue requirements submitted by the Black Start Service generator owner in such case, the Market Monitoring Unit may petition the Commission for an order that would require the Black Start Service generator to utilize the values determined by the Market Monitoring Unit or such other values as determined by the Commission. No change to a Black Start Service revenue requirement shall become effective until the existing revenue requirement has been effective for at least twelve months.

18. The formula for calculating a generator's annual Black Start Service revenue requirement is:

$$\{(Fixed\ BSSC) + (Variable\ BSSC) + (Training\ Costs) + (Fuel\ Storage\ Costs)\} * (1 + Z)$$

For units that have the demonstrated ability to operate at reduced levels when automatically disconnected from the grid, the formula is revised to:

$$(Training\ Costs) * (1 + Z)$$

where:

Fixed BSSC

Black Start Units with a commitment established under Paragraph 5 shall calculate Fixed BSSC or "Fixed Black Start Service Costs" in accordance with the following Base Formula Rate:

Base Formula Rate:

$$Net\ CONE * Black\ Start\ Unit\ Capacity * X$$

Where:

"Net CONE" is the then current installed capacity ("ICAP") net Cost of New Entry (expressed in \$/MW year) for the CONE Area where the Black Start Unit is located.

"Black Start Unit Capacity" is the Black Start Unit's installed capacity, expressed in MW.

“X” is the Black Start Service allocation factor unless a higher or lower value is supported by the documentation of the actual costs of providing Black Start Service. For such units qualifying as Black Start Units on the basis of demonstrated ability to operate at reduced levels when automatically disconnected from the grid, X shall be zero. For Black Start Units with a commitment established under section 5, X shall be .01 for Hydro units, .02 for Diesel or CT units.

Black Start Units with a commitment established under Paragraph 6 above shall calculate Fixed BSSC or “Fixed Black Start Service Costs” in accordance with one of the following formulas, as applicable:

Capital Cost Recovery Rate – NERC-CIP Specific Recovery

$$(\text{Net Cone} * \text{Black Start NERC-CIP Unit Capacity} * X) + (\text{Incremental Black Start NERC-CIP Capital Costs} * \text{CRF})$$

Where:

“Net Cone” is the then current installed capacity (“ICAP”) net Cost of New Entry (expressed in \$/MW year) for the CONE area where the Black Start Unit is located.

“Black Start NERC-CIP Unit Capacity” is the Black Start Unit’s installed capacity, expressed in MW, but, for purposes of this calculation, capped at 100 MW for Hydro units, or 50 MW for Diesel or CT units.

“Incremental Black Start NERC-CIP Capital Cost” are those capital costs documented by the owner or accepted by the Commission for the incremental equipment solely necessary to enable a Black Start Unit to maintain compliance with mandatory Critical Infrastructure Protection Reliability Standards (as approved by the Commission and administered by the applicable Electric Reliability Organization).

“CRF” or “Capital Recovery Factor” is equal to the levelized CRF as set forth in the applicable CRF Table set forth below.

A Black Start Unit may elect to terminate forward cost recovery under this Capital Cost Recovery Rate – NERC-CIP Specific Recovery at any time and seek cost recovery under the Capital Cost Recovery Rate, pursuant to the terms and conditions set forth below.

Capital Cost Recovery Rate

$$(\text{FERC-approved rate}) + (\text{Incremental Black Start Capital Costs} * \text{CRF})$$

Where:

“FERC-approved rate” is the Black Start Unit’s current FERC-approved recovery of costs to provide Black Start Service, if applicable.

“Incremental Black Start Capital Costs” are the new or additional capital costs documented by the owner or accepted by the Commission for the incremental equipment solely necessary to enable a unit to provide Black Start Service in addition to whatever other product or services such unit may provide. Such costs shall include those incurred by a Black Start Owner in order to meet NERC Reliability Standards that apply to Black Start Units solely on the basis of the provision of Black Start Service by such unit. However, Incremental Black Start Capital Costs shall not include any capital costs that the Black Start Unit owner is recovering for that unit pursuant to a FERC-approved recovery rate.

“CRF” or “Capital Recovery Factor “ is equal to the levelized CRF based on the age of the Black Start Unit, which is modified to provide Black Start Service, as present in the CRF Table below:

Age of Black Start Unit	Term of Black Start Commitment	Levelized CRF
1 to 5	20	0.125
6 to 10	15	0.146
11 to 15	10	0.198
16+	5	0.363

Or:

Optionally, a Black Start Unit owner may elect to apply an alternative Capital Recovery Factor, in lieu of the age-based CRF Table listed above, which is based upon to the expected Capital Improvement Lifespan of the new or additional capital improvements (as determined by the applicable depreciation period of the capital improvement, as published from time to time by the US Internal Revenue Service). The applicable term of Black Start Service commitment shall be equal to the Capital Improvement Lifespan. In the event that the Black Start Unit seeks recovery of capital improvements that are included in more than one category of Capital Improvement Lifespan (as set forth below), its applicable commitment to provide black start service for such Black Start Unit shall be the longest expected life of those new or additional capital improvements.

Capital Improvement Lifespan (Years)	Levelized CRF
16-20	0.125
11-15	0.146
6-10	0.198

1-5	0.363
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In those circumstances where a Black Start Unit owner has elected to recover Incremental Black Start Capital Costs, in addition to a FERC-approved recovery rate, its applicable term of commitment shall be the greater of: (i) the FERC-approved recovery period, or; (ii) the applicable term of commitment as established by the CRF Tables above.

A Black Start Unit may make a non-revocable election to forego calculation of its Fixed BSSC, and surrender any forward compensation that it otherwise would have been entitled to, in accordance with either Capital Cost Recovery Rate set forth above. In this case, the Black Start Unit shall calculate its Fixed BSSC in accordance with the Base Formula Rate (and provide the applicable term of commitment established in Paragraph 5 above). In the event that the Black Start Unit seeks to recover further new or additional Black Start Capital Costs, it may not seek to recover any portion of those Black Start Capital Costs as its Fixed BSSC that it had previously forfeited.

After a Black Start Unit has recovered its allowable Incremental Black Start Capital Costs or Incremental Black Start NERC-CIP Capital Costs, as provided by the applicable Capital Cost Recovery Rate, and has satisfied its applicable commitment period required under Paragraph 6, the Black Start Unit shall be committed to providing black start in accordance with Paragraph 5 of this Schedule 6A and calculate its Fixed BSSC in accordance with the Base Formula Rate.

Variable BSSC

All Black Start Units shall calculate Variable BSSC or “Variable Black Start Service Costs” in accordance with the following formula:

$$\text{Black Start Unit O\&M} * Y$$

Where:

“Black Start Unit O&M” are the operations and maintenance costs attributable to supporting Black Start Service and must equal the annual variable O&M outlined in the PJM Cost Development Guidelines set forth in the PJM Manuals. Such costs shall include those incurred by a Black Start Owner in order to meet NERC Reliability Standards that apply to the Black Start Unit solely on the basis of the provision of Black Start Service by unit.

“Y” is 0.01, unless a higher or lower value is supported by the documentation of costs. If a value of Y is submitted for this cost, a (1-Y) factor must be applied to the Black Start Unit’s O&M costs on the unit’s cost-based energy schedule, calculated based on the Cost Development Guidelines in the PJM Manuals.

For units qualifying as Black Start Units on the basis of a demonstrated ability to operate at reduced levels when automatically disconnected from the grid, there are no variable

costs associated with providing Black Start Service and the value for Variable BSSC shall be zero.

Training Costs:

All Black Start Units shall calculate Training Costs in accordance with the following formula:

50 staff hours/year/plant*75/hour

Fuel Storage Costs:

Black Start Units that cannot use oil for fuel shall calculate Fuel Storage Costs or “FSC” as zero. Black Start Units that can use oil for fuel shall calculate Fuel Storage Costs in accordance with the following formula:

$$\{MTSL + [(\# \text{ Run Hours}) * (\text{Fuel Burn Rate})]\} * (\text{12 Month Forward Strip} + \text{Basis}) * (\text{Bond Rate})$$

Where:

Run Hours are the actual number of hours a Transmission Provider requires a Black Start Unit to run. Run Hours shall be at least 16 hours or as defined by the Transmission Owner restoration plan, whichever is less.

“Fuel Burn Rate” is actual fuel burn rate for the Black Start Unit.

“12-Month Forward Strip” is the average of forward prices for the fuel burned in the Black Start Unit.

“Basis” is the transportation costs from the location referenced in the forward price data to the Black Start Unit plus any variable taxes.

“Bond rate” is the value determined with reference to the Moody's Utility Index for bonds rated Baa1.

“MTSL” is the “minimum tank suction level” and shall apply where no direct current pumps are available for the Black Start Unit.

For units qualifying as Black Start Units on the basis of a demonstrated ability to operate at reduced levels when automatically disconnected from the grid, there are no associated fuel storage costs and the value for FSC shall be zero.

Z

Z shall be an incentive factor for Black Start Units with a commitment established under section 5 above and shall be ten percent.

At least every two years, PJM shall review the formula and its costs components set forth in this section, and report on the results of that review to stakeholders.

19. Transmission Provider or its agent shall have the right to independently audit the accounts and records of each Black Start Unit that is receiving payments for providing Black Start Service.

20. PJM shall notify its Members when a Black Start Unit seeks to recover new or additional Black Start NERC-CIP Capital Costs under Paragraph 18 no later than thirty (30) days prior to the effective date of the recovery. At the written request of any PJM Member, made simultaneously to the Market Monitoring Unit and PJM, with notice to the Black Start Unit owner, the Market Monitoring Unit shall make available to the PJM Member for inspection at the offices of the Market Monitoring Unit, all data supporting the requested new or additional NERC-CIP specific Capital Costs. The Black Start Unit owner may elect to attend this review. In all cases, the supporting data is to be held confidential and may not be distributed.

21. The Market Monitoring Unit shall include a Black Start Service summary in its annual State of the Market report which will set forth a descriptive summary of the new or additional Black Start NERC-CIP Capital Costs requested by Black Start Units, and include a list of the types of capital costs requested and the overall cost of such capital improvements on an aggregate basis such that no data is attributable to an individual Black Start Unit.

Credits

22. Monthly credits are provided to generators that submit to the Transmission Provider their annual revenue requirements established pursuant to section 17 of this Schedule 6A. The generator's monthly credit is equal to 1/12 of its annual Black Start Service revenue requirement for eligible critical Black Start Units.

23. Revenue requirements for jointly owned Black Start Units will be allocated to the owners based on ownership percentage.

24. Transmission Provider shall not compensate generators for Black Start Service unless they meet the Transmission Provider and Applicable Regional Reliability Council criteria for Black Start Service and provide Transmission Provider with all necessary data in accordance with this Schedule 6A and the PJM manuals.

Charges

25. Zonal rates will be based on Black Start Service capability of generation units nominated by each transmission zone and allocated to network service customers and point-to-point reservations.

26. Revenue requirements for Black Start Units nominated by a Transmission Owner as critical (regardless of zonal location) will be allocated to the nominating Transmission Owner's zone.

27. Purchasers of Black Start Service shall be charged for such service in accordance with the following formulae.

Monthly Charge for a purchaser receiving Network Integration Transmission Service or Point-to-Point Transmission Service to serve Non-Zone Load = Allocation Factor * Total Generation Owner Monthly Black Start Service Revenue Requirement

Monthly Charge for a purchaser receiving Network Integration Transmission Service or Point-to-Point Transmission Service to serve Zone Load = Allocation Factor * Zonal Generation Owner Monthly Black Start Service Revenue Requirement * Adjustment Factor

Where:

Purchaser serving Non-Zone Load is a Network Customer serving Non-Zone Network Load or a Transmission Customer where the Point of Delivery is at the boundary of the PJM Region.

Zonal Generation Owner Monthly Black Start Service Revenue Requirement is the sum of the monthly Black Start Service revenue requirements for each generator nominated by the Transmission Owners in that zone.

Total Generation Owner Monthly Black Start Service Revenue Requirement is the sum of the Zonal Generation Owner Monthly Black Start Service Revenue Requirements for all Zones in the PJM Region.

Allocation Factor is the monthly transmission use of each Network Customer or Transmission Customer per Zone or Non-Zone, as applicable, on a megawatt basis divided by the total transmission use in the Zone or in the PJM Region, as applicable, on a megawatt basis.

For Network Customers, monthly transmission use on a megawatt basis is the sum of a Network Customer's daily values of DCPZ or DCPNZ (as those terms are defined in Section 34.1) as applicable, for all days of the month.

For Transmission Customers, monthly transmission use on a megawatt basis is the sum of the Transmission Customer's hourly amounts of Reserved Capacity in the month (not curtailed by PJM) divided by 24.

Adjustment Factor is determined as the sum of the total monthly transmission use in the PJM Region on a megawatt basis, exclusive of such use by Network Customers and Transmission Customers serving Non-Zone Load, divided by the total monthly transmission use in the PJM Region on a megawatt basis.

In the event that a single customer is serving load in more than one Zone, or serving Non-Zone Load as well as load in one or more Zones, or is both a Network Customer and a Transmission Customer, the Monthly Charge for such a customer shall be the sum of the Monthly Charges determined by applying the appropriate formulae set forth in this Schedule 6A.