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January 8, 2026

The Honorable Debbie-Anne A. Reese, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E. Room 1A
Washington, D.C. 20426

*Re: PJM Interconnection L.L.C., Docket No. ER26-980-000
Governing Document Enhancements and Clarifications of the Tariff, Operating Agreement and
Reliability Assurance Agreement regarding Markets Rule Revisions*

Dear Secretary Reese,

Pursuant to Section 205 of the Federal Power Act (“FPA”),¹ and Part 35 of the Federal Energy Regulatory Commission’s (“Commission”) Regulations,² PJM Interconnection, L.L.C. (“PJM”) hereby submits for filing clerical and ministerial revisions to correct, clarify, and/or make consistent certain provisions of the PJM Open Access Transmission Tariff (“Tariff”), the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. (“Operating Agreement”) and the Reliability Assurance Agreement among Load Serving Entities in the PJM Region (“RAA”) pertaining to Markets revisions.

I. BACKGROUND

In the last several years, PJM has used its Governing Documents Enhancement and Clarifications Subcommittee (“GDECS”) stakeholder process as the primary vehicle to effectuate review of its Governing Documents to ensure that provisions are clear, consistent, and accurately reflect PJM’s practices and procedures. To date, PJM has submitted several filings to correct and clarify definitions and provisions identified via GDECS that were ambiguous, incorrect, or required additional detail, which the Commission has accepted.³ PJM and its stakeholders utilize the GDECS process as a means to continually review and

¹ 16 U.S.C. § 824d (2025).

² 18 C.F.R. Part 35 (2025).

³ See, e.g., *PJM Interconnection L.L.C.*, Delegated Letter Order, Docket No. ER19-744-000 (Feb. 4, 2019); *PJM Interconnection L.L.C.*, Delegated Letter Order, Docket No. ER18-1528-000 (June 25, 2018); *PJM Interconnection, L.L.C.*, Delegated Letter Order, Docket No. ER17-1372-000 (May 17, 2017); *PJM Interconnection, L.L.C.*, Delegated Letter Order, Docket No. ER16-1737-000 (June 20, 2016); *PJM Interconnection, L.L.C.*, 155 FERC ¶ 61,303 (2016)

make non-controversial substantive and non-substantive revisions to the Governing Documents.⁴ Through these ongoing efforts, PJM has identified a number of additional revisions that will help clarify, correct, and/or reflect previously filed and accepted revisions to PJM's Governing Documents, thereby decreasing the likelihood of misinterpretation or ambiguity in the language of a given provision. Other proposed revisions will correct or remove language that does not accurately describe the current processes that PJM utilizes or is no longer applicable, in an effort to eliminate inconsistencies between provisions within the Governing Documents or otherwise bring the Governing Documents up to date.

II. PROPOSED REVISIONS

The revisions proposed herein remove obsolete provisions and terms, eliminate ambiguity, modify incorrect or update cross references, correct formatting and grammatical errors and, reincorporate revisions that the Commission has previously accepted but which are not reflected in the posted versions of the Governing Documents, and otherwise clarify provisions.⁵ For ease of review, PJM has provided a table appended hereto as Attachment C, which describes the proposed revisions, the Governing Document in which the revision is being made, the current language, and the rationale for making the referenced changes. Given that each of the proposed revisions are discrete, severable, and not interdependent, PJM requests the Commission evaluate the justness and reasonableness of these revisions separately.⁶

(accepting all proposed revisions except one); *PJM Interconnection L.L.C.*, Delegated Letter Order, Docket No. ER20-2799-000 (Oct. 9, 2020), and *PJM Interconnection L.L.C.*, Delegated Letter Order, Docket No. ER22-486-000 (June 22, 2022).

⁴ See PJM, GDECS Charter, <https://www.pjm.com/-/media/DotCom/committees-groups/subcommittees/gdecs/20151023/20151023-charter.ashx?la=en> (indicating that meetings will be held as needed and that expected duration of the work of the subcommittee to be "indefinite.").

⁵ As part of this filing, PJM is proposing revisions to: Tariff, Definitions R-S; Schedule 6A; Attachment K-Appendix, Section 1.4B; Attachment N-4; Attachment Q; Attachment DD, sections 5.5A and 11B; Operating Agreement, Definitions S-T; Schedule 1, section 1.4B; and RAA, Schedule 8.1.G.

⁶ See *NRG Power Mktg., LLC v. FERC*, 862 F.3d 108, 114-15 (D.C. Cir. 2017) (finding that the Commission has "authority to propose modifications to a utility's [FPA section 205] proposal if the utility consents to the modifications") (emphasis in original); see also *Public Service Company of New Mexico*, 178 FERC ¶ 61,088, at P 31 n.48 (2022) (accepting the filer's proposed tariff revisions, but directing certain revisions to remove specific charges, as agreed to by the filer) (citing 862 F.3d 108); *Southwest Power Pool, Inc.*, 177 FERC ¶ 61,148, at P 27 n.42 (2021); *PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,080, at P 43 n.54 (2021); *Southwest Power Pool, Inc.*, 177 FERC ¶

III. STAKEHOLDER PROCESS

PJM worked with its stakeholders through the GDECS on September 12, 2025 and September 30, 2025 to review changes that were needed to PJM's Governing Documents.⁷ PJM discussed the proposed revisions and associated rationale for each of the items listed on the enclosed table with stakeholders in the GDECS during this timeframe. The proposed revisions were presented to, and discussed with, the PJM Markets and Reliability Committee ("MRC") between October and November 2025. The MRC endorsed the revisions by acclamation with no objection or abstentions at its November 20, 2025 meeting.⁸ The Members Committee ("MC") endorsed the revisions by acclamation with no objections and no abstentions at its December 17, 2025 meeting.⁹

IV. PROPOSED EFFECTIVE DATE

PJM respectively requests that the Commission accept certain ministerial corrections to the PJM Tariff, and Operating Agreement effective March 10, 2026, and other certain ministerial corrections to the PJM Tariff and RAA effective February 1, 2028.

If the Commission finds a waiver is necessary regarding the February 1, 2028 effective date, then PJM requests waiver of the FPA and the Commission's 60 days' prior notice requirement¹⁰ to allow the Commission to accept these ministerial corrections, to be effective on

61,230, at P 24 n.43 (2021).

⁷ The timeline for this GDECS item was posted for the April 28, 2025 meeting and is available here: <https://www.pjm.com/-/media/DotCom/committees-groups/subcommittees/gdecs/2025/20250930/20250930-item-02---gdecs-timeline.pdf>.

⁸ The Consent Agenda for the June 18, 2025 MRC meeting is available here: <https://www.pjm.com/-/media/DotCom/committees-groups/committees/mrc/2025/20251217/20251217-consent-agenda-a---draft-mrc-minutes---11202025.pdf>.

⁹ The GDECS Presentation for the July 23, 2025 MC Consent Agenda is available here: <https://www.pjm.com/-/media/DotCom/committees-groups/committees/mc/2025/20251217/20251217-consent-agenda-c---1-gdecs-governing-document-revisions---presentation.pdf>.

¹⁰ See 16 U.S.C. § 824d(d); 18 C.F.R. § 35.3.

February 1, 2028. Allowing the updated versions of Tariff, Attachment N-4, Attachment DD, section 11B and RAA, Schedule 8.1.G to be effective on February 1, 2028, is appropriate because that will ensure that these sections consistently and continuously reflect the correct, Commission-accepted eTariff records on the effective date granted by the Commission. Good cause exists for granting such waiver for the reasons set forth above. Accordingly, the Commission should accept this filing with the requested effective dates.

V. DOCUMENTS ENCLOSED

PJM encloses the following as part of this filing:

1. This transmittal letter;
2. Attachment A: revisions to the Tariff and Operating Agreement in marked format;
3. Attachment B: revisions to the Tariff and Operating Agreement in clean format; and
4. Attachment C: chart of revisions.

VI. COMMUNICATIONS

PJM requests that all communications regarding this filing be directed to the following persons:

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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. In accordance with the Commission's regulations,¹¹ PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: <https://www.pjm.com/library/filing-order> 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 Region¹² alerting them that this filing has been made by PJM and is 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 FERC's eLibrary website located at the following link: <http://www.ferc.gov/docsfiling/elibrary.asp> in accordance with the Commission's regulations and Order No. 714.

VIII. CONCLUSION

In accordance with the foregoing, PJM respectfully requests that the Commission accept this ministerial filing, as discussed herein.

Respectfully submitted,

/s/ Erin Lai

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¹¹ See 18 C.F.R §§ 35.2(e) and 385.2010(f)(3).

¹² PJM already maintains updates and regularly uses e-mail lists for all PJM Members and affected state commissions.

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On behalf of PJM Interconnection, L.L.C.

Attachment A

Revisions to the PJM Open Access Transmission Tariff, Operating Agreement and Reliability Assurance Agreement

(Marked Format)

(Identified by Additional Cover Pages)

Revisions to the
PJM Open Access Transmission Tariff
Effective March 10, 2026

(Marked Format)

Definitions – R - S

Ramping Capability:

“Ramping Capability” shall mean the sustained rate of change of generator output, in megawatts per minute.

Rating Agency:

“Rating Agency” shall mean a Nationally Recognized Statistical Rating Organization that assesses the financial condition, strength and stability of companies and governmental entities and their ability to timely make principal and interest payments on their debts and the likelihood of default, and assigns a rating that reflects its assessment of the ability of the company or governmental entity to make the debt payments.

Real-time Congestion Price:

“Real-time Congestion Price” shall mean the Congestion Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Loss Price:

“Real-time Loss Price” shall mean the Loss Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Energy Market:

“Real-time Energy Market” shall mean the purchase or sale of energy and payment of Transmission Congestion Charges for quantity deviations from the Day-ahead Energy Market in the Operating Day.

Real-time Offer:

“Real-time Offer” shall mean a new offer or an update to a Market Seller’s existing cost-based or market-based offer for a clock hour, submitted for use after the close of the Day-ahead Energy Market.

Real-time Prices:

“Real-time Prices” shall mean the Locational Marginal Prices resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Settlement Interval:

“Real-time Settlement Interval” shall mean the interval used by settlements, which shall be every five minutes.

Real-time System Energy Price:

“Real-time System Energy Price” shall mean the System Energy Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Reasonable Efforts:

“Reasonable Efforts” shall mean, with respect to any action required to be made, attempted, or taken by an Interconnection Party or by a Construction Party under Tariff, Part IV or Tariff, Part VI, an Interconnection Service Agreement, or a Construction Service Agreement, such efforts as are timely and consistent with Good Utility Practice and with efforts that such party would undertake for the protection of its own interests.

Receiving Party:

“Receiving Party” shall mean the entity receiving the capacity and energy transmitted by the Transmission Provider to Point(s) of Delivery.

Referral:

“Referral” shall mean a formal report of the Market Monitoring Unit to the Commission for investigation of behavior of a Market Participant, of behavior of PJM, or of a market design flaw, pursuant to Tariff, Attachment M, section IV.I.

Reference Resource:

For Delivery Years up to and including the 2025/2026 Delivery Year, “Reference Resource” shall mean a combustion turbine generating station, configured with a single General Electric Frame 7HA turbine with evaporative cooling, Selective Catalytic Reduction technology, dual fuel capability, and a heat rate of 9.134 Mmbtu/ MWh. For the 2026/2027 Delivery Year and subsequent Delivery Years, “Reference Resource” shall mean, for all CONE Areas, a combustion turbine generating station, configured with a single General Electric Frame 7HA turbine with evaporative cooling, Selective Catalytic Reduction technology, dual fuel capability, and a heat rate of 9.189 Mmbtu/MWh.

Regional Entity:

“Regional Entity” shall have the same meaning specified in the Operating Agreement.

Regional Network Integration Transmission Service:

“Regional Network Integration Transmission Service” shall mean firm transmission service taken by Network Customers that involves the delivery of energy and/or capacity from Network Resources physically interconnected to the Transmission Provider’s transmission system to Network Load physically interconnected to the Transmission Provider’s transmission system.

Regional Transmission Expansion Plan:

“Regional Transmission Expansion Plan” shall mean the plan prepared by the Office of the Interconnection pursuant to Operating Agreement, Schedule 6 for the enhancement and expansion of the Transmission System in order to meet the demands for firm transmission service in the PJM Region.

Regional Transmission Group (RTG):

“Regional Transmission Group” or “RTG” shall mean a voluntary organization of transmission owners, transmission users and other entities approved by the Commission to efficiently coordinate transmission planning (and expansion), operation and use on a regional (and interregional) basis.

Regulation:

“Regulation” shall mean the capability of a specific generation resource or Demand Resource with appropriate telecommunications, control and response capability to separately increase and decrease its output or adjust load in response to a regulating control signal, in accordance with the specifications in the PJM Manuals.

Regulation Requirement:

“Regulation Requirement” shall mean the required megawatts of performance-adjusted Regulation capability to be maintained in a Regulation Zone. The Regulation Requirement is defined as a set megawatt value by commitment interval and can increase to account for additional operational uncertainty, in accordance with the PJM Manuals.

Regulation Zone:

“Regulation Zone” shall mean any of those one or more geographic areas, each consisting of a combination of one or more Control Zone(s) as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, regulation service.

Relevant Electric Retail Regulatory Authority:

“Relevant Electric Retail Regulatory Authority” shall mean an entity that has jurisdiction over and establishes prices and policies for competition for providers of retail electric service to end-customers, such as the city council for a municipal utility, the governing board of a cooperative utility, the state public utility commission or any other such entity.

Reliability Assurance Agreement or PJM Reliability Assurance Agreement:

“Reliability Assurance Agreement” or “PJM Reliability Assurance Agreement” shall mean that certain Reliability Assurance Agreement Among Load Serving Entities in the PJM Region, on

file with FERC as PJM Interconnection L.L.C. Rate Schedule FERC No. 44, and as amended from time to time thereafter.

Reliability Pricing Model Auction:

“Reliability Pricing Model Auction” or “RPM Auction” shall mean the Base Residual Auction or any Incremental Auction.

Required Transmission Enhancements:

“Regional Transmission Enhancements” shall mean enhancements and expansions of the Transmission System that (1) a Regional Transmission Expansion Plan developed pursuant to Operating Agreement, Schedule 6 or (2) any joint planning or coordination agreement between PJM and another region or transmission planning authority set forth in Tariff, Schedule 12-Appendix B (“Appendix B Agreement”) designates one or more of the Transmission Owner(s) to construct and own or finance. Required Transmission Enhancements shall also include enhancements and expansions of facilities in another region or planning authority that meet the definition of transmission facilities pursuant to FERC’s Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities constructed pursuant to an Appendix B Agreement cost responsibility for which has been assigned at least in part to PJM pursuant to such Appendix B Agreement.

Reserved Capacity:

“Reserved Capacity” shall mean the maximum amount of capacity and energy that the Transmission Provider agrees to transmit for the Transmission Customer over the Transmission Provider’s Transmission System between the Point(s) of Receipt and the Point(s) of Delivery under Tariff, Part II. Reserved Capacity shall be expressed in terms of whole megawatts on a sixty (60) minute interval (commencing on the clock hour) basis.

Reserve Penalty Factor:

“Reserve Penalty Factor” shall mean the cost, in \$/MWh, associated with being unable to meet a specific reserve requirement in a Reserve Zone or Reserve Sub-zone. A Reserve Penalty Factor will be defined for each reserve requirement in a Reserve Zone or Reserve Sub-zone.

Reserve Sub-zone:

“Reserve Sub-zone” shall mean any of those geographic areas wholly contained within a Reserve Zone, consisting of a combination of a portion of one or more Control Zone(s) as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, reserve service.

Reserve Zone:

“Reserve Zone” shall mean any of those geographic areas consisting of a combination of one or more Control Zone(s), as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, reserve service.

Residual Auction Revenue Rights:

“Residual Auction Revenue Rights” shall mean incremental stage 1 Auction Revenue Rights created within a Planning Period by an increase in transmission system capability, including the return to service of existing transmission capability, that was not modeled pursuant to Operating Agreement, Schedule 1, section 7.5 and the parallel provisions of Tariff, Attachment K-Appendix, section 7.5 in compliance with Operating Agreement, Schedule 1, section 7.4.2 (h) and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.2(h), and, if modeled, would have increased the amount of stage 1 Auction Revenue Rights allocated pursuant to Operating Agreement, Schedule 1, section 7.4.2 and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.2; provided that, the foregoing notwithstanding, Residual Auction Revenue Rights shall exclude: 1) Incremental Auction Revenue Rights allocated pursuant to Tariff, Part VI; and 2) Auction Revenue Rights allocated to entities that are assigned cost responsibility pursuant to Operating Agreement, Schedule 6 for transmission upgrades that create such rights.

Residual Metered Load:

“Residual Metered Load” shall mean all load remaining in an electric distribution company’s fully metered franchise area(s) or service territory(ies) after all nodally priced load of entities serving load in such area(s) or territory(ies) has been carved out.

Resource Substitution Charge:

“Resource Substitution Charge” shall mean a charge assessed on Capacity Market Buyers in an Incremental Auction to recover the cost of replacement Capacity Resources.

Restricted Collateral:

“Restricted Collateral” shall mean Collateral, held by PJM or PJMSettlement, which cannot be used, netted, credited or spent by the Participant to satisfy any other obligations.

Revenue Data for Settlements:

“Revenue Data for Settlements” shall mean energy quantities used in accounting and billing as determined pursuant to Tariff, Attachment K-Appendix and the corresponding provisions of Operating Agreement, Schedule 1.

RPM Seller Credit:

“RPM Seller Credit” shall mean an additional form of Unsecured Credit defined in Tariff, Attachment Q, section VI.

Scheduled Incremental Auctions:

“Scheduled Incremental Auctions” shall refer to the First, Second, or Third Incremental Auction.

Schedule of Work:

“Schedule of Work” shall mean that schedule attached to the Interconnection Construction Service Agreement setting forth the timing of work to be performed by the Constructing Entity pursuant to the Interconnection Construction Service Agreement, based upon the Facilities Study and subject to modification, as required, in accordance with Transmission Provider’s scope change process for interconnection projects set forth in the PJM Manuals.

Scope of Work:

“Scope of Work” shall mean that scope of the work attached as a schedule to the Interconnection Construction Service Agreement and to be performed by the Constructing Entity(ies) pursuant to the Interconnection Construction Service Agreement, provided that such Scope of Work may be modified, as required, in accordance with Transmission Provider’s scope change process for interconnection projects set forth in the PJM Manuals.

Seasonal Capacity Performance Resource:

“Seasonal Capacity Performance Resource” shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Secondary Reserve:

“Secondary Reserve” shall mean the reserve capability of generation resources that can be converted fully into energy or Economic Load Response Participant resources whose demand can be reduced within 30 minutes (less the capability of such resources to provide Primary Reserve), from the request of the Office of the Interconnection, regardless of whether the equipment providing the reserve is electrically synchronized to the Transmission System or not.

Secondary Systems:

“Secondary Systems” shall mean control or power circuits that operate below 600 volts, AC or DC, including, but not limited to, any hardware, control or protective devices, cables, conductors, electric raceways, secondary equipment panels, transducers, batteries, chargers, and voltage and current transformers.

Second Incremental Auction:

“Second Incremental Auction” shall mean an Incremental Auction conducted ten months before the Delivery Year to which it relates.

Security:

“Security” shall mean the security provided by the New Service Customer pursuant to Tariff, section 212.4 or Tariff, Part VI, section 213.4 to secure the New Service Customer’s responsibility for Costs under the Interconnection Service Agreement or Upgrade Construction Service Agreement and Tariff, Part VI, section 217.

Segment:

“Segment” shall have the same meaning as described in Operating Agreement, Schedule 1, section 3.2.3(e), and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(e).

Self-Supply:

“Self-Supply” shall mean Capacity Resources secured by a Load-Serving Entity, by ownership or contract, outside a Reliability Pricing Model Auction, and used to meet obligations under this Attachment or the Reliability Assurance Agreement through submission in a Base Residual Auction or an Incremental Auction of a Sell Offer indicating such Market Seller’s intent that such Capacity Resource be Self-Supply. Self-Supply may be either committed regardless of clearing price or submitted as a Sell Offer with a price bid. A Load Serving Entity’s Sell Offer with a price bid for an owned or contracted Capacity Resource shall not be deemed “Self-Supply,” unless it is designated as Self-Supply and used by the LSE to meet obligations under this Attachment or the Reliability Assurance Agreement.

Self-Supply Entity:

“Self-Supply Entity” shall mean the following types of Load Serving Entity that operate under long-standing business models: single customer entity, public power entity, or vertically integrated utility, where “vertically integrated utility” means a utility that owns generation, includes such generation in its regulated rates, and earns a regulated return on its investment in such generation or receives any cost recovery for such generation through bilateral contracts; “single customer entity” means a Load Serving Entity that serves at retail only customers that are under common control with such Load Serving Entity, where such control means holding 51% or more of the voting securities or voting interests of the Load Serving Entity and all its retail customers; and “public power entity” means cooperative and municipal utilities, including public power supply entities comprised of either or both of the same and rural electric cooperatives, and joint action agencies.

Self-Supply Seller:

“Self-Supply Seller” shall mean, for purposes of evaluating Buyer-Side Market Power, the following types of Load Serving Entities that operate under long-standing business models: vertically integrated utility or public power entity, where “vertically integrated utility” means a utility that owns generation, includes such generation in its state-regulated rates, and earns a state-regulated return on its investment in such generation; and “public power entity” means electric cooperatives that are either rate regulated by the state or have their long-term resource plan approved or otherwise reviewed and accepted by a Relevant Electric Retail Regulatory

Authority and municipal utilities or joint action agencies that are subject to direct regulation by a Relevant Electric Retail Regulatory Authority.

Sell Offer:

“Sell Offer” shall mean an offer to sell Capacity Resources in a Base Residual Auction, Incremental Auction, or Reliability Backstop Auction.

Service Agreement:

“Service Agreement” shall mean the initial agreement and any amendments or supplements thereto entered into by the Transmission Customer and the Transmission Provider for service under the Tariff.

Service Commencement Date:

“Service Commencement Date” shall mean the date the Transmission Provider begins to provide service pursuant to the terms of an executed Service Agreement, or the date the Transmission Provider begins to provide service in accordance with Tariff, Part II, section 15.3 or Tariff, Part III, section 29.1.

Short-Term Firm Point-To-Point Transmission Service:

“Short-Term Firm Point-To-Point Transmission Service” shall mean Firm Point-To-Point Transmission Service under Tariff, Part II with a term of less than one year.

Short-term Project:

“Short-term Project” shall have the same meaning provided in the Operating Agreement.

Site:

“Site” shall mean all of the real property, including but not limited to any leased real property and easements, on which the Customer Facility is situated and/or on which the Customer Interconnection Facilities are to be located.

Small Commercial Customer:

“Small Commercial Customer,” as used in RAA, Schedule 6 and Tariff, Attachment DD-1, shall mean a commercial retail electric end-use customer of an electric distribution company that participates in a mass market demand response program under the jurisdiction of a RERRA and satisfies the definition of a “small commercial customer” under the terms of the applicable RERRA’s program, provided that the customer has an annual peak demand no greater than 100kW.

Small Generation Resource:

“Small Generation Resource” shall mean an Interconnection Customer’s device of 20 MW or less for the production and/or storage for later injection of electricity identified in an Interconnection Request, but shall not include the Interconnection Customer’s Interconnection Facilities. This term shall include Energy Storage Resources and/or other devices for storage for later injection of energy.

Small Inverter Facility:

“Small Inverter Facility” shall mean an Energy Resource that is a certified small inverter-based facility no larger than 10 kW.

Small Inverter ISA:

“Small Inverter ISA” shall mean an agreement among Transmission Provider, Interconnection Customer, and Interconnected Transmission Owner regarding interconnection of a Small Inverter Facility under Tariff, Part IV, section 112B.

Special Member:

“Special Member” shall mean an entity that satisfies the requirements of Operating Agreement, Schedule 1, section 1.5A.02, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.02, or the special membership provisions established under the Emergency Load Response and Pre-Emergency Load Response Programs.

Spot Market Backup:

“Spot Market Backup” shall mean the purchase of energy from, or the delivery of energy to, the PJM Interchange Energy Market in quantities sufficient to complete the delivery or receipt obligations of a bilateral contract that has been curtailed or interrupted for any reason.

Spot Market Energy:

“Spot Market Energy” shall mean energy bought or sold by Market Participants through the PJM Interchange Energy Market at System Energy Prices determined as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

Start Additional Labor Costs:

“Start Additional Labor Costs” shall mean additional labor costs for startup required above normal station manning levels.

Start Fuel:

For units without a soak process, “Start Fuel” shall consist of fuel consumed from first fire of the start process to first breaker closing, plus any fuel expended from last breaker opening to shutdown.

For units with a soak process, “Start Fuel” is fuel consumed from first fire of the start process (initial reactor criticality for nuclear units) to dispatchable output (including auxiliary boiler fuel), plus any fuel expended from last breaker opening to shutdown, excluding normal plant heating/auxiliary equipment fuel requirements. Start Fuel included for each temperature state from breaker closure to dispatchable output shall not exceed the unit specific soak time period reviewed and approved as part of the unit-specific parameter process detailed in Tariff, Attachment K-Appendix, section 6.6(c) or the defaults below:

- Cold Soak Time = $0.73 * \text{unit specific Minimum Run Time (in hours)}$
- Intermediate Soak Time = $0.61 * \text{unit specific Minimum Run Time (in hours)}$
- Hot Soak Time = $0.43 * \text{unit specific Minimum Run Time (in hours)}$

Start-Up Costs:

“Start-Up Costs” shall consist primarily of the cost of fuel, as determined by the unit’s start heat input (adjusted by the performance factor) times the fuel cost. It also includes operating costs, Maintenance Adders, emissions allowances/adders, and station service cost. Start-Up Costs can vary with the unit offline time being categorized in three unit temperature conditions: hot, intermediate and cold.

For units with a steam turbine and a soak process (nuclear, steam, and combined cycle), “Start Fuel” is fuel consumed from first fire of start process (initial reactor criticality for nuclear units): Start-Up Costs shall mean the net unit costs from PJM’s notification to the level at which the unit can follow PJM’s dispatch, and from last breaker open to shutdown.

For units without a steam turbine and no soak process (engines, combustion turbines, Intermittent Resources, and Energy Storage Resources): Start-Up Costs shall mean the unit costs from PJM’s notification to first breaker close and from last breaker open to shutdown.

State:

“State” shall mean the District of Columbia and any State or Commonwealth of the United States.

State Commission:

“State Commission” shall mean any state regulatory agency having jurisdiction over retail electricity sales in any State in the PJM Region.

State Estimator:

“State Estimator” shall mean the computer model of power flows specified in Operating Agreement, Schedule 1, section [2-31.11A](#) and the parallel provisions of Tariff, Attachment K-Appendix, section [2-31.11A](#).

State of Charge:

“State of Charge” shall mean the quantity of physical energy stored in an Energy Storage Resource Model Participant or in a storage component of a Hybrid Resource in proportion to its maximum State of Charge capability. State of Charge is quantified as defined in the PJM Manuals.

State of Charge Management:

“State of Charge Management” shall mean the control of State of Charge of an Energy Storage Resource Market Participant or a storage component of a Hybrid Resource using minimum and maximum discharge (and, as applicable, charge) limits, changes in operating mode (as applicable), discharging (and, as applicable, charging) offer curves, and self-scheduling of non-dispatchable sales (and, as applicable, purchases) of energy in the PJM markets. State of Charge Management shall not interfere with the obligation of a Market Seller of an Energy Storage Resource Model Participant or of a Hybrid Resource to follow PJM dispatch, consistent with all other resources.

State Subsidy:

“State Subsidy” shall mean a direct or indirect payment, concession, rebate, subsidy, non-bypassable consumer charge, or other financial benefit that is as a result of any action, mandated process, or sponsored process of a state government, a political subdivision or agency of a state, or an electric cooperative formed pursuant to state law, and that

(1) is derived from or connected to the procurement of (a) electricity or electric generation capacity sold at wholesale in interstate commerce, or (b) an attribute of the generation process for electricity or electric generation capacity sold at wholesale in interstate commerce; or

(2) will support the construction, development, or operation of a new or existing Capacity Resource; or

(3) could have the effect of allowing the unit to clear in any PJM capacity auction.

Notwithstanding the foregoing, State Subsidy shall not include (a) payments, concessions, rebates, subsidies, or incentives designed to incent, or participation in a program, contract or other arrangement that utilizes criteria designed to incent or promote, general industrial development in an area or designed to incent siting facilities in that county or locality rather than another county or locality; (b) state action that imposes a tax or assesses a charge utilizing the parameters of a regional program on a given set of resources notwithstanding the tax or cost having indirect benefits on resources not subject to the tax or cost (e.g., Regional Greenhouse Gas Initiative); (c) any indirect benefits to a Capacity Resource as a result of any transmission project approved as part of the Regional Transmission Expansion Plan; (d) any contract, legally enforceable obligation, or rate pursuant to the Public Utility Regulatory Policies Act or any other state-administered federal regulatory program (e.g., the Cross-State Air Pollution Rule); (e) any revenues from the sale or allocation, either direct or indirect, to an Entity Providing Supply Services to Default Retail Service Provider where such entity’s obligations was awarded through a state default procurement auction that was subject to independent oversight by a consultant or

manager who certifies that the auction was conducted through a non-discriminatory and competitive bidding process, subject to the below condition, and provided further that nothing herein would exempt a Capacity Resource that would otherwise be subject to the minimum offer price rule pursuant to this Tariff; (f) any revenues for providing capacity as part of an FRR Capacity Plan or through bilateral transactions with FRR Entities; or (g) any voluntary and arm's length bilateral transaction (including but not limited to those reported pursuant to Tariff, Attachment DD, section 4.6), such as a power purchase agreement or other similar contract where the buyer is a Self-Supply Entity and the transaction is (1) a short term transaction (one-year or less) or (2) a long-term transaction that is the result of a competitive process that was not fuel-specific and is not used for the purpose of supporting uneconomic construction, development, or operation of the subject Capacity Resource, provided however that if the Self-Supply Entity is responsible for offering the Capacity Resource into an RPM Auction, the specified amount of installed capacity purchased by such Self-Supply Entity shall be considered to receive a State Subsidy in the same manner, under the same conditions, and to the same extent as any other Capacity Resource of a Self-Supply Entity. For purposes of subsection (e) of this definition, a state default procurement auction that has been certified to be a result of a non-discriminatory and competitive bidding process shall:

- (i) have no conditions based on the ownership (except supplier diversity requirements or limits), location (except to meet PJM deliverability requirements), affiliation, fuel type, technology, or emissions of any resources or supply (except state-mandated renewable portfolio standards for which Capacity Resources are separately subject to the minimum offer price rule or eligible for an exemption);
- (ii) result in contracts between an Entity Providing Supply Services to Default Retail Service Provider and the electric distribution company for a retail default generation supply product and none of those contracts require that the retail obligation be sourced from any specific Capacity Resource or resource type as set forth in subsection (i) above; and
- (iii) establish market-based compensation for a retail default generation supply product that retail customers can avoid paying for by obtaining supply from a competitive retail supplier of their choice.

Station Power:

“Station Power” shall mean energy used for operating the electric equipment on the site of a generation facility located in the PJM Region or for the heating, lighting, air-conditioning and office equipment needs of buildings on the site of such a generation facility that are used in the operation, maintenance, or repair of the facility. Station Power does not include any energy (i) used to power synchronous condensers; (ii) used for pumping at a pumped storage facility; (iii) used in association with restoration or black start service; or (iv) that is Direct Charging Energy.

Sub-meter:

“Sub-meter” shall mean a metering point for electricity consumption that does not include all electricity consumption for the end-use customer as defined by the electric distribution company

account number. PJM shall only accept sub-meter load data from end-use customers for measurement and verification of Regulation service as set forth in the Economic Load Response rules and PJM Manuals.

Summer-Period Capacity Performance Resource:

“Summer-Period Capacity Performance Resource” shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Surplus Interconnection Customer:

“Surplus Interconnection Customer” shall mean either an Interconnection Customer whose Generating Facility is already interconnected to the PJM Transmission System or one of its affiliates, or an unaffiliated entity that submits a Surplus Interconnection Request to utilize Surplus Interconnection Service within the Transmission System in the PJM Region. A Surplus Interconnection Customer is not a New Service Customer.

Surplus Interconnection Request:

“Surplus Interconnection Request” shall mean a request submitted by a Surplus Interconnection Customer, pursuant to Tariff, Attachment RR, to utilize Surplus Interconnection Service within the Transmission System in the PJM Region. A Surplus Interconnection Request is not a New Service Request.

Surplus Interconnection Service:

“Surplus Interconnection Service” shall mean any unneeded portion of Interconnection Service established in an Interconnection Service Agreement, such that if Surplus Interconnection Service is utilized, the total amount of Interconnection Service at the Point of Interconnection would remain the same.

Switching and Tagging Rules:

“Switching and Tagging Rules” shall mean the switching and tagging procedures of Interconnected Transmission Owners and Interconnection Customer as they may be amended from time to time.

Synchronized Reserve:

“Synchronized Reserve” shall mean the reserve capability of generation resources that can be converted fully into energy or Economic Load Response Participant resources whose demand can be reduced within ten minutes from the request of the Office of the Interconnection dispatcher, and is provided by equipment that is electrically synchronized to the Transmission System.

Synchronized Reserve Event:

“Synchronized Reserve Event” shall mean a request from the Office of the Interconnection to generation resources and/or Economic Load Response Participant resources able, assigned or self-scheduled to provide Synchronized Reserve in one or more specified Reserve Zones or Reserve Sub-zones, within ten minutes, to increase the energy output or reduce load by a directed amount of the assigned or self-scheduled Synchronized Reserve.

Synchronized Reserve Requirement:

“Synchronized Reserve Requirement” shall mean the megawatts required to be maintained in a Reserve Zone or Reserve Sub-zone as Synchronized Reserve, absent any increase to account for additional reserves scheduled to address operational uncertainty. The Synchronized Reserve Requirement is calculated in accordance with the PJM Manuals. This requirement can only be satisfied by Synchronized Reserve resources.

System Condition:

“System Condition” shall mean a specified condition on the Transmission Provider’s system or on a neighboring system, such as a constrained transmission element or flowgate, that may trigger Curtailment of Long-Term Firm Point-to-Point Transmission Service using the curtailment priority pursuant to Tariff, Part II, section 13.6. Such conditions must be identified in the Transmission Customer’s Service Agreement.

System Energy Price:

“System Energy Price” shall mean the energy component of the Locational Marginal Price, which is the price at which the Market Seller has offered to supply an additional increment of energy from a resource, calculated as specified in Operating Agreement, Schedule 1, section 2 and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

System Impact Study:

“System Impact Study” shall mean an assessment by the Transmission Provider of (i) the adequacy of the Transmission System to accommodate a Completed Application, an Interconnection Request or an Upgrade Request, (ii) whether any additional costs may be incurred in order to provide such transmission service or to accommodate an Interconnection Request, and (iii) with respect to an Interconnection Request, an estimated date that an Interconnection Customer’s Customer Facility can be interconnected with the Transmission System and an estimate of the Interconnection Customer’s cost responsibility for the interconnection; and (iv) with respect to an Upgrade Request, the estimated cost of the requested system upgrades or expansion, or of the cost of the system upgrades or expansion, necessary to provide the requested incremental rights.

System Protection Facilities:

“System Protection Facilities” shall refer to the equipment required to protect (i) the Transmission System, other delivery systems and/or other generating systems connected to the Transmission

System from faults or other electrical disturbance occurring at or on the Customer Facility, and (ii) the Customer Facility from faults or other electrical system disturbance occurring on the Transmission System or on other delivery systems and/or other generating systems to which the Transmission System is directly or indirectly connected. System Protection Facilities shall include such protective and regulating devices as are identified in the Applicable Technical Requirements and Standards or that are required by Applicable Laws and Regulations or other Applicable Standards, or as are otherwise necessary to protect personnel and equipment and to minimize deleterious effects to the Transmission System arising from the Customer Facility.

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 the Transmission Provider 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. The expected life of the Black Start Unit shall take into consideration expectations regarding both the enabling equipment and the generation unit itself.

A Fuel Assured Black Start Unit is a Black Start Unit that is capable of starting without an outside electrical supply and running 16 hours or more at full load and either stores at least 16 hours of fuel on site, can operate independently on 2 or more interstate pipelines, is directly connected to a natural gas gathering system or is an intermittent or hybrid resource that has been evaluated by the Transmission Provider to be capable of providing no less than 16 hours of operation per day, which need not be continuous, at a megawatt level that provides a confidence level of 90% based on an evaluation of the unit's historical operation over a representative period of time, and meets any other requirements specified in the PJM manuals. Distributed energy resources interconnected to distribution facilities may qualify as Fuel Assured Black Start Units under the criteria that applies to all Fuel Assured Black Start Units. Unless otherwise specified as only applicable to Fuel Assured Black Start Units, all terms and conditions set forth in this Tariff, Schedule 6A applicable to Black Start Units shall be deemed to include Fuel Assured Black Start Units.

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 is 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 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, 6, or 6A below.

5. Owners of Black Start Units selected to provide Black Start Service in accordance with Schedule 6A, 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 Provider provides written, one-year advance notice of its intention to terminate the commitment or the commitment is involuntarily terminated pursuant to section 15 of this Schedule 6A. Black Start Units that are selected to provide Black Start Service after June 6, 2021, pursuant to Schedule 6A, section 6 that subsequently transition from the Capital Cost Recovery Rate to the Base Formula Rate shall have a lifetime commitment and can only terminate for the reason specified in Schedule 6A, section 6(ii).

6. (i) Owners of Black Start Units ~~selected to provide Black Start Service making capital investment~~ prior to June 6, 2021, in order to provide or continue to provide Black Start Service in accordance with section 4 of this Schedule 6A 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 Table in section 18 of this Schedule 6A. 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 Table in section 18 of this Schedule 6A. The Transmission Provider may terminate the commitment with one year advance notice of its intention to the Black Start Unit owner, but the Black Start Unit owner shall be eligible to recover 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 and consent of the Transmission Provider (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) of this Schedule 6A) in excess of the amount that would have been recovered pursuant to section 18 of this Schedule 6A during the same period. At the conclusion of the term of commitment established under this section 6 of this Schedule 6A, a Black Start Unit shall commence a new term of commitment under either section 5 or 6 of this Schedule 6A, as applicable.

(ii) Owners of Black Start Units ~~selected-making capital investment after June 6, 2021,~~ in order to provide Black Start Service ~~after June 6, 2021,~~ in accordance with Schedule 6A, 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 an initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment. 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 initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment.

(iii) Black Start Units selected to be Fuel Assured Black Start Units in accordance with Schedule 6A, section 4 and electing to recover new or additional Fuel Assurance Capital Costs or new and additional Fuel Assurance Costs and Black Start Capital Costs shall commit to provide Black Start Service from such Black Start Units for an initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment. For those Fuel Assured 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 initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment. For those Fuel Assured Black Start Units that elect to recover new or additional Fuel Assurance Capital Costs, the applicable capital recovery period shall be the fuel assurance capital recovery period based upon the age of the Fuel Assured Black Start Unit .

The Transmission Provider may terminate the commitment with one year advance notice of its intention to the Black Start Unit owner, but the Black Start Unit owner shall be eligible to recover any amount of unrecovered Fixed Black Start Service Costs including any amount of unrecovered Fuel Assurance Capital 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 and consent of the Transmission Provider (or its commitment period may be involuntarily terminated pursuant to the section 15 below), provided the Black Start Unit's owner demonstrates to the satisfaction of the Transmission Provider at least one of the following reasons for such termination apply:

- a. Black Start Unit retirement or deactivation with at least one year's notice;
- b. Expiration of a state, federal, or other governmental agency permit(s) required for Black Start Service with at least one year's notice; or
- c. Additional capital is required by the Black Start Unit owner to maintain Black Start Service capability (in which case, the Black Start Unit will apply for Black Start Service selection in accordance with the procedures set forth in Manual 12 and only continue to provide Black Start Service if selected for Black Start Service by the Transmission Provider).

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 and/or Fuel Assurance Capital Costs recovered under a FERC-approved rate (recovered on an accelerated basis pursuant to the provisions of section 17(i) of this Schedule 6A) in excess of the amount that would have been recovered pursuant to Schedule 6A, section 18 during the same period.

6A. Black Start Units which are owned or contracted for by a Transmission Owner to provide Black Start Service as a result of the black start reliability backstop process defined in the PJM Manuals, shall be subject to cost recovery through such Transmission Owner's annual revenue requirement under such Transmission Owner's Tariff, Attachment H, as filed with, and accepted by, FERC under Section 205 of the Federal Power Act and in accordance with Tariff, Part I, section 9, or through such other cost recovery mechanism, provided that such cost recovery mechanism is filed with and accepted by FERC. The relevant Transmission Owner shall commit to provide, or effectuate the provision of, Black Start Service from such a Black Start Unit for the FERC-approved cost recovery period. The Transmission Provider may terminate the commitment with one year advance notice of its intention to the Transmission Owner. Provision of Black Start Service from a Black Start Unit obtained through the black start reliability backstop process defined in the PJM Manuals shall be subject to sections 7 through 13 of this Schedule 6A. The Revenue Requirements, Credits, and Charges provisions contained in sections 16 through 27 of this Schedule 6A, shall not apply to Black Start Units obtained as a result of the black start reliability backstop process defined in the PJM Manuals.

6B. 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) of this Schedule 6A) in excess of the amount that would have been recovered pursuant to section 18 of this Schedule 6A during the same period, but such unit remains eligible to establish a new commitment under section 5 or 6 of this Schedule 6A. Provided, however, Black Start Units that are selected to provide Black Start Service after June 6, 2021, pursuant to Schedule 6A, section 6 that subsequently transition from the Capital Cost Recovery Rate to the Base Formula Rate shall have a lifetime commitment and can only terminate for a reason specified in Schedule 6A, section 6(ii).

Performance Standards and Outage Restrictions

7. In addition to the performance capabilities set forth in the PJM Manuals, 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 the time specified in the PJM Manuals.
 - 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.
 - d. A Fuel Assured Black Start Unit must meet the fuel assurance requirements as specified in the PJM Manuals.
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 a Generator Planned Outage or Generator Maintenance Outage at any one time without written approval of the Transmission Provider and the Transmission Owner in the Zone receiving Black Start Service from the Black Start Plant. This restriction excludes outages on common plant equipment that may make all units unavailable. A Black Start Unit not selected for providing Black Start Service in accordance with this Schedule 6A, section 4 and the PJM Manuals may be substituted for a Black Start Unit that is subject to a Generator Planned Outage to permit a concurrent planned outage of another critical Black Start Unit at the same Black Start Plant. The Black Start Unit used as a substitute shall not receive compensation for additional capital expenditures to qualify for Black Start Service, will not increase the current Black Start Unit capital recovery commitment period, must be connected at the same voltage level and cranking path, must be similar age as the current Black Start Unit, must provide equivalent Black Start Unit Capacity, and must have had a valid annual test within the previous 13 months. Black Start Unit substitutions may be permitted for reasons other than Generator Planned Outages if requested by the Black Start Unit owner and if approved by the Transmission Provider; provided, however, all requests for Black Start Unit substitutions must be supported by documentation and information demonstrating operational or technical reasons for the substitution satisfactory to the Transmission Provider and may only occur once within a 12-month period.
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 shall be tested annually in accordance with the Tariff and the PJM Manuals. Fuel Assured Black Start Units that are dual fuel must conduct an annual test on both fuels. The Black Start Unit owner shall determine the time of the annual test.

13. Compensation under this Schedule 6A 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. All Black Start Units must have a successful annual test on record with the Transmission Provider within the preceding 13 months. A Black Start Unit receiving revenues under Section 5 or Section 6 above that does not have a successful annual test on record with the Transmission Provider within the preceding 13 months will not qualify to receive Black Start Service revenues. A Fuel Assured Black Start Unit that stores fuel on-site and fails in any month to store the fuel and non-fuel consumables needed to meet its fuel assurance run hour requirements except for allowable conditions specified in the PJM Manuals, and except when the Fuel Assured Black Start Unit can also operate independently on 2 or more interstate pipelines, does not qualify to receive Black Start revenues in that month.

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 under this Schedule 6A 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 does not make the necessary repairs to enable the Black Start Unit to pass the annual test within 90 days of the due date for the annual test pursuant to section 14 above, the Black Start Unit will immediately cease to qualify as a Black Start Unit and, if applicable, will have failed to fulfill its commitment pursuant to section 5 or section 6 above, whichever is applicable, of this Schedule 6A and will be subject to the additional forfeiture of revenues set forth in section 6B of this Schedule 6A. The 90 day period may be extended up to 1 year by the Transmission Provider in accordance with the PJM Manuals. If the 90 day period is extended, the Black Start Unit owner will continue to forfeit all revenues starting in the month of the first failed test until the Black Start Unit has demonstrated to the Transmission Provider that a successful test has been completed.

Revenue Requirements

16. A Black Start Unit Owner's 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 of this Schedule 6A, as applicable, or (ii) the formula rates set forth in section 18 of this Schedule 6A for the commitment term set forth in section 5 or 6 of this Schedule 6A as applicable. Each generator's Black Start Service revenue requirements shall be an annual calculation.

17A. Annual Review for all Black Start Units

Requests for Black Start Service revenue requirements and 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 Tariff, Attachment M-Appendix, section III and the PJM Manuals, with a copy to the Office of the Interconnection, by no later than May 3 of each year. The Market Monitoring Unit and the Black Start Unit owner shall attempt to come to agreement on the level of each component included in the Black Start Service revenue requirements by no later than May 14 of each year. By no later than May 21 of each year, the Black Start Unit owner shall notify the Office of the Interconnection and the Market Monitoring Unit in writing whether it agrees or disagrees with the Market Monitoring Unit's determination of the level of each component included in the Black Start Service revenue requirements. The Black Start Unit owner may also submit Black Start Service revenue requirements that it chooses to the Office of the Interconnection by no later than May 21 of each year, provided that (i) it has participated in good faith with the process described in this section and in Tariff, Attachment M-Appendix, section III (ii) the Black Start Service revenue requirements are no higher than the level defined in any agreement reached by the Black Start Unit 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 and PJM Manuals.

The Office of the Interconnection shall determine whether to accept the values submitted by the Black Start Unit owner subject to the requirements of the Tariff and the PJM Manuals by no later than May 27. If the Office of the Interconnection does not accept the values submitted by the Black Start Unit owner in such case, the Black Start Unit owner may file its proposed values with the Commission for approval. Pursuant to Tariff, Attachment M-Appendix, section III, if the Office of the Interconnection accepts the Black Start Service revenue requirements submitted by the Black Start Unit owner in such case, the Market Monitoring Unit may petition the Commission for an order that would require the Black Start Unit owner to utilize the values determined by the Market Monitoring Unit or the Office of the Interconnection or such other values as determined by the Commission. The annual calculation of Black Start Service revenue requirements shall become effective on June 1 of each year, except that 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. Notwithstanding the foregoing, for the 2025/2026 Delivery Year the annual calculation of Black Start Service revenue requirements that became

effective on June 1, 2025 will be further updated on September 1, 2025 to reflect any FERC approved changes in the Base Formula Rate equation regardless of whether the existing revenue requirement has been effective for at least 12 months; and for the 2026/2027 Delivery Year, the Black Start Service revenue requirement shall become effective June 1, 2026 regardless of whether the existing revenue requirement has been effective for at least 12 months. Notwithstanding the foregoing, the deadlines set forth in this section 17 shall not apply to a Black Start Unit owner's election to select a new method of recovery for its Fixed BSSC.

17B. Initial Review for New Black Start Units or existing Black Starts Units that require Fuel Assured Capital Cost

Requests for new Black Start Service revenue requirements and/or Fuel Assured Capital Costs must be submitted to the Market Monitoring Unit for review and analysis, with supporting data and documentation, pursuant to Tariff, Attachment M–Appendix, section III and the PJM Manuals, with a copy to the Office of the Interconnection, by no later than 90 days after entering Black Start Service or qualifying to be a Fuel Assured Black Start Unit. The Market Monitoring Unit and the Black Start Unit owner shall attempt to come to agreement on the level of each component included in the Black Start Service revenue requirements by no later than 90 days after the Black Start Unit owner's submittal of final black start capital costs (if applicable), variable black start costs, and fuel storage cost documentation. By no later than 90 days of the Black Start Unit owner's submittal of final black start cost documentation, the Market Monitoring Unit shall calculate the new Black Start Unit's annual revenue requirement and submit it to the Office of the Interconnection and the Black Start Unit owner. If more than three Black Start Unit owners submit documentation within a 90-day period, the Market Monitoring Unit shall complete the review of the first three submittals within 90 days and the next set of three within the following three months and so on until all are complete. The Black Start Unit owner shall notify the Office of the Interconnection and the Market Monitoring Unit in writing if it disagrees with the Market Monitoring Unit's determination of the level of any component included in the Black Start Service revenue requirements within 7 days after the Market Monitoring Unit's submittal of the annual revenue requirement to the Office of the Interconnection. The Black Start Unit owner shall also submit Black Start Service revenue requirements that it proposes to the Office of the Interconnection provided that (i) it has participated in good faith with the process described in this section and in Tariff, Attachment M–Appendix, section III; (ii) the Black Start Service revenue requirements are no higher than the level defined in any agreement reached by the Black Start Unit 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 and PJM Manuals.

The Office of the Interconnection shall determine whether to accept the values submitted by the Black Start Unit owner subject to the requirements of the Tariff and the PJM Manuals by no later than 30 days after its receipt of the Black Start Unit owner's written notice of a disagreement. If the Office of the Interconnection does not accept the values submitted by the Black Start Unit owner in such case, the Black Start Unit owner may file its proposed values with the Commission for approval. Pursuant to Tariff, Attachment M–Appendix, section III, if the Office of the Interconnection accepts the Black Start Service revenue requirements submitted by the

Black Start Unit owner in such case, the Market Monitoring Unit may petition the Commission for an order that would require the Black Start Unit owner to utilize the values determined by the Market Monitoring Unit or the Office of the Interconnection or such other values as determined by the Commission. The annual calculation of Black Start Service revenue requirements shall become effective the day the unit enters Black Start Service or becomes fuel assured.

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

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

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

$$(\text{Training Costs}) * (1 + Z)$$

Where:

Fixed BSSC

Black Start Units with a commitment established under section 5 of this Schedule 6A shall calculate Fixed BSSC or "Fixed Black Start Service Costs" in accordance with the following Base Formula Rate:

Base Formula Rate:

$$\text{Fixed Rate} * \text{Black Start Unit Capacity} * X$$

Where:

"Fixed Rate" is a fixed rate for providing Black Start Service (expressed in \$/MW day). This Fixed Rate will be adjusted annually based on the Handy Whitman index. By March 31 of each year, PJM will post the adjusted Fixed Rate on the PJM website. Beginning with the 2025/2026 Delivery Year, the Fixed Rate shall be \$272.62/MW day.

"Black Start Unit Capacity" is either: (i) the Black Start Unit's installed capacity, expressed in MW, for those Black Start Units which are not Fuel Assured Black Start Units that are Generation Capacity Resources; (ii) the awarded MWs in the Transmission Provider's request for proposal process under the PJM Manuals, for those Black Start Units, which are not Fuel Assured Black Start Units, that are Energy Resources; (iii) the Fuel Assured Black Start Unit's installed capacity for fuel assured non-intermittent Capacity Resources; or (iv) the monthly 90% confidence MW value calculated by the Transmission Provider for fuel assured intermittent or hybrid Capacity Resources. The 90% confidence MW value is

calculated using Black Start Unit historical data to determine the hourly MW value the resource can provide each day in each month for 16 hours, which need not be continuous. The hourly MW value is then iterated until the confidence level of the unit providing the MW value on a monthly basis for 16 hours is 90%.

“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 non-fuel assured Black Start Units with a commitment established under Schedule 6A, X shall be .01 for Hydro units, .02 for CT units. For fuel assured Black Start Units with a commitment established under Schedule 6A, X shall be .02 for all units.

Black Start Units with a commitment established under section 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

$$(\text{Fixed Rate} * \text{Black Start NERC-CIP Unit Capacity} * X) + (\text{Incremental Black Start NERC-CIP Capital Costs} * \text{CRF}) + (\text{Fuel Assurance Capital Costs} * \text{CRF})$$

Where:

“Fixed Rate” is a fixed rate for providing Black Start Service (expressed in \$/MW day). This Fixed Rate will be adjusted annually based on the Handy Whitman index. By March 31 of each year, PJM will post the adjusted Fixed Rate on the PJM website. Beginning with the 2025/2026 Delivery Year, the Fixed Rate shall be \$272.62/MW day.

“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 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).

“Fuel Assurance Capital Costs” are the new or additional capital costs documented by the owner for the installation of equipment necessary for the unit to meet the fuel assurance criteria specified in the PJM manuals.

“CRF” or “Capital Recovery Factor” is equal to the levelized CRF as set forth in the applicable CRF table posted on the PJM website in accordance with Tariff, Schedule 6A, section 18 and Manual 15.

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) + (Fuel Assurance Capital Costs * CRF)

Where:

“FERC-approved rate” is the Black Start Unit’s current FERC-approved recovery of costs to provide Black Start Service, if applicable. To the extent that a Black Start Unit owner is currently recovering black start costs pursuant to a FERC-approved rate, that cost recovery will be included as a formulaic component for calculating the Black Start Unit’s annual revenue requirement pursuant to this section 18. However, under no circumstances will PJM or the Black Start Unit owner restructure or modify that existing FERC-approved rate without FERC approval.

“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 Unit 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.

“Fuel Assurance Capital Costs” are the new or additional capital costs documented by the owner for the installation of equipment necessary for the unit to meet the fuel assurance criteria specified in the PJM manuals. However, Fuel Assurance Capital Costs shall not include any capital costs that the Fuel Assured Black Start Unit owner is recovering for that unit pursuant to a FERC-approved recovery rate.

The Capital Recovery Factor (“CRF”) is equal to the Levelized CRF based on the age of the Black Start Unit, which is modified to provide Black Start Service.

The CRF applicable to Black Start Capital Costs of Black Start Units ~~selected for Black Start Service-making capital investment~~ prior to June 6, 2021 in order to provide or continue to provide Black Start Service, shall continue to be determined in accordance with the following table:

Age of Black Start Unit	Term of Black Start Commitment	Levelized CRF
1 to 5	20	0.1180
6 to 10	15	0.1348
11 to 15	10	0.1767
16+	5	0.3097

The CRF applicable to Black Start Capital Costs and/or for Fuel Assurance Capital Costs, of Black Start Units making capital investment after June 6, 2021 to provide or continue to provide~~selected for Black Start Service after June 6, 2021~~, shall be updated annually on March 1 (if March 1 is not a Business day then the first Business Day after March 1) for (i) federal income tax rates as utilized by the U.S. Internal Revenue Service in effect at the time of the annual CRF update; (ii) average state tax rate; and (iii) debt interest rates and shall be posted on the PJM website by March 31 each year as shown in the table below. Interested parties shall have until April 15 of each year to contest PJM's calculation of the annual CRF value before it becomes effective on June 1 of each year.

PJM determines annual CRF inputs	March 1 (if March 1 is not a Business day then the first Business Day after March 1)
PJM posts annual CRF	March 31
Deadline for contesting annual CRF	April 15
Annual revenue requirement calculation	May 3 through May 27
Annual revenue requirement with CRF in effect	June 1

The CRF values shall be calculated for a recovery period based on the age of the Black Start Unit using the equation below:

$$CRF = \frac{r(1+r)^N \left[1 - \frac{sB}{\sqrt{1+r}} - s(1-B)\sqrt{1+r} \sum_{j=1}^L \frac{m_j}{(1+r)^j} \right]}{(1-s)\sqrt{1+r}[(1+r)^N - 1]} \dots$$

Where:

Formula Symbol	Description
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r	After Tax Weighted Average Cost of Capital (ATWACC), which equals (equity percentage)(cost of equity) + (debt percentage)(debt interest rate)(1 – effective tax rate)
s	Effective Tax Rate, which equals (1 – state tax rate)(federal tax rate) + state tax rate
B	Bonus depreciation percent in effect at the Black Start Unit in-service date
N	Cost recovery period based on the age of the unit in years, as established in the Age of Unit/Applicable Recovery Period table below
L	The lesser of N or 16 years
M_j	Modified Accelerated Cost Recovery System (MACRS) depreciation

The following assumptions are used in the calculation:

The current federal tax and depreciation rates are as established by U.S. Internal Revenue Service;

The state tax rate is an average of the income tax rates for all the states in the PJM Region;

The capital investment necessary to make a unit qualify for Black Start Service is made up of 50 percent equity;

The capital investment necessary to make a unit qualify for Black Start Service is made up of 50 percent debt;

The debt interest rate is based on the most recent Net CONE quadrennial review after-tax weighted average cost of capital (ATWACC) and shall be updated as follows:

The debt interest rate will be updated during the Net CONE quadrennial review; and

If the 2-year change in the Moody Utility Index for bonds rated Baa1 is more than 200 basis points, this change will be added to the interest rate used in the most recent Net CONE quadrennial review and will be used as the current year's debt interest rate.

The debt term is equal to the applicable recovery period specified in the Age of Unit/Applicable Recovery Period table below; and

The cost of equity shall be equal to an after tax internal rate of return on equity of 12%.

Any changes to the debt and equity percentages and after tax internal rate of return on equity components stated above shall be included in revisions to this section 18.

Age of the Unit (years)	Incremental Black Start Capital Costs Applicable Recovery Period (years)	Fuel Assurance Capital Costs Recovery Period (years)
1-5	20	20
6-10	15	15
11-15	10	10
16+	5	10

In those circumstances where a Black Start Unit owner has elected to recover Incremental Black Start Capital Costs and/or Fuel assurance 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 set forth in the Age of Unit/Applicable Recovery Period table above.

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

Black Start Units with the demonstrated ability to automatically remain operating, at reduced levels, when disconnected from the grid may receive NERC compliance costs associated with providing Black Start Service in addition to the formula above, if approved in accordance with the procedures in section 17 of this Schedule 6A.

Training Costs:

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

$$50 \text{ staff hours/year/plant} * 75/\text{hour}$$

Fuel Storage Costs:

Black Start Units that store liquefied or compressed natural gas, propane, or oil on site 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 traded the first Business Day on or following April 1.

“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 reported the first Business Day on or following April 1.

“MTSL” is the “minimum tank suction level” and shall apply to oil fired Black Start Units’ storage tanks that have an unusable volume of oil. In the case where a Black Start Unit shares a common fuel tank, the Black Start Unit will be eligible for recovery of the Black Start Energy Tank Ratio of the MTSL in its fuel storage calculation.

$$\text{Black Start Energy Tank Ratio} = \{ (\text{Fuel Burn Rate} * \text{Minimum Run Hours}) / \\ (\text{Tank Capacity} - \text{MTSL}) \}$$

The MTS� fuel storage calculation shall be as follows:
$$\{(\text{Black Start Energy Tank Ratio} * \text{MTSL}) + [(\text{\#Run Hours}) * (\text{Fuel Burn Rate})]\} \\ * (\text{12 Month Forward Strip} + \text{Basis}) * (\text{Bond Rate})$$

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 solely for Black Start Units with a commitment established under section 5 above and shall be ten percent for non-fuel assured Black Start Units and twenty percent for Fuel Assured Black Start Units. For those Black Start Units that elect to recover new or additional Black Start or Fuel Assurance Capital Costs under section 6 above, the incentive factor, Z, shall be equal to zero.

Every five years, PJM shall review the formula and its costs components set forth in this section 18, 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 section 18 of this Schedule 6A no later than thirty (30) days prior to the effective date of the recovery. At the written request of a 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 affected 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. For existing Black Start Units, monthly credits are provided to Black Start Unit owners that submit to the Transmission Provider their annual revenue requirements established pursuant to section 17A 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. For new Black Start Unit owners, monthly credits will be held by the Office of the Interconnection in a non-interest bearing account until the Office of the Interconnection, or the Commission as applicable,

accepts the owner's annual revenue requirement pursuant to section 17B of this Schedule 6A. New Black Start Unit owners will begin to receive monthly credits, including any monthly credits held by the Office of the Interconnection back to the date the unit enters Black Start Service and any required estimated annual revenue requirement true up after the Office of the Interconnection, or the Commission as applicable, accepts the new Black Start Unit owner's annual revenue requirement.

22A. For Fuel Assured Black Start Units that are recovering Fuel Assurance Capital Costs, pursuant to section 17B of this Schedule 6A, shall have its monthly credits reduced, but not less than zero, by the positive net value of the Day-ahead Energy Market and Real-time Energy Market revenues from being committed using the fuel assurance fuel as further described in the PJM manuals minus the cost of running on that fuel. The Black Start Unit's monthly credits shall not be increased. For Fuel Assured Black Start Units that are recovering Fuel Assurance Capital Cost and the Fuel Assurance Capital Costs increased the Installed Capacity Rating (ICAP) of the unit, monthly credits shall be reduced, but not less than zero, by the monthly capacity revenues for the increased ICAP. Monthly credits will only be reduced during the Fuel Assurance Capital Cost recovery period.

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 criteria for Black Start Service and the criteria for Black Start Service in the Applicable Standards 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 or share of generation units designated by the Transmission Provider and allocated to network service customers and point-to-point reservations. Zonal rates will include estimated annual revenue requirements for new Black Start Units from the date the units enter Black Start Service to last day of the month preceding the Office of the Interconnection's acceptance of the unit's annual revenue requirement. The estimated annual revenue requirement will be based on the Black Start Unit owner's best estimate at the time the unit enters Black Start Service. Any estimated annual revenue requirement true up will be included in the monthly bill after the Office of the Interconnection accepts the new Black Start unit's annual revenue requirement.

26. Revenue requirements for Black Start Units designated by the Transmission Provider as critical (regardless of zonal location) will be allocated to the receiving Transmission Owner's zone. Black Start Units that are shared and designated to serve multiple zones will have their annual revenues allocated by Transmission Owner designated critical load percentage.

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 share of 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 Tariff, Part I, 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 for each day of the month (not curtailed by PJM) divided by the number of hours in the day.

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.

1.4B DER Aggregator Participation Model

(a) DER Aggregators providing capacity using a DER Capacity Aggregation Resource shall be subject to the Day-ahead Energy Market must-offer requirement described in Tariff, Attachment K-Appendix, section 1.10.1A(d) and Operating Agreement, Schedule 1, section 1.10.1A(d), based on the technology of the Component DER within the DER Aggregation Resource linked to the DER Capacity Aggregation Resource, in accordance with the PJM Manuals.

(b) DER Aggregation Resources are subject to offer price cap and associated three pivotal supplier test provisions of Operating Agreement, Schedule 1, section 6.4.

(c) A DER Capacity Aggregation Resource shall be subject to a MOPR Floor Offer Price in accordance with the provisions applicable to MOPR Floor Offer Price for Generation Capacity Resources, as described in Tariff, Attachment DD, section 5.14(h-2), and Market Seller Offer Cap for Generation Capacity Resources in a manner consistent with the provisions applicable to Market Seller Offer Cap for Generation Capacity Resources, as described in Tariff, Attachment DD, section 6.4 and Tariff, Attachment M-Appendix, section II.E, based on the underlying technology of the Component DER.

A DER Capacity Aggregation Resource may segment offers for the Component DER subject to mitigation, based on the underlying technology of the Component DER in the DER Capacity Aggregation Resource, and further described in the PJM Manuals.

If a DER Capacity Aggregation Resource is subject to the Minimum Floor Offer Price pursuant to Tariff, Attachment DD, sections 5.14(h-2), the Capacity Market Seller that owns or controls such resources may submit a Sell Offer with a Minimum Floor Offer Price of no lower than the MW-weighted average of the applicable MOPR Floor Offer Prices (zero if not applicable) of the aggregated resources in such Sell Offer.

(d) Projected PJM Market Revenues for DER Capacity Aggregation Resources subject to the Minimum Floor Offer Price or Market Seller Offer Cap shall be determined in accordance with Tariff, Attachment DD, section 6.8(d-1). ~~The determination of PJM Market Revenues by the Market Monitoring Unit or the Office of the Interconnection shall utilize either the hourly output profiles, or the Projected EAS Dispatch, as appropriate.~~

VI. SUPPLEMENTAL CREDIT REQUIREMENTS FOR SCREENED TRANSACTIONS

A. Virtual and Export Transaction Screening

1. Credit for Virtual and Export Transactions

Export Transactions and Virtual Transactions both utilize Credit Available for Virtual Transactions to support their credit requirements.

PJM does not require a Market Participant to establish separate or additional credit for submitting Virtual or Export Transactions; however, once transactions are submitted and accepted by PJM, PJM may require credit supporting those transactions to be held until the transactions are completed and their financial impact incorporated into the Market Participant's Obligations. If a Market Participant chooses to establish additional Collateral and/or Unsecured Credit Allowance in order to increase its Credit Available for Virtual Transactions, the Market Participant's Working Credit Limit for Virtual Transactions shall be increased in accordance with the definition thereof. The Collateral and/or Unsecured Credit Allowance available to increase a Market Participant's Credit Available for Virtual Transactions shall be the amount of Collateral and/or Unsecured Credit Allowance available after subtracting any credit required for Minimum Participation Requirements, FTR, RPM or other credit requirement determinants defined in this Attachment Q, as applicable.

If a Market Participant chooses to provide additional Collateral in order to increase its Credit Available for Virtual Transactions PJM may establish a reasonable timeframe, not to exceed three months, for which such Collateral must be maintained. PJM will not impose such restriction on a deposit unless a Market Participant is notified prior to making the deposit. Such restriction, if applied, shall be applied to all future deposits by all Market Participants engaging in Virtual Transactions.

A Market Participant may increase its Credit Available for Virtual Transactions by providing additional Collateral to PJM. PJM will make a good faith effort to make new Collateral available as Credit Available for Virtual Transactions as soon as practicable after confirmation of receipt. In any event, however, Collateral received and confirmed by noon on a Business Day will be applied (as provided under this Attachment Q) to Credit Available for Virtual Transactions no later than 10:00 am on the following Business Day. Receipt and acceptance of wired funds for cash deposit shall mean actual receipt by PJM's bank, deposit into PJM's customer deposit account, confirmation by PJM that such wire has been received and deposited, and entry into PJM's credit system. Receipt and acceptance of letters of credit or surety bonds shall mean receipt of the original Letter of Credit or surety bond, or amendment thereto, confirmation from PJM's credit and legal staffs that such Letter of Credit or surety bond, or amendment thereto conforms to PJM's requirements, which confirmation shall be made in a reasonable and practicable timeframe, and entry into PJM's credit system. To facilitate this process, bidders submitting additional Collateral for the purpose of increasing their Credit Available for Virtual Transactions are advised to submit such Collateral well in advance of the desired time, and to specifically notify PJM of such submission.

A Market Participant wishing to submit Virtual or Export Transactions must allocate within PJM's credit system the appropriate amount of Credit Available for Virtual Transactions to the virtual and export allocation sections within each customer account in which it wishes to submit such transactions.

2. Virtual Transaction Screening

All Virtual Transactions submitted to PJM shall be subject to a credit screen prior to acceptance in the Day-ahead Energy Market. The credit screen is applied separately for each of a Market Participant's customer accounts. The credit screen process will automatically reject Virtual Transactions submitted by the Market Participant in a customer account if the Market Participant's Credit Available for Virtual Transactions, allocated on a customer account basis, is exceeded by the Virtual Credit Exposure that is calculated based on the Market Participant's Virtual Transactions submitted, as described below.

A Market Participant's Virtual Credit Exposure will be calculated separately for each customer account on a daily basis for all Virtual Transactions submitted by the Market Participant for the next Operating Day using the following equation:

Virtual Credit Exposure = INC and DEC Exposure + Up-to Congestion Exposure

Where:

(a) INC and DEC Exposure for each customer account is calculated as:

(i) ((the total MWh bid or offered, whichever is greater, hourly at each node) x the Nodal Reference Price x 1 day) summed over all nodes and all hours; plus (ii) ((the difference between the total bid MWh cleared and total offered MWh cleared hourly at each node) x Nodal Reference Price) summed over all nodes and all hours for the previous cleared Day-ahead Energy Market.

(b) Up-to Congestion Exposure for each customer account is calculated as:

(i) Total MWh bid hourly for each Up-to Congestion Transaction x (price bid – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours; plus (ii) Total MWh cleared hourly for each Up-to Congestion Transaction x (cleared price – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours for the previous cleared Day-ahead Energy Market, provided that hours for which the calculation for an Up-to Congestion Transaction is negative, it shall be deemed to have a zero contribution to the sum.

3. Export Transaction Screening

Export Transactions in the Real-time Energy Market shall be subject to Export Transaction Screening. Export Transaction Screening may be performed either for the duration of the entire Export Transaction, or separately for each time interval comprising an Export Transaction. PJM

will deny or curtail all or a portion (based on the relevant time interval) of an Export Transaction if that Export Transaction, or portion thereof, would otherwise cause the Market Participant's Export Credit Exposure to exceed its Credit Available for Export Transactions. Export Transaction Screening shall be applied separately for each Operating Day and shall also be applied to each Export Transaction one or more times prior to the market clearing process for each relevant time interval. Export Transaction Screening shall not apply to transactions established directly by and between PJM and a neighboring Balancing Authority for the purpose of maintaining reliability.

A Market Participant's credit exposure for an individual Export Transaction shall be the MWh volume of the Export Transaction for each relevant time interval multiplied by each relevant Export Transaction Price Factor and summed over all relevant time intervals of the Export Transaction.

B. RPM Auction and Price Responsive Demand Credit Requirements

Settlement during any Delivery Year of cleared positions resulting or expected to result from any RPM Auction shall be included as appropriate in Peak Market Activity, and the provisions of this Attachment Q shall apply to any such activity and obligations arising therefrom. In addition, the provisions of this section shall apply to any entity seeking to participate in any RPM Auction, to address credit risks unique to such auctions. The provisions of this section also shall apply under certain circumstances to PRD Providers that seek to commit Price Responsive Demand pursuant to the provisions of the Reliability Assurance Agreement.

Credit requirements described herein for RPM Auctions and RPM bilateral transactions are applied separately for each customer account of a Market Participant. Market Participants wishing to participate in an RPM Auction or enter into RPM bilateral transactions must designate the appropriate amount of credit to each account in which their offers are submitted.

1. Applicability

A Market Participant seeking to submit a Sell Offer in any RPM Auction based on any Capacity Resource for which there is a materially increased risk of nonperformance must satisfy the credit requirement specified herein before submitting such Sell Offer. A PRD Provider seeking to commit Price Responsive Demand for which there is a materially increased risk of non-performance must satisfy the credit requirement specified herein before it may commit the Price Responsive Demand. Credit must be maintained until such risk of non-performance is substantially eliminated, but may be reduced commensurate with the reduction in such risk, as set forth in section VI.B.3 below.

For purposes of this provision, a resource for which there is a materially increased risk of nonperformance shall mean: (i) a Planned Generation Capacity Resource; (ii) a Planned Demand Resource or an Energy Efficiency Resource; (iii) a Qualifying Transmission Upgrade; (iv) an existing or Planned Generation Capacity Resource located outside the PJM Region that at the time it is submitted in a Sell Offer has not secured firm transmission service to the border of the PJM Region sufficient to satisfy the deliverability requirements of the Reliability Assurance Agreement; (v) Price Responsive Demand to the extent the responsible PRD Provider has not registered PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Reliability Assurance Agreement, Schedule 6.1; or (vi) a Planned DER Capacity Aggregation Resource.

2. Reliability Pricing Model Auction and Price Responsive Demand Credit Requirement

Except as provided for Credit-Limited Offers below, for any resource specified in section VI.B.1 above, other than Price Responsive Demand, the credit requirement shall be the RPM Auction Credit Rate, as provided in section VI.B.4 below, times the megawatts to be offered for sale from such resource in an RPM Auction. For Qualified Transmission Upgrades, the credit requirements shall be based on the Locational Deliverability Area in which such upgrade was to increase the Capacity Emergency Transfer Limit. The RPM Auction Credit Requirement for each Market Participant shall be determined on a customer account basis, separately for each customer account of a Market Participant, and shall be the sum of the credit requirements for all such resources to be offered by such Market Participant in the auction or, as applicable, cleared by such Market Participant in the relevant auctions. For Price Responsive Demand, the credit requirement shall be based on the Nominal PRD Value (stated in Unforced Capacity terms) times the Price Responsive Demand Credit Rate as set forth in section VI.B.5 below. Except for Credit-Limited Offers, the RPM Auction Credit requirement for a Market Participant will be reduced for any Delivery Year to the extent less than all of such Market Participant's offers clear in the Base Residual Auction or any Incremental Auction for such Delivery Year. Such reduction shall be proportional to the quantity, in megawatts, that failed to clear in such Delivery Year.

A Sell Offer based on a Planned Generation Capacity Resource, Planned Demand Resource, Energy Efficiency Resource or Planned DER Capacity Aggregation Resource may be submitted as a Credit-Limited Offer. A Market Participant electing this option shall specify a maximum amount of Unforced Capacity, in megawatts, and a maximum credit requirement, in dollars,

applicable to the Sell Offer. A Credit-Limited Offer shall clear the RPM Auction in which it is submitted (to the extent it otherwise would clear based on the other offer parameters and the system's need for the offered capacity) only to the extent of the lesser of: (i) the quantity of Unforced Capacity that is the quotient of the division of the specified maximum credit requirement by the Auction Credit Rate resulting from section VI.B.4.b. below; and (ii) the maximum amount of Unforced Capacity specified in the Sell Offer. For a Market Participant electing this alternative, the RPM Auction Credit requirement applicable prior to the posting of results of the auction shall be the maximum credit requirement specified in its Credit-Limited Offer, and the RPM Auction Credit requirement subsequent to posting of the results will be the Auction Credit Rate, as provided in section VI.B.4.b, c. or d. of this Attachment Q, as applicable, times the amount of Unforced Capacity from such Sell Offer that cleared in the auction. The availability and operational details of Credit-Limited Offers shall be as described in the PJM Manuals.

As set forth in section VI.B.4 below, a Market Participant's Auction Credit requirement shall be determined separately for each Delivery Year.

3. Reduction in Credit Requirement

As specified below, the RPM Auction Credit Rate may be reduced under certain circumstances after the auction has closed.

The Price Responsive Demand credit requirement shall be reduced as and to the extent the PRD Provider registers PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Reliability Assurance Agreement, Schedule 6.1.

In addition, the RPM Auction Credit requirement for a Market Participant for any given Delivery Year shall be reduced periodically, after the Market Participant has provided PJM a written request for each reduction, accompanied by documentation sufficient for PJM to verify attainment of required milestones or satisfaction of other requirements, and PJM has verified that the Market Participant has successfully met progress milestones for its Capacity Resource that reduce the risk of non-performance, as follows:

(a) For Planned Demand Resources, Planned DER Capacity Aggregation Resources and Energy Efficiency Resources, the RPM Auction Credit requirement will be reduced in direct proportion to the megawatts of such Demand Resource and DER Capacity Aggregation Resource that the Resource Provider qualifies as a Capacity Resource, in accordance with the procedures established under the Reliability Assurance Agreement.

(b) For Existing Generation Capacity Resources located outside the PJM Region that have not secured sufficient firm transmission to the border of the PJM Region prior to the auction in which such resource is first offered, the RPM Auction Credit requirement shall be reduced in direct proportion to the megawatts of firm transmission service secured by the Market Participant that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.

(c) For Planned Generation Capacity Resources located in the PJM Region, the RPM Auction Credit requirement shall be reduced as the Capacity Resource attains the milestones stated in the following table and as further described in the PJM Manuals.

Milestones	Increment of reduction from initial RPM Auction Credit requirement
Effective Date of Interconnection Service Agreement, Generation Interconnection Agreement or Wholesale Market Participation Agreement	50%
Financial Close	15%
Full Notice to Proceed and Commencement of Construction (e.g., footers poured)	5%
Main Power Generating Equipment Delivered	5%
Commencement of Interconnection Service	25%

For externally financed projects, the Market Participant must submit with its request for reduction a sworn, notarized certification of a duly authorized independent engineer for the Financial Close, Full Notice to Proceed and Commencement of Construction, and Main Power Generating Equipment Delivered milestones.

For internally financed projects, the Market Participant must submit with its request for reduction a sworn, notarized certification of a duly authorized officer of the Market Participant for the Financial Close milestone and either a duly authorized independent engineer or Professional Engineer for the Full Notice to Proceed and Commencement of Construction and the Main Power Generating Equipment Delivered milestones.

The required certifications must be in a form acceptable to PJM, certifying that the engineer or officer, as applicable, has personal knowledge, or has engaged in a diligent inquiry to determine, that the milestone has been achieved and that, based on its review of the relevant project information, the engineer or officer, as applicable, is not aware of any information that could reasonably cause it to believe that the Capacity Resource will not be in-service by the beginning of the applicable Delivery Year. The Market Participant shall, if requested by PJM, supply to PJM on a confidential basis all records and documents relating to the engineer's and/or officer's certifications.

(d) For Planned External Generation Capacity Resources, the RPM Auction Credit requirement shall be reduced as the Capacity Resource attains the milestones stated in the following table and as further described in the PJM Manuals; provided, however, that the total percentage reduction in the RPM Auction Credit requirement shall be no greater than the quotient of (i) the MWs of firm transmission service that the Market Participant has secured for the complete transmission path divided by (ii) the MWs of firm transmission service required to qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.

Credit Reduction Milestones for Planned External Generation Capacity Resources	
Milestones	Increment of reduction from initial RPM Auction Credit requirement
Effective Date of the equivalent of an Interconnection Service Agreement, Generation Interconnection Agreement or Wholesale Market Participation Agreement	50%
Financial Close	15%
Full Notice to Proceed and Commencement of Construction (e.g., footers poured)	5%
Main Power Generating Equipment Delivered	5%
Commencement of Interconnection Service	25%

To obtain a reduction in its RPM Auction Credit requirement, the Market Participant must demonstrate satisfaction of the applicable milestone in the same manner as set forth for Planned Generation Capacity Resources in subsection (c) above.

(e) For Qualifying Transmission Upgrades, the RPM Auction Credit requirement shall be reduced to 50% of the amount calculated under section VI.B.2 above beginning as of the effective date of the latest associated Interconnection Service Agreement or Generation Interconnection Agreement (or, when a project will have no such agreement, an Upgrade Construction Service Agreement), and shall be reduced to zero on the date the Qualifying Transmission Upgrade is placed in service.

4. RPM Auction Credit Rate

As set forth in the PJM Manuals, a separate Auction Credit Rate shall be calculated for each Delivery Year prior to each RPM Auction for such Delivery Year, as follows:

- (a) Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Auction Credit Rate shall be:
 - (i) For Capacity Performance Resources, the greater of ((A) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in MW-day or (B) \$20 per MW-day) times the number of calendar days in such Delivery Year.
 - (ii) For Seasonal Capacity Performance Resources, the same as the Auction Credit Rate for Capacity Performance Resources, but reduced to be proportional to the number of calendar days in the relevant season.
- (b) Subsequent to the posting of the results from a Base Residual Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:

- (i) For Capacity Performance Resources, the (greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) or (C) the lesser of (1) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (2) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery year or for the Relevant LDA, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of calendar days in such Delivery Year).
 - (ii) For Seasonal Capacity Performance Resources, the same as the Auction Credit Rate for Capacity Performance Resources, but reduced to be proportional to the number of calendar days in the relevant season.
- (c) For any resource not previously committed for a Delivery Year that seeks to participate in an Incremental Auction, the Auction Credit Rate shall be:
 - (i) For Capacity Performance Resources, the (greater of (A) 0.5 times Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA or (B) \$20/MW-day) times the number of calendar days in such Delivery Year.
- (d) Subsequent to the posting of the results of an Incremental Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:
 - (i) For Capacity Performance Resources, the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located or (C) the lesser of (1) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (2) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of calendar days in such Delivery Year); and
 - (ii) For Seasonal Capacity Performance Resources, the same as the Auction Credit Rate for Capacity Performance Resources, but reduced to be proportional to the number of calendar days in the relevant season.
- (e) For the purposes of this section VI.B.4 and section VI.B.5 below, “Relevant LDA” means the Locational Deliverability Area in which the Capacity Performance Resource is located if a separate Variable Resource Requirement Curve has been established for that Locational Deliverability Area for the Base Residual Auction for such Delivery Year.

5. Price Responsive Demand Credit Rate

(a) For the 2018/2019 through 2022/2023 Delivery Years:

- (i) Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Price Responsive Demand Credit Rate shall be (the greater of (A) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of calendar days in such Delivery Year;
- (ii) Subsequent to the posting of the results from a Base Residual Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for Price Responsive Demand committed in such auction shall be (the greater of (A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the Price Responsive Demand load is located, in \$/MW-day) times the number of calendar days in such Delivery Year times a final price uncertainty factor of 1.05;
- (iii) For any additional Price Responsive Demand that seeks to commit in a Third Incremental Auction in response to a qualifying change in the final LDA load forecast, the Price Responsive Demand Credit Rate shall be the same as the rate for Price Responsive Demand that had cleared in the Base Residual Auction; and
- (iv) Subsequent to the posting of the results of the Third Incremental Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for all Price Responsive Demand, shall be (the greater of (i) \$20/MW-day or (ii) 0.2 times the Final Zonal Capacity Price for the Locational Deliverability Area within which the Price Responsive Demand is located) times the number of calendar days in such Delivery Year, but no greater than the Price Responsive Demand Credit Rate previously established under subsections (a)(i), (a)(ii), or (a)(iii) of this section for such Delivery Year.

(b) For the 2022/2023 Delivery Year and Subsequent Delivery Years:

- (i) Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Price Responsive Demand Credit Rate shall be (the greater of (A) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (B) \$20 per MW-day) times the number of calendar days in such Delivery Year;
- (ii) Subsequent to the posting of the results from a Base Residual Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for Price Responsive Demand committed in such auction shall be (the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the Price Responsive Demand is located, in \$/MW-day or (C) the lesser of (1) 0.5 times the Net Cost of

New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (2) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery year or for the Relevant LDA, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the Price Responsive Demand is located)] times the number of calendar days in such Delivery Year;

- (iii) For any additional Price Responsive Demand that seeks to commit in a Third Incremental Auction in response to a qualifying change in the final LDA load forecast, the Price Responsive Demand Credit Rate shall be (the greater of (A) 0.5 times Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (B) \$20/MW-day) times the number of calendar days in such Delivery Year; and
- (iv) Subsequent to the posting of the results of the Third Incremental Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for all Price Responsive Demand committed in such auction shall be the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the Price Responsive Demand is located or (C) the lesser of (1) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (2) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day minus (the Capacity Performance Resource Clearing Price in such Incremental Auction for the Locational Deliverability Areas within which the Price Responsive Demand is located)] times the number of calendar days in such Delivery Year.

6. RPM Seller Credit - Additional Form of Unsecured Credit for RPM

In addition to the forms of credit specified elsewhere in this Attachment Q, RPM Seller Credit shall be available to Market Participants, but solely for purposes of satisfying RPM Auction Credit requirements. If a supplier has a history of being a net seller into PJM Markets, on average, over the past 12 months, then PJM will count as available Unsecured Credit twice the average of that Market Participant's total net monthly PJM bills over the past 12 months. This RPM Seller Credit shall be subject to the cap on available Unsecured Credit as established in section II.G.3 above.

RPM Seller Credit is calculated as a single value for each Market Participant, not separately by account, and must be designated to specific customer accounts in order to be available to satisfy RPM Auction Credit requirements that are calculated in each such customer account.

7. Credit Responsibility for Traded Planned RPM Capacity Resources

PJM may require that credit and financial responsibility for planned Capacity Resources that are traded remain with the original party (which for these purposes, means the party bearing credit

responsibility for the planned Capacity Resource immediately prior to trade) unless the receiving party independently establishes consistent with this Attachment Q, that it has sufficient credit with PJM and agrees by providing written notice to PJM that it will fully assume the credit responsibility associated with the traded planned Capacity Resource.

8. Credit Review of Bilateral Capacity Transactions

To the extent the capacity that is the subject of a bilateral capacity transaction already has cleared an auction under Tariff, Attachment DD, such bilateral capacity transactions shall be subject to the prior consent of the Office of the Interconnection and its determination that sufficient credit is in place for the buyer and/or the seller with respect to the credit exposure associated with such obligations.

The following terms shall apply to credit reviews of Section 4.6(b) Bilateral transactions and Locational UCAP bilateral transactions:

- (a) The Office of the Interconnection shall complete its review of an anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction by no later than the close of the next Business Day if such Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction has been received by the Office of the Interconnection's Credit Department for review by 1:00 p.m. Eastern Prevailing Time.
- (b) The Office of the Interconnection shall complete its review of an anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction by no later than the close of the second (2nd) Business Day if such Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction has been received by the Office of the Interconnection's Credit Department for review after 1:00 p.m. Eastern Prevailing Time.
- (c) The timing of the Market Participants' submission of an anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction to the Office of the Interconnection's Credit Department for review, relative to the desired transaction start date, is at the Market Participants' discretion. The Market Participants, however, assume all risk in delaying the submission to the Office of the Interconnection and the Market Participants hold the Office of the Interconnection harmless from any consequences of such delay.
- (d) The Office of the Interconnection will make reasonable efforts to communicate its credit determination and any associated requirements regarding the anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction with the buyer and seller in advance of the deadlines set forth in subparts (a) and (b) above.
- (e) Each submission of an anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction to the Office of the Interconnection for its review shall contain the following information supplied by the buyer and/or seller: (i) seller's account; (ii) buyer's account; (iii) auction/resource; (iv) quantity (MWs); (v) price; (vi) total notional value; and (vii) start and end dates.

(f) All credit reviews of Section 4.6(b) Bilateral transactions and Locational UCAP bilateral transactions, including, but not limited to, with respect to the creditworthiness of the buyer and seller, the impact of the anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction on the buyer and seller, and the determination and timing requirements of any additional credit that the Office of the Interconnection may require from one or both of buyer and seller as a condition for its consenting to the transaction, shall be performed by the Office of the Interconnection in accordance with the provisions of this Attachment Q.

(g) For anticipated Section 4.6(b) Bilateral transactions and Locational UCAP bilateral transactions in which (i) both the buyer and seller have external “investment grade” ratings and (ii) the total notional value of the anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction is less than the Unsecured Credit Allowance for each of the buyer and seller, the Office of the Interconnection will be deemed to have consented to such transaction unless the Office of the Interconnection has informed the buyer and seller otherwise in advance of the applicable deadline under subparts (a) and (b) above.

C. Financial Transmission Right Auctions

Credit requirements described herein for FTR activity are applied separately for each customer account of a Market Participant, unless specified otherwise in this section C. FTR Participants must designate the appropriate amount of credit to each separate customer account in which any activity occurs or will occur.

1. FTR Credit Limit.

Participants must maintain their FTR Credit Limit at a level equal to or greater than their FTR Credit Requirement for each applicable account. FTR Credit Limits will be established only by a Participant providing Collateral and designating the available credit to specific accounts.

2. FTR Credit Requirement.

For each Market Participant with FTR activity, PJM shall calculate an FTR Credit Requirement. The FTR Credit Requirement shall be calculated on a portfolio basis for each Market Participant based on (a) initial margin, (b) Auction Revenue Right Credits, (c) Mark-to-Auction Value, (d) application of a 10¢ per MWh minimum value adjustment, and (e) realized gains and/or losses, as set forth in subsections (a)-(e) of this subsection, employing the formula:

$$\text{Max} \{ \text{Max} (\text{IM} - \text{ARR} - \text{MTA}, \text{Ten Cent per Mwh Minimum}) - \text{Realized Gains and/or Losses}, 0 \}$$

Where IM is the initial margin, ARR is Auction Revenue Rights Credits and MTA is the Mark-to-Auction Value. The FTR Credit Requirement may be increased to reflect any change in the value of a Market Participant’s portfolio requiring an increase in Collateral as further described below.

(a) Initial Margin

Initial margin shall be calculated in accordance with the following formula:

$$\text{IM} = \text{FTR Obligations IM} + \text{FTR Options IM}$$

The model will employ a confidence interval of 99 percent.

(i) FTR Obligations IM

Initial margin values for Financial Transmission Right Obligations shall be determined utilizing a historical simulation value-at-risk methodology that calculates the size and value at risk of the applicable FTR portfolio based on a defined confidence interval and subject to a weighted aggregation method that is represented by a straight sum for long term positions and a combination of straight sum (20%) and weighted root sum of squares (80%) for balance of planning period positions.

(ii) FTR Options IM

The initial margin for Financial Transmission Right Options shall be calculated as the FTR cost minus the FTR Historical Values. FTR Historical Values shall be calculated separately for weekend on-peak, weekday on-peak, off-peak, and 24-hour FTRs for each month of the year. FTR Historical Values shall be adjusted by plus or minus ten percent for cleared counter flow or prevailing flow FTRs, respectively, in order to mitigate exposure due to uncertainty and fluctuations in actual FTR value. Historical values used in the calculation of FTR Historical Values shall be adjusted when the network simulation model utilized in PJM's economic planning process indicates that transmission congestion will decrease due to certain transmission upgrades that are in effect or planned to go into effect for the following Planning Period. The transmission upgrades to be modeled for this purpose shall only include those upgrades that, individually, or together, have 10% or more impact on the transmission congestion on an individual constraint or constraints with congestion of \$5 million or more affecting a common congestion path. The adjustments to historical values shall be the dollar amount of the adjustment shown in the network simulation model.

(b) Auction Revenue Rights Credits

For a given month for which initial margin is calculated, the prorated value of any Auction Revenue Rights Credits held by a Market Participant with Financial Transmission Right Obligations shall be subtracted from the initial margin for that month. In accordance with subsection 3 below, PJM may recalculate Auction Revenue Rights Credits at any time, but shall do so no less frequently than subsequent to each annual FTR auction. If a reduction in such ARR credits at any time increases an FTR Participant's FTR Credit Requirements beyond its credit available for FTR activity, the FTR Participant must increase its Collateral or the FTR Credit Limit.

(c) Mark-to-Auction Value

A Mark-to-Auction Value shall be calculated for each Market Participant in accordance with subsection 7 below.

(d) Ten Cent (10¢) per MWh Minimum Value Adjustment

If the FTR Credit Requirement as calculated pursuant to subsections (a)-(c) above, results in a value that is less than ten cents (10¢) per MWh, the FTR Credit Requirement shall be increased to ten cents (10¢) per MWh. When calculating the portfolio MWh for this comparison, for cleared “Sell” FTRs, the MWh shall be subtracted from the portfolio total; prior to clearing, the MWh for “Sell” FTRs shall not be included in the portfolio total.

(e) Realized Gains and/or Losses

Any realized gains and/or losses resulting from the settlement of Financial Transmission Right Obligations that have not been paid out will be subtracted from the FTR Credit Requirement. A realized gain will decrease the FTR Credit Requirement (but not below \$0.00), whereas a realized loss will increase the FTR Credit Requirement.

3. Rejection of FTR Bids.

Bids submitted into an auction will be rejected if the Market Participant’s FTR Credit Requirement including such submitted bids would exceed the Market Participant’s FTR Credit Limit, or if the Market Participant fails to provide additional Collateral as required pursuant to provisions related to mark-to-auction.

4. FTR Credit Collateral Returns.

A Market Participant may request from PJM the return of any Collateral no longer required for the FTR markets. PJM is permitted to limit the frequency of such requested Collateral returns, provided that Collateral returns shall be made by PJM at least once per calendar quarter, if requested by a Market Participant.

5. Credit Responsibility for Bilateral Transfers of FTRs.

PJM may require that credit responsibility associated with an FTR bilaterally transferred to a new Market Participant remain with the original party (which for these purposes, means the party bearing credit responsibility for the FTR immediately prior to bilateral transfer) unless and until the receiving party independently establishes, consistent with this Attachment Q, sufficient credit with PJM and agrees through confirmation of the bilateral transfer in PJM's FTR reporting tool that it will meet in full the credit requirements associated with the transferred FTR.

6. FTR Administrative Charge Credit Requirement

In addition to any other credit requirements, PJM may apply a credit requirement to cover the maximum administrative fees that may be charged to a Market Participant for its bids and offers.

7. Mark-to-Auction

A Mark-to-Auction Value shall be calculated separately for each customer account of a Market Participant. For each such customer account, the Mark-to-Auction Value shall be a single number equal to the sum, over all months remaining in the applicable FTR period and for all cleared FTRs in the customer account, of the most recently available cleared auction price applicable to the FTR minus the original transaction price of the FTR, multiplied by the transacted quantity.

The FTR Credit Requirement, as otherwise described above, shall be increased when the Mark-to-Auction Value is negative and decreased when the Mark-to-Auction Value is positive. The increase shall equal the absolute value of the negative Mark-to-Auction Value less the value of ARR credits that are held in the customer account and have not been used to reduce the FTR Credit Requirement prior to application of the Mark-to-Auction Value. PJM shall recalculate ARR credits held by each Market Participant after each annual FTR auction and may also recalculate such ARR credits at any other additional time intervals it deems appropriate. Application of the Mark-to-Auction Value, including the effect from ARR application, shall not decrease the FTR Credit Requirement below the Ten Cent (10¢) per MWh Minimum.

For Market Participant customer accounts for which FTR bids have been submitted into the current FTR auction, if the Market Participant's FTR Credit Requirement exceeds its credit available for the Market Participant's portfolio of FTRs in the tentative cleared solution for an FTR auction (or auction round), PJM shall issue a Collateral Call to the Market Participant, and the Market Participant must fulfill such demand before 4:00 p.m. Eastern Prevailing Time on the following Business Day. If a Market Participant does not timely satisfy such Collateral Call,

PJM shall, in coordination with PJM, cause the removal of all of that Market Participant's bids in that FTR auction (or auction round), submitted from such Market Participant's customer account, and a new cleared solution shall be calculated for the FTR auction (or auction round).

If necessary, PJM shall repeat the auction clearing calculation. PJM shall repeat these mark-to-auction calculations subsequent to any secondary clearing calculation, and PJM shall require affected Market Participants to establish additional credit.

Subsequent to final clearing of an FTR auction or an annual FTR auction round, PJM shall recalculate the FTR Credit Requirement for all FTR portfolios, and, as applicable, issue to each Market Participant a request for Collateral for the total amount by which the FTR Credit Requirement exceeds the credit allocated in any of the Market Participant's accounts. The Market Participant must fulfill such demand by 4:00 p.m. Eastern Prevailing Time on the following Business Day.

If the request for Collateral is not satisfied within the applicable cure period referenced in Operating Agreement, section 15, then such Market Participant shall be restricted in all of its credit-screened transactions. Specifically, such Market Participant may not engage in any Virtual Transactions or Export Transactions, or participate in RPM Auctions or other RPM activity. Such Market Participant may engage only in the selling of open FTR positions, either in FTR auctions or bilaterally, provided such sales would reduce the Market Participant's FTR Credit Requirements. PJM shall not return any Collateral to such Market Participant, and no payment shall be due or payable to such Market Participant, until its credit shortfall is remedied. Market Participant shall allocate any excess or unallocated Collateral to any of its account in which there is a credit shortfall. Market Participants may remedy their credit shortfall at any time through provision of sufficient Collateral.

If a Market Participant fails to satisfy a request for Collateral for two consecutive auctions of overlapping periods, e.g. two balance of Planning Period auctions, an annual FTR auction and a balance of Planning Period auction, or two long term FTR auctions, (for this purpose the four rounds of an annual FTR auction shall be considered a single auction), the Market Participant shall be declared in default of this Attachment Q.

5.5A Capacity Resource Types

(a) Capacity Performance Resources

Capacity Performance Resources are Capacity Resources which, to the extent such resources cleared in a Reliability Pricing Model Auction or are otherwise committed as a Capacity Resource, are obligated to deliver energy during the relevant Delivery Year as scheduled and/or dispatched by the Office of Interconnection during the Performance Assessment Intervals. As further detailed in Tariff, Attachment DD, section 10A, Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Charge, unless excused pursuant to Tariff, Attachment DD, section 10A(d). Subject to 5.5A(a)(i), the following types of Capacity Resources are eligible to submit a Sell Offer as a Capacity Performance Resource: internal or external Generation Capacity Resources; Annual Demand Resources; Capacity Storage Resources; Annual Energy Efficiency Resources; and Qualifying Transmission Upgrades. To the extent the underlying Capacity Resource is an external Generation Capacity Resource, such resource must meet, to the extent subsection (b) or (c) of this section is applicable to offers from such resource, meet the applicable requirements of such subsection, and if neither subsection (b) or (c) is applicable, then offers from such resource must meet the criteria for obtaining an exception to the Capacity Import Limit as contained in RAA, Article 1.

(i) Process for Support and Review of Capacity Performance Resource Offers

A. The Capacity Market Seller shall provide to the Office of the Interconnection and the Market Monitoring Unit, upon their request, all supporting data and information requested by either the Office of the Interconnection or the Market Monitoring Unit to evaluate whether the underlying Capacity Resource can meet the operational and performance requirements of Capacity Performance Resources. The Capacity Market Seller shall have an ongoing obligation through the closing of the offer period for the RPM Auction to update the request to reflect any material changes.

B. The Office of the Interconnection and the Market Monitoring Unit shall review any requested supporting data and information, and the Office of the Interconnection, considering advice and recommendation from the Market Monitoring Unit, shall reject a request for a resource to offer as a Capacity Performance Resource if the Capacity Market Seller does not demonstrate that it can reasonably be expected to meet its Capacity Performance obligations consistent with the resource's offer by the relevant Delivery Year. The Office of Interconnection shall provide its determination to reject eligibility of the resource as a Capacity Performance Resource, and notify the Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences. A Capacity Market Seller that is dissatisfied with any determination hereunder may seek any remedies available to it from FERC; provided, however, that the Office of the Interconnection will proceed with administration of the Tariff and market rules unless and until ordered to do otherwise by FERC.

(b) Offers from External Generation Capacity Resources for the 2020/2021 Delivery Year

and Subsequent Delivery Years—General Rule

For the 2020/2021 Delivery Year and any subsequent Delivery Year and for Capacity Performance Resource Sell Offers in any RPM Auction conducted for the 2018/2019 Delivery Year or 2019/2020 Delivery Year after May 9, 2017, unless excepted pursuant to subsection (c) below, a Capacity Market Seller may submit a Sell Offer for an external Generation Capacity Resource in an RPM Auction if the Capacity Market Seller demonstrates to PJM, by no later than five (5) business days prior to the commencement of the offer period for the relevant RPM Auction, that such resource meets all of the following requirements:

(i) The Capacity Market Seller has obtained a determination that the Pseudo-Tie required for its external Generation Capacity Resource is feasible, including (without limitation) that such Pseudo-Tie meets the following requirements:

(A) the external Generation Capacity Resource must have a minimum Electrical Distance impedance equal to or less than 0.065 p.u.; or is within one station of a transmission bus that has a minimum Electrical Distance impedance equal to or less than 0.065 p.u. With regard to this Electrical Distance requirement, the Office of the Interconnection shall:

- (1) post on its website the material assumptions, applicable to all tested generators, implemented in the modeling software used to conduct the Electrical Distance analysis (e.g., the general process used to define the facilities included in the Electrical Distance requirement and analysis for each Pseudo-Tie applicant);
- (2) upon request by an applicant for a Pseudo-Tie, provide that applicant a copy of the results of the Electrical Distance analysis conducted by the Office of the Interconnection for the specific Pseudo-Tie requested by the applicant, as well as related work papers; and
- (3) upon request by an applicant for a Pseudo-Tie, meet with that applicant to discuss specific modeling assumptions and the results of the Electrical Distance analysis for the specific Pseudo-Tie requested by that applicant;

(B) at least one generation resource that has a historic economic minimum offer lower than its historic economic maximum offer, located inside the metered boundaries of the PJM Region, has a minimum flow distribution impact of 1.5 percent on each eligible coordinated flowgate resulting from such Pseudo-Tie. With regard to this requirement, the Office of the Interconnection shall:

- (1) post on its website the material assumptions, applicable to all tested generators, that have been implemented in the modeling software used to conduct the analysis to determine whether the requirement has been met (e.g., the definitions of the sink and source used in the market-to-

market analysis and the definition of eligible coordinated flowgates as applicable to the requirement);

(2) upon request by an applicant for a Pseudo-Tie, provide that applicant a copy of the results of the market-to-market flowgate analysis conducted by the Office of the Interconnection for the specific Pseudo-Tie requested by the applicant, as well as related work papers; and

(3) upon request by an applicant for a Pseudo-Tie, meet with that applicant to discuss specific modeling assumptions and the results of the market-to-market flowgate analysis conducted for the specific Pseudo-Tie requested by that applicant;

(C) each external entity with which PJM may be required to coordinate flowgates under an agreed congestion management process maintains a network model that produces results for such flowgates that are within two percent of the results produced by the PJM network model for such flowgates;

(D) the Capacity Market Seller has secured written acknowledgement from the external Balancing Authority Areas that such Pseudo-Tie does not require tagging and that firm allocations associated with any coordinated flowgates applicable to the external Generation Capacity Resource under any agreed congestion management process then in effect between PJM and such Balancing Authority Area will be allocated to PJM.

and the Capacity Market Seller has committed in writing that it will take all steps necessary to implement such Pseudo-Tie prior to the start of the relevant Delivery Year;

(ii) it has, for transmission outside PJM, obtained long-term firm point-to-point transmission service (evaluated for deliverability from the unit-specific physical location of the resource to PJM load pursuant to a study that is reviewed and approved by PJM in accordance with PJM deliverability criteria to ensure uniformity for internal and external resource deliverability requirements), with rollover rights for the term of the transmission service that is confirmed by the Balancing Authority for the Balancing Authority Area where such resource is geographically located; and, as to transmission within PJM, has obtained Network External Designated Transmission Service; and

(iii) it is, by written commitment of the Capacity Market Seller, subject to the same obligations imposed on Generation Capacity Resources located in the PJM Region by Tariff, Attachment DD, section 6.6 to offer their capacity into RPM Auctions.

A Capacity Market Seller that satisfies the above requirements with respect to an external Generation Capacity Resource Sell Offer submitted in an RPM Auction for a Delivery Year shall be required to demonstrate satisfaction of such requirements for any Sell Offer with respect to such resource submitted in an RPM Auction for any subsequent Delivery Year, including, without limitation, demonstration that the required external transmission service continues to

satisfy PJM's deliverability standards.

(c) Offers from external Generation Capacity Resources for the 2020/2021 Delivery Year and Subsequent Delivery Years—Exception.

A Capacity Market Seller of a Prior CIL Exception External Resource may continue to submit Sell Offers for such resource for any RPM Auction for any Delivery Year up to and including the 2021/2022 Delivery Year (or, solely for any such resource that is (1) owned by a Load Serving Entity and used to self-supply (under arrangements initiated before June 1, 2016, with a duration of at least ten years) such entity's PJM Region load or (2) the subject of a contract for energy or capacity or equivalent written agreement entered into on or before June 1, 2016 for a term of ten years or longer with a purchaser that is an internal PJM load customer, for any Delivery Year during the life of such resource for subparagraph (1) or for the term of the agreement under subparagraph (2)) so long as it continues to comply with all conditions on the grant of its exception to the Capacity Import Limit, subject to the following additional conditions:

(i) for any Delivery Year, beginning with the 2017/2018 Delivery Year, for which such Prior CIL Exception External Resource has cleared an RPM Auction, PJM may in its sole judgment determine that the resource is not Operationally Deliverable for such Delivery Year because it does not satisfy the requirements of subsection (b). If PJM determines a Prior CIL Exception External Resource is not Operationally Deliverable for a Delivery Year, it must notify the Capacity Market Seller of its determination by no later than October 1 immediately preceding such Delivery Year. After receiving such notice, the Capacity Market Seller may elect to:

(A) take the necessary actions to make the Prior CIL Exception External Resource Operationally Deliverable, in PJM's sole judgment, prior to the beginning of such Delivery Year, provided that PJM will, if transmission upgrades are required to make such resource Operationally Deliverable, facilitate the performance of transmission studies and otherwise cooperate with the external Transmission Provider of the system on which such upgrades are required to identify the upgrades required to meet PJM's deliverability standards;

(B) be relieved of its capacity obligation for such Delivery Year by providing written notice of such election to the Office of the Interconnection no later than seven (7) days prior to the posting of planning parameters for the Third Incremental Auction for such Delivery Year as PJM will procure the replacement capacity in the Third Incremental Auction in accordance with Tariff, Attachment DD, sections 5.12(b)(ii) and 5.12(b)(iii), with no entitlement to any capacity revenues based on such resource, with no requirement to seek replacement for such capacity for such Delivery Year, with no penalty for non-performance or lack of commitment for such Delivery Year, and with no further must-offer obligation that would otherwise arise solely from clearing such capacity for such Delivery Year; or

(C) procure, by purchase or otherwise, replacement in a sufficient quantity to replace the capacity that would have been provided by the Prior CIL Exception External Resource but for PJM's determination that such resource is not Operationally Deliverable.

(ii) Such Capacity Market Seller's continued ability to offer such resource under this exception is conditioned on external Transmission Providers continuing to honor the firm status of the Capacity Market Seller's transmission service for all Delivery Years for which such seller offers such resource under the exceptions provided in this subsection (c).

(iii) A Capacity Market Seller offering and clearing a Prior CIL Exception External Resource pursuant to this subsection (c) shall be relieved of its must-offer obligation that would otherwise arise solely from clearing such capacity. Such relief of the must-offer obligation shall be for any Delivery Year after the last Delivery Year for which it is permitted to offer such resource under this subsection (c).

(iv) PJM will determine key triggers for when a Prior CIL Exception External Resource will not be Operationally Deliverable, including the need for: (1) a remedial action scheme or manual generation dump protocol to manage external transmission emergencies; (2) transmission facility switching arrangements that would have the effect of radializing load in order to manage external transmission emergencies; and (3) "out of market" external Balancing Authority or Transmission Operator directed dispatch instructions to manage excessive or unacceptable frequency of external regional reliability limit violations or (outside an interregional agreed congestion management process) of local reliability limit violations.

(d) Seasonal Capacity Performance Resource

For the 2020/2021 Delivery Year and subsequent Delivery Years, a Seasonal Capacity Performance Resource shall mean a Summer-Period Capacity Performance Resource or Winter-Period Capacity Performance Resource, as defined below.

i) Summer-Period Capacity Performance Resource

For the 2020/2021 Delivery Year and subsequent Delivery Years, the following types of Capacity Resources are eligible to submit a Sell Offer as a Summer-Period Capacity Performance Resource: Summer Period Demand Resource, Summer-Period Energy Efficiency Resource, and Capacity Storage Resource, Intermittent Resource, or Environmentally-Limited Resource that has an average expected energy output during summer peak-hour periods consistently and measurably greater than its average expected energy output during winter peakhour periods. To the extent such resource clears an RPM Auction or is otherwise committed as a Summer-Period Capacity Performance Resource, it is obligated to deliver energy as scheduled and/or dispatched by the Office of Interconnection during Performance Assessment Intervals occurring in the calendar months of June through October and the following May of the Delivery Year, and must

satisfy the requirements of a Capacity Performance Resource for such period of time. As further detailed in Tariff, Attachment DD, section 10A, Summer-Period Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Charge, unless excused pursuant to Tariff, Attachment DD, section 10A(d).

ii) Winter-Period Capacity Performance Resource

~~For the 2020/2021 Delivery Year and subsequent Delivery Years, the following types of Capacity Resources are eligible to submit a Sell Offer as a Winter-Period Capacity Performance Resource: Capacity Storage Resource, Intermittent Resource that has been granted additional Capacity Interconnection Rights related to the winter-period, and Environmentally Limited Resource that has an average expected energy output during winter peak hour periods consistently and measurably greater than its average expected energy output during summer peak hour periods.~~ To the extent such resource clears an RPM Auction or is otherwise committed as a Winter-Period Capacity Performance Resource, it is obligated to deliver energy as scheduled and/or dispatched by the Office of Interconnection during Performance Assessment Intervals occurring in the calendar months of November through April of the Delivery Year, and must satisfy the requirements of a Capacity Performance Resource for such period of time. As further detailed in Tariff, Attachment DD, section 10A, Winter-Period Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Charge, unless excused pursuant to Tariff, Attachment DD, section 10A(d).

Revisions to the
PJM Operating Agreement
Effective March 10, 2026

(Marked Format)

Definitions S – T

Sector Votes:

“Sector Votes” shall mean the affirmative and negative votes of each sector of a Senior Standing Committee, as specified in Operating Agreement, section 8.4.

Securities:

“Securities” shall mean negotiable or non-negotiable investment or financing instruments that can be sold and bought. Securities include bonds, stocks, debentures, notes and options.

Segment:

“Segment” shall have the same meaning as described in Operating Agreement, Schedule 1, section 3.2.3(e) and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(e).

Senior Standing Committees:

“Senior Standing Committees” shall mean the Members Committee, and the Markets and Reliability Committee, as established in Operating Agreement, section 8.1 and Operating Agreement, section 8.6.

SERC:

“SERC” or “Southeastern Electric Reliability Council” shall mean the reliability council under section 202 of the Federal Power Act established pursuant to the SERC Agreement dated January 14, 1970, or any successor thereto.

Short-term Project:

“Short-term Project” shall mean a transmission enhancement or expansion with an in-service date of more than three years but no more than five years from the year in which, pursuant to Operating Agreement, Schedule 6, section 1.5.8(c), the Office of the Interconnection posts the violations, system conditions, or Public Policy Requirements to be addressed by the enhancement or expansion.

Special Member:

“Special Member” shall mean an entity that satisfies the requirements of Operating Agreement, Schedule 1, section 1.5A.02, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.02, or the special membership provisions established under the Emergency Load Response and Pre-Emergency Load Response Programs.

Spot Market Backup:

“Spot Market Backup” shall mean the purchase of energy from, or the delivery of energy to, the PJM Interchange Energy Market in quantities sufficient to complete the delivery or receipt obligations of a bilateral contract that has been curtailed or interrupted for any reason.

Spot Market Energy:

“Spot Market Energy” shall mean energy bought or sold by Market Participants through the PJM Interchange Energy Market at System Energy Prices determined as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

Standing Committees:

“Standing Committees” shall mean the Members Committee, the committees established and maintained under Operating Agreement, section 8.6, and such other committees as the Members Committee may establish and maintain from time to time.

Start Fuel:

For units without a soak process, “Start Fuel” shall consist of fuel consumed from first fire of the start process to first breaker closing, plus any fuel expended from last breaker opening to shutdown.

For units with a soak process, “Start Fuel” is fuel consumed from first fire of the start process (initial reactor criticality for nuclear units) to dispatchable output (including auxiliary boiler fuel), plus any fuel expended from last breaker opening to shutdown, excluding normal plant heating/auxiliary equipment fuel requirements. Start Fuel included for each temperature state from breaker closure to dispatchable output shall not exceed the unit specific soak time period reviewed and approved as part of the unit-specific parameter process detailed in Tariff, Attachment K-Appendix, section 6.6(c) or the defaults below:

- Cold Soak Time = $0.73 \times \text{unit specific Minimum Run Time (in hours)}$
- Intermediate Soak Time = $0.61 \times \text{unit specific Minimum Run Time (in hours)}$
- Hot Soak Time = $0.43 \times \text{unit specific Minimum Run Time (in hours)}$

Start-Up Costs:

“Start-Up Costs” shall consist primarily of the cost of fuel, as determined by the unit’s start heat input (adjusted by the performance factor) times the fuel cost. It also includes operating costs, Maintenance Adders, emissions allowances/adders, and station service cost. Start-Up Costs can vary with the unit offline time being categorized in three unit temperature conditions: hot, intermediate and cold.

For units with a steam turbine and a soak process (nuclear, steam, and combined cycle), “Start Fuel” is fuel consumed from first fire of start process (initial reactor criticality for nuclear units):

Start-Up Costs shall mean the net unit costs from PJM's notification to the level at which the unit can follow PJM's dispatch, and from last breaker open to shutdown.

For units without a steam turbine and no soak process (engines, combustion turbines, Intermittent Resources, and Energy Storage Resources): Start-Up Costs shall mean the unit costs from PJM's notification to first breaker close and from last breaker open to shutdown.

State:

"State" shall mean the District of Columbia and any State or Commonwealth of the United States.

State Certification:

"State Certification" shall mean the Certification of an Authorized Commission, pursuant to Operating Agreement, section 18, the form of which is appended to the Operating Agreement as Operating Agreement, Schedule 10A, wherein the Authorized Commission identifies all Authorized Persons employed or retained by such Authorized Commission, a copy of which shall be filed with FERC.

State Consumer Advocate:

"State Consumer Advocate" shall mean a legislatively created office from any State, all or any part of the territory of which is within the PJM Region, and the District of Columbia established, inter alia, for the purpose of representing the interests of energy consumers before the utility regulatory commissions of such states and the District of Columbia and the FERC.

State Estimator:

"State Estimator" shall mean the computer model of power flows specified in Operating Agreement, Schedule 1, section 2.31.11A, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.31.11A.

State of Charge:

"State of Charge" shall mean the quantity of physical energy stored in an Energy Storage Resource Model Participant or in a storage component of a Hybrid Resource in proportion to its maximum State of Charge capability. State of Charge is quantified as defined in the PJM Manuals.

State of Charge Management:

"State of Charge Management" shall mean the control of State of Charge of an Energy Storage Resource Market Participant or a storage component of a Hybrid Resource using minimum and maximum discharge (and, as applicable, charge) limits, changes in operating mode (as applicable), discharging (and, as applicable, charging) offer curves, and self-scheduling of non-

dispatchable sales (and, as applicable, purchases) of energy in the PJM markets. State of Charge Management shall not interfere with the obligation of a Market Seller of an Energy Storage Resource Model Participant or of a Hybrid Resource to follow PJM dispatch, consistent with all other resources.

Station Power:

“Station Power” shall mean energy used for operating the electric equipment on the site of a generation facility located in the PJM Region or for the heating, lighting, air-conditioning and office equipment needs of buildings on the site of such a generation facility that are used in the operation, maintenance, or repair of the facility. Station Power does not include any energy (i) used to power synchronous condensers; (ii) used for pumping at a pumped storage facility; (iii) used in association with restoration or black start service; or (iv) that is Direct Charging Energy.

Sub-meter:

“Sub-meter” shall mean a metering point for electricity consumption that does not include all electricity consumption for the end-use customer as defined by the electric distribution company account number. PJM shall only accept sub-meter load data from end-use customers for measurement and verification of Regulation service as set forth in the Economic Load Response rules and PJM Manuals.

Subregional RTEP Project:

“Subregional RTEP Project” shall mean a transmission expansion or enhancement rated below 230 kV which is required for compliance with the following PJM criteria: system reliability, operational performance or economic criteria, pursuant to a determination by the Office of the Interconnection.

Supplemental Project:

“Supplemental Project” shall mean a transmission expansion or enhancement that is not required for compliance with the following PJM criteria: system reliability, operational performance or economic criteria, pursuant to a determination by the Office of the Interconnection and is not a state public policy project pursuant to Operating Agreement, Schedule 6, section 1.5.9(a)(ii). Any system upgrades required to maintain the reliability of the system that are driven by a Supplemental Project are considered part of that Supplemental Project and are the responsibility of the entity sponsoring that Supplemental Project.

Synchronized Reserve:

“Synchronized Reserve” shall mean the reserve capability of generation resources that can be converted fully into energy or Economic Load Response Participant resources whose demand can be reduced within ten minutes from the request of the Office of the Interconnection dispatcher, and is provided by equipment that is electrically synchronized to the Transmission System.

Synchronized Reserve Event:

“Synchronized Reserve Event” shall mean a request from the Office of the Interconnection to generation resources and/or Economic Load Response Participant resources able, assigned or self-scheduled to provide Synchronized Reserve in one or more specified Reserve Zones or Reserve Sub-zones, within ten minutes, to increase the energy output or reduce load by a directed amount of the assigned or self-scheduled Synchronized Reserve.

Synchronized Reserve Requirement:

“Synchronized Reserve Requirement” shall mean the megawatts required to be maintained in a Reserve Zone or Reserve Sub-zone as Synchronized Reserve, absent any increase to account for additional reserves scheduled to address operational uncertainty. The Synchronized Reserve Requirement is calculated in accordance with the PJM Manuals. This requirement can only be satisfied by Synchronized Reserve resources.

System:

“System” shall mean the interconnected electric supply system of a Member and its interconnected subsidiaries exclusive of facilities which it may own or control outside of the PJM Region. Each Member may include in its system the electric supply systems of any party or parties other than Members which are within the PJM Region, provided its interconnection agreements with such other party or parties do not conflict with such inclusion.

System Energy Price:

“System Energy Price” shall mean the energy component of the Locational Marginal Price, which is the price at which the Market Seller has offered to supply an additional increment of energy from a resource, calculated as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

Target Allocation:

“Target Allocation” shall mean the allocation of Transmission Congestion Credits as set forth in Operating Agreement, Schedule 1, section 5.2.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.3 or the allocation of Auction Revenue Rights Credits as set forth in Operating Agreement, Schedule 1, section 7.4.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.3.

Third Party Request:

“Third Party Request” shall mean any request or demand by any entity upon an Authorized Person or an Authorized Commission for release or disclosure of confidential information provided to the Authorized Person or Authorized Commission by the Office of the Interconnection or the Market Monitoring Unit. A Third Party Request shall include, but shall not be limited to, any subpoena,

discovery request, or other request for confidential information made by any: (i) federal, state, or local governmental subdivision, department, official, agency or court, or (ii) arbitration panel, business, company, entity or individual.

Tie Line:

“Tie Line” shall have the same meaning provided in the Open Access Transmission Tariff.

Total Lost Opportunity Cost Offer:

“Total Lost Opportunity Cost Offer” shall mean the applicable offer used to calculate lost opportunity cost credits. For pool-scheduled resources specified in PJM Operating Agreement, Schedule 1, section 3.2.3(f-1) and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(f-1), the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, as determined by the greater of the Committed Offer or last Real-Time Offer submitted for the offer on which the resource was committed in the Day-ahead Energy Market for each hour in an Operating Day. For all other pool-scheduled resources, the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, as determined by the offer curve associated with the greater of the Committed Offer or Final Offer for each hour in an Operating Day. For self-scheduled generation resources, the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, where for self-scheduled generation resources (a) operating pursuant to a cost-based offer, the applicable offer curve shall be the greater of the originally submitted cost-based offer or the cost-based offer that the resource was dispatched on in real-time; or (b) operating pursuant to a market-based offer, the applicable offer curve shall be determined in accordance with the following process: (1) select the greater of the cost-based day-ahead offer and updated costbased Real-time Offer; (2) for resources with multiple cost-based offers, first, for each cost-based offer select the greater of the day-ahead offer and updated Real-time Offer, and then select the lesser of the resulting cost-based offers; and (3) compare the offer selected in (1), or for resources with multiple cost-based offers the offer selected in (2), with the market-based day-ahead offer and the market-based Real-time Offer and select the highest offer.

Total Operating Reserve Offer:

“Total Operating Reserve Offer” shall mean the applicable offer used to calculate Operating Reserve credits. The Total Operating Reserve Offer shall equal the sum of all individual Real-time Settlement Interval energy offers, inclusive of Start-Up Costs (shut-down costs for Demand Resources) and No-load Costs, for every Real-time Settlement Interval in a Segment, integrated under the applicable offer curve up to the applicable megawatt output as further described in the PJM Manuals. The applicable offer used to calculate day-ahead Operating Reserve credits shall be the Committed Offer, and the applicable offer used to calculate balancing Operating Reserve credits shall be lesser of the Committed Offer or Final Offer for each hour in an Operating Day.

Transmission Congestion Charge:

“Transmission Congestion Charge” shall mean a charge attributable to the increased cost of energy delivered at a given load bus when the transmission system serving that load bus is operating under constrained conditions, or as necessary to provide energy for third-party transmission losses, which shall be calculated and allocated as specified in Operating Agreement, Schedule 1, section 5.1, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.1.

Transmission Congestion Credit:

“Transmission Congestion Credit” shall mean the allocated share of total Transmission Congestion Charges credited to each FTR Holder, calculated and allocated as specified in Operating Agreement, Schedule 1, section 5.2 and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.

Transmission Customer:

“Transmission Customer” shall have the meaning set forth in the PJM Tariff.

Transmission Facilities:

“Transmission Facilities” shall mean facilities that: (i) are within the PJM Region; (ii) meet the definition of transmission facilities pursuant to FERC’s Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities; and (iii) have been demonstrated to the satisfaction of the Office of the Interconnection to be integrated with the PJM Region transmission system and integrated into the planning and operation of the PJM Region to serve all of the power and transmission customers within the PJM Region.

Transmission Forced Outage:

“Transmission Forced Outage” shall mean an immediate removal from service of a transmission facility by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the transmission facility, as specified in the relevant portions of the PJM Manuals. A removal from service of a transmission facility at the request of the Office of the Interconnection to improve transmission capability shall not constitute a Forced Transmission Outage.

Transmission Loading Relief:

“Transmission Loading Relief” shall mean NERC’s procedures for preventing operating security limit violations, as implemented by PJM as the security coordinator responsible for maintaining transmission security for the PJM Region.

Transmission Loss Charge:

“Transmission Loss Charge” shall mean the charges to each Market Participant, Network Customer, or Transmission Customer for the cost of energy lost in the transmission of electricity from a generation resource to load as specified in Operating Agreement, Schedule 1, section 5, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.

Transmission Operator:

“Transmission Operator” shall have the same meaning set forth in the NERC Glossary of Terms used in NERC Reliability Standards.

Transmission Owner:

“Transmission Owner” shall mean a Member that owns or leases with rights equivalent to ownership Transmission Facilities and is a signatory to the PJM Transmission Owners Agreement. Taking transmission service shall not be sufficient to qualify a Member as a Transmission Owner.

Transmission Owner Upgrade:

“Transmission Owner Upgrade” shall mean an upgrade to a Transmission Owner’s own transmission facilities, which is an improvement to, addition to, or replacement of a part of, an existing facility and is not an entirely new transmission facility.

Transmission Planned Outage:

“Transmission Planned Outage” shall mean any transmission outage scheduled in advance for a pre-determined duration and which meets the notification requirements for such outages specified in Operating Agreement, Schedule 1, and the parallel provisions of Tariff, Attachment K-Appendix, or the PJM Manuals.

Turn Down Ratio:

“Turn Down Ratio” shall mean the ratio of a generating unit’s economic maximum megawatts to its economic minimum megawatts.

1.4B DER Aggregator Participation Model

(a) DER Aggregators providing capacity using a DER Capacity Aggregation Resource shall be subject to the Day-ahead Energy Market must-offer requirement described in Tariff, Attachment K-Appendix, section 1.10.1A(d) and Operating Agreement, Schedule 1, section 1.10.1A(d), based on the technology of the Component DER within the DER Aggregation Resource linked to the DER Capacity Aggregation Resource, in accordance with the PJM Manuals.

(b) DER Aggregation Resources are subject to offer price cap and associated three pivotal supplier test provisions of Operating Agreement, Schedule 1, section 6.4.

(c) A DER Capacity Aggregation Resource shall be subject to a MOPR Floor Offer Price in accordance with the provisions applicable to MOPR Floor Offer Price for Generation Capacity Resources, as described in Tariff, Attachment DD, section 5.14(h-2), and Market Seller Offer Cap for Generation Capacity Resources in a manner consistent with the provisions applicable to Market Seller Offer Cap for Generation Capacity Resources, as described in Tariff, Attachment DD, section 6.4 and Tariff, Attachment M-Appendix, section II.E, based on the underlying technology of the Component DER.

A DER Capacity Aggregation Resource may segment offers for the Component DER subject to mitigation, based on the underlying technology of the Component DER in the DER Capacity Aggregation Resource, and further described in the PJM Manuals.

If a DER Capacity Aggregation Resource is subject to the Minimum Floor Offer Price pursuant to Tariff, Attachment DD, sections 5.14(h-2), the Capacity Market Seller that owns or controls such resources may submit a Sell Offer with a Minimum Floor Offer Price of no lower than the MW-weighted average of the applicable MOPR Floor Offer Prices (zero if not applicable) of the aggregated resources in such Sell Offer.

(d) Projected PJM Market Revenues for DER Capacity Aggregation Resources subject to the Minimum Floor Offer Price or Market Seller Offer Cap shall be determined in accordance with Tariff, Attachment DD, section 6.8(d-1). ~~The determination of PJM Market Revenues by the Market Monitoring Unit or the Office of the Interconnection shall utilize either the hourly output profiles, or the Projected EAS Dispatch, as appropriate.~~

Revisions to the
PJM Open Access Transmission Tariff
Effective February 1, 2028

(Marked Format)

ATTACHMENT N-4

**FORM DER AGGREGATOR PARTICIPATION
SERVICE AGREEMENT**

Service Agreement No. []

DER AGGREGATOR PARTICIPATION SERVICE AGREEMENT
Among
PJM INTERCONNECTION, L.L.C.
And
[Name of DER Aggregator]

DER AGGREGATOR PARTICIPATION SERVICE AGREEMENT

By and Among
PJM Interconnection, L.L.C.
And
[Name of DER Aggregator]

- 1.0 This DER Aggregator Participation Service Agreement (“DAPSA”), dated and effective as of _____, is entered into, by and between, the following entities (hereinafter referred to individually as “Party” or collectively as “the Parties”), for purposes of facilitating the participation of a DER Aggregator in the energy, capacity, and/or ancillary services markets of PJM through the DER Aggregator Participation Model, as described in Tariff, Attachment K-Appendix, Operating Agreement, Schedule 1, and the PJM Manuals (“DER Aggregator Participation Service”).
- a. PJM Interconnection, L.L.C. (“PJM”), the Regional Transmission Organization for the PJM Region, administrator of the DER Aggregator Participation Model, provider of DER Aggregator Participation Service, and a NERC-registered Reliability Coordinator, Balancing Authority, and Transmission Operator; and
 - b. [Name of DER Aggregator], the DER Aggregator taking DER Aggregator Participation Service from PJM; and
- 2.0 In consideration of the mutual covenants herein contained, together with other good and valuable consideration, the receipt and sufficiency of which is hereby mutually acknowledged by PJM and the DER Aggregator the Parties agree as follows:
- a. PJM shall provide DER Aggregator Participation Service to the DER Aggregator, in accordance with the applicable provisions of the PJM Tariff, Attachment K-Appendix, Operating Agreement, Schedule 1, and the PJM Manuals.
 - b. The DER Aggregator has met all requisite qualification and eligibility criteria for receiving DER Aggregator Participation Service from PJM, shall comply with all operational and safety directives of PJM, and shall comply with all applicable provisions of the PJM Tariff, Attachment K-Appendix, Operating Agreement, Schedule 1, and the PJM Manuals. The DER Aggregator attests that it is currently, and will remain, in full compliance with the tariffs, agreements, and operating procedures of the applicable ~~e~~Electric ~~d~~Distribution ~~e~~Company, and the rules and regulations of any Relevant Electric Retail Regulatory Authority, during the term of this DAPSA.
- 3.0 Service under this DAPSA shall commence on the later of: (i) the date it is executed and made effective by the Parties, as indicated below in Section 6.0 and above in Section 1.0; or (ii) if this DAPSA is filed with the Commission unexecuted by one

Party, upon the date it is permitted to become effective by the Commission. Service under this DAPSA shall terminate in accordance with the applicable provisions of the PJM Tariff and Operating Agreement, including, but not limited to, Operating Agreement, section 15.1, on such date as mutually agreed upon by the Parties, or as otherwise established by the Commission.

4.0 All portions of the Tariff and the Operating Agreement pertinent to the subject matter of this DAPSA and not otherwise made a part hereof are hereby incorporated herein and made a part hereof.

5.0 Any notice or request made to or by any Party regarding this DAPSA shall be made to the representatives of another Party as indicated below.

PJM:

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403-2497

DER Aggregator:

6.0 IN WITNESS WHEREOF, the Parties have caused this DAPSA to be executed by their respective authorized officials.

PJM: **PJM Interconnection, L.L.C.**

By: _____
Name Title Date

Printed name of signer:

DER Aggregator: **[Name]**

By: _____
Name Title Date

Printed name of signer:

11B DER CAPACITY AGGREGATION RESOURCE TEST FAILURE CHARGE

Each DER Capacity Aggregation Resource committed in a Delivery Year shall be obligated to simultaneously test all applicable Component DER within the aggregation, on an annual basis, as described in the PJM Manuals. The DER Aggregator may perform an unlimited number of tests during each such period. The Office of Interconnection may, at its discretion, cancel a test and allow a retest, to ensure system reliability. The DER Aggregator shall notify the applicable electric distribution company at least seven business days prior to each such test, and the electric distribution company may cancel the test consistent with Tariff, Attachment K-Appendix, section 1.4B(f). If none of the tests during a testing period certify full delivery of the megawatt amount of nominated capacity the DER Aggregator committed, for such Delivery Year, the DER Aggregator shall be assessed a DER Capacity Aggregation Resource Test Failure Charge equal to the net capability testing shortfall, multiplied by the DER Capacity Aggregation Resource Test Failure Charge rate.

The DER Capacity Aggregation Resource Test Failure Charge rate shall equal such Seller's Weighted Daily Revenue Rate in such Zone for the DER Capacity Aggregation Resource that tested plus the greater of (0.20 times the Weighted Daily Revenue Rate in such Zone for the product(s) tested or \$20/MW-day); provided, however, if a resource is unavailable during the Delivery Year at less than the level committed in the Market Seller's cleared Sell Offer or Locational UCAP Seller's Location UCAP sale, then such seller shall not be assessed a charge under this section to the extent (i.e., for the same megawatts and time period) that such seller is assessed a Capacity Resource deficiency charge pursuant to Tariff, Attachment DD, section 8 for such unavailability; and provided further that a resource that is subject to a charge under this section that is also subject to a charge under Tariff, Attachment DD, section 10A hereof for a Performance Shortfall during one or more Performance Assessment Intervals occurring during the period of testing shortfall addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Tariff, Attachment DD, section 10A, but shall not be assessed a charge under both this section and Tariff, Attachment DD, section 10A for such simultaneous occurrence of a testing shortfall and Performance Shortfall. Such charge shall be assessed daily and charged monthly (or otherwise in accordance with customary PJM billing practices in effect at the time); provided, however, that a lump sum payment may be required to reflect amounts due, as a result of a test failure, from the start of the Delivery Year to the day that charges are reflected in regular billing.

Revenues collected from assessment of DER Capacity Aggregation Resource Test Failure Charges shall be distributed to Load Serving Entities that were charged a Locational Reliability Charge for the Delivery Year for which the DER Aggregation Test Failure Charge was assessed, pro-rata based on such Load Serving Entities' Daily Unforced Capacity Obligations.

Revisions to the
PJM Reliability Assurance Agreement
Effective February 1, 2028

(Marked Format)

G. Capacity Resource Performance

1. Any Capacity Resource committed by an FRR Entity in an FRR Capacity Plan for a Delivery Year shall be subject during such Delivery Year to the charges set forth in Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 10A, Tariff, Attachment DD, section 11A, Tariff, Attachment DD, section 11B, and Tariff, Attachment DD, section 13; provided, however: (i) the Daily Deficiency Rate under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 11A, and Tariff, Attachment DD, section 13, and the Daily Revenue Rate under Tariff, Attachment DD, section 11B shall be 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions); and (ii) the charges set forth in Tariff, Attachment DD, section 10A shall apply, only to those FRR Entities which opted to be subject to the Non-Performance Charge under section C.1 of this Schedule 8.1. An FRR Entity shall have the same opportunities to cure deficiencies and avoid or reduce associated charges during the Delivery Year that a Market Seller has under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 10A, ~~and~~ Tariff, Attachment DD, section 11A, and Tariff, Attachment DD, section 11B. An FRR Entity may cure deficiencies and avoid or reduce associated charges prior to the Delivery Year by procuring replacement Unforced Capacity outside of any RPM Auction and committing such capacity in its FRR Capacity Plan.

2. For any FRR Entity which opted to be subject to physical non-performance assessments under RAA, Schedule 8.1, section C.1, such FRR Entity will not be subject to charges under Tariff, Attachment DD, section 10A, but, rather, it will be required to update its FRR Capacity Plan with additional megawatts of Capacity Performance Resources or Seasonal Capacity Performance Resources determined in accordance with the following: For each Performance Assessment Interval, the Actual Performance and Expected Performance of each resource contained in an FRR Entity's FRR Capacity Plan or Price Responsive Demand committed to reduce the FRR Entity's unforced capacity obligation (for the 2022/2023 Delivery Year and subsequent Delivery Years) will be determined in the same fashion as prescribed by the Tariff, Attachment DD, section 10A, and for such hour, a net Performance Shortfall shall be determined separately for Capacity Performance Resources and for Base Capacity Resources. If, for a Performance Assessment Interval, the combined Actual Performance of all an FRR Entity's committed Capacity Performance Resources or Price Responsive Demand committed by the FRR Entity (for the 2022/2023 Delivery Year and subsequent Delivery Years) exceeds the Expected Performance of such resources or Price Responsive Demand, then such over-performance may be applied to any Performance Shortfall experienced by such FRR Entity's Base Capacity Resources for such hour. If, for a Performance Assessment Interval, the combined Actual Performance of all an FRR Entity's committed Base Capacity Resources exceeds the Expected Performance of such resources, then such over-performance may be applied to any Performance Shortfall experienced by such FRR Entity's Capacity Performance Resources or Price Responsive Demand committed by the FRR Entity (for the 2022/2023 Delivery Year and subsequent Delivery Years) for such hour. For the 2020/2021 Delivery Year, the net Performance Shortfall determined for Capacity Performance Resources and Price Responsive Demand shall include the performance of Seasonal Capacity Performance Resources contained in the FRR Capacity Plan.

The FRR Entity's net Performance Shortfall among Capacity Performance Resources or Price Responsive Demand, if any, for each such Performance Assessment Interval shall be multiplied by a rate of 0.00139 MWs/Performance Assessment Interval to establish the additional MW quantities of Capacity Performance Resources, Seasonal Capacity Performance Resources, or Price Responsive Demand that such FRR Entity must add to its FRR Capacity Plan for the next Delivery Year. Notwithstanding the foregoing, the total additional MWs required as a result of non-performance by the FRR Entity's Capacity Performance Resources in any Delivery Year shall not exceed a MW quantity equal to 0.5 times the MW quantity of the Capacity Performance Resources and Seasonal Capacity Performance Resources that were committed in the FRR Capacity Plan for such Delivery Year and Price Responsive Demand committed such Delivery Year (for the 2022/2023 Delivery Year and subsequent Delivery Years). The FRR Entity's net Performance Shortfall among Base Capacity Resources, if any, for each such Performance Assessment Interval shall be multiplied by a rate of $[(0.00139 \text{ MWs/Performance Assessment Interval}) \times (\text{the Base Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions, divided by the Net CONE established for such LDA for the Delivery Year})]$ to establish the additional MW quantities of Capacity Performance Resources or Seasonal Capacity Performance Resources that such FRR Entity must add to its FRR Capacity Plan for the next Delivery Year. Notwithstanding the foregoing, the total additional MWs required as a result of non-performance by the FRR Entity's Base Capacity Resources in any Delivery Year shall not exceed a MW quantity equal to $[(0.5 \text{ times the MW quantity of the Base Capacity Resources that were committed in the FRR Capacity Plan for such Delivery Year}) \times (\text{the Base Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions, divided by the Net CONE established for such LDA for the Delivery Year})]$.

An FRR Entity that elects the physical option shall not be eligible for, or subject to, the revenue allocation described in Tariff, Attachment DD, section 10A(g).

Revisions to the
PJM Open Access Transmission Tariff
Effective March 10, 2026

(Clean Format)

Attachment B

Revisions to the PJM Open Access Transmission Tariff, Operating Agreement and Reliability Assurance Agreement

(Clean Format)

(Identified by Additional Cover Pages)

Definitions – R - S

Ramping Capability:

“Ramping Capability” shall mean the sustained rate of change of generator output, in megawatts per minute.

Rating Agency:

“Rating Agency” shall mean a Nationally Recognized Statistical Rating Organization that assesses the financial condition, strength and stability of companies and governmental entities and their ability to timely make principal and interest payments on their debts and the likelihood of default, and assigns a rating that reflects its assessment of the ability of the company or governmental entity to make the debt payments.

Real-time Congestion Price:

“Real-time Congestion Price” shall mean the Congestion Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Loss Price:

“Real-time Loss Price” shall mean the Loss Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Energy Market:

“Real-time Energy Market” shall mean the purchase or sale of energy and payment of Transmission Congestion Charges for quantity deviations from the Day-ahead Energy Market in the Operating Day.

Real-time Offer:

“Real-time Offer” shall mean a new offer or an update to a Market Seller’s existing cost-based or market-based offer for a clock hour, submitted for use after the close of the Day-ahead Energy Market.

Real-time Prices:

“Real-time Prices” shall mean the Locational Marginal Prices resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Settlement Interval:

“Real-time Settlement Interval” shall mean the interval used by settlements, which shall be every five minutes.

Real-time System Energy Price:

“Real-time System Energy Price” shall mean the System Energy Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Reasonable Efforts:

“Reasonable Efforts” shall mean, with respect to any action required to be made, attempted, or taken by an Interconnection Party or by a Construction Party under Tariff, Part IV or Tariff, Part VI, an Interconnection Service Agreement, or a Construction Service Agreement, such efforts as are timely and consistent with Good Utility Practice and with efforts that such party would undertake for the protection of its own interests.

Receiving Party:

“Receiving Party” shall mean the entity receiving the capacity and energy transmitted by the Transmission Provider to Point(s) of Delivery.

Referral:

“Referral” shall mean a formal report of the Market Monitoring Unit to the Commission for investigation of behavior of a Market Participant, of behavior of PJM, or of a market design flaw, pursuant to Tariff, Attachment M, section IV.I.

Reference Resource:

For Delivery Years up to and including the 2025/2026 Delivery Year, “Reference Resource” shall mean a combustion turbine generating station, configured with a single General Electric Frame 7HA turbine with evaporative cooling, Selective Catalytic Reduction technology, dual fuel capability, and a heat rate of 9.134 Mmbtu/ MWh. For the 2026/2027 Delivery Year and subsequent Delivery Years, “Reference Resource” shall mean, for all CONE Areas, a combustion turbine generating station, configured with a single General Electric Frame 7HA turbine with evaporative cooling, Selective Catalytic Reduction technology, dual fuel capability, and a heat rate of 9.189 Mmbtu/MWh.

Regional Entity:

“Regional Entity” shall have the same meaning specified in the Operating Agreement.

Regional Network Integration Transmission Service:

“Regional Network Integration Transmission Service” shall mean firm transmission service taken by Network Customers that involves the delivery of energy and/or capacity from Network Resources physically interconnected to the Transmission Provider’s transmission system to Network Load physically interconnected to the Transmission Provider’s transmission system.

Regional Transmission Expansion Plan:

“Regional Transmission Expansion Plan” shall mean the plan prepared by the Office of the Interconnection pursuant to Operating Agreement, Schedule 6 for the enhancement and expansion of the Transmission System in order to meet the demands for firm transmission service in the PJM Region.

Regional Transmission Group (RTG):

“Regional Transmission Group” or “RTG” shall mean a voluntary organization of transmission owners, transmission users and other entities approved by the Commission to efficiently coordinate transmission planning (and expansion), operation and use on a regional (and interregional) basis.

Regulation:

“Regulation” shall mean the capability of a specific generation resource or Demand Resource with appropriate telecommunications, control and response capability to separately increase and decrease its output or adjust load in response to a regulating control signal, in accordance with the specifications in the PJM Manuals.

Regulation Requirement:

“Regulation Requirement” shall mean the required megawatts of performance-adjusted Regulation capability to be maintained in a Regulation Zone. The Regulation Requirement is defined as a set megawatt value by commitment interval and can increase to account for additional operational uncertainty, in accordance with the PJM Manuals.

Regulation Zone:

“Regulation Zone” shall mean any of those one or more geographic areas, each consisting of a combination of one or more Control Zone(s) as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, regulation service.

Relevant Electric Retail Regulatory Authority:

“Relevant Electric Retail Regulatory Authority” shall mean an entity that has jurisdiction over and establishes prices and policies for competition for providers of retail electric service to end-customers, such as the city council for a municipal utility, the governing board of a cooperative utility, the state public utility commission or any other such entity.

Reliability Assurance Agreement or PJM Reliability Assurance Agreement:

“Reliability Assurance Agreement” or “PJM Reliability Assurance Agreement” shall mean that certain Reliability Assurance Agreement Among Load Serving Entities in the PJM Region, on

file with FERC as PJM Interconnection L.L.C. Rate Schedule FERC No. 44, and as amended from time to time thereafter.

Reliability Pricing Model Auction:

“Reliability Pricing Model Auction” or “RPM Auction” shall mean the Base Residual Auction or any Incremental Auction.

Required Transmission Enhancements:

“Regional Transmission Enhancements” shall mean enhancements and expansions of the Transmission System that (1) a Regional Transmission Expansion Plan developed pursuant to Operating Agreement, Schedule 6 or (2) any joint planning or coordination agreement between PJM and another region or transmission planning authority set forth in Tariff, Schedule 12-Appendix B (“Appendix B Agreement”) designates one or more of the Transmission Owner(s) to construct and own or finance. Required Transmission Enhancements shall also include enhancements and expansions of facilities in another region or planning authority that meet the definition of transmission facilities pursuant to FERC’s Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities constructed pursuant to an Appendix B Agreement cost responsibility for which has been assigned at least in part to PJM pursuant to such Appendix B Agreement.

Reserved Capacity:

“Reserved Capacity” shall mean the maximum amount of capacity and energy that the Transmission Provider agrees to transmit for the Transmission Customer over the Transmission Provider’s Transmission System between the Point(s) of Receipt and the Point(s) of Delivery under Tariff, Part II. Reserved Capacity shall be expressed in terms of whole megawatts on a sixty (60) minute interval (commencing on the clock hour) basis.

Reserve Penalty Factor:

“Reserve Penalty Factor” shall mean the cost, in \$/MWh, associated with being unable to meet a specific reserve requirement in a Reserve Zone or Reserve Sub-zone. A Reserve Penalty Factor will be defined for each reserve requirement in a Reserve Zone or Reserve Sub-zone.

Reserve Sub-zone:

“Reserve Sub-zone” shall mean any of those geographic areas wholly contained within a Reserve Zone, consisting of a combination of a portion of one or more Control Zone(s) as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, reserve service.

Reserve Zone:

“Reserve Zone” shall mean any of those geographic areas consisting of a combination of one or more Control Zone(s), as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, reserve service.

Residual Auction Revenue Rights:

“Residual Auction Revenue Rights” shall mean incremental stage 1 Auction Revenue Rights created within a Planning Period by an increase in transmission system capability, including the return to service of existing transmission capability, that was not modeled pursuant to Operating Agreement, Schedule 1, section 7.5 and the parallel provisions of Tariff, Attachment K-Appendix, section 7.5 in compliance with Operating Agreement, Schedule 1, section 7.4.2 (h) and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.2(h), and, if modeled, would have increased the amount of stage 1 Auction Revenue Rights allocated pursuant to Operating Agreement, Schedule 1, section 7.4.2 and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.2; provided that, the foregoing notwithstanding, Residual Auction Revenue Rights shall exclude: 1) Incremental Auction Revenue Rights allocated pursuant to Tariff, Part VI; and 2) Auction Revenue Rights allocated to entities that are assigned cost responsibility pursuant to Operating Agreement, Schedule 6 for transmission upgrades that create such rights.

Residual Metered Load:

“Residual Metered Load” shall mean all load remaining in an electric distribution company’s fully metered franchise area(s) or service territory(ies) after all nodally priced load of entities serving load in such area(s) or territory(ies) has been carved out.

Resource Substitution Charge:

“Resource Substitution Charge” shall mean a charge assessed on Capacity Market Buyers in an Incremental Auction to recover the cost of replacement Capacity Resources.

Restricted Collateral:

“Restricted Collateral” shall mean Collateral, held by PJM or PJMSettlement, which cannot be used, netted, credited or spent by the Participant to satisfy any other obligations.

Revenue Data for Settlements:

“Revenue Data for Settlements” shall mean energy quantities used in accounting and billing as determined pursuant to Tariff, Attachment K-Appendix and the corresponding provisions of Operating Agreement, Schedule 1.

RPM Seller Credit:

“RPM Seller Credit” shall mean an additional form of Unsecured Credit defined in Tariff, Attachment Q, section VI.

Scheduled Incremental Auctions:

“Scheduled Incremental Auctions” shall refer to the First, Second, or Third Incremental Auction.

Schedule of Work:

“Schedule of Work” shall mean that schedule attached to the Interconnection Construction Service Agreement setting forth the timing of work to be performed by the Constructing Entity pursuant to the Interconnection Construction Service Agreement, based upon the Facilities Study and subject to modification, as required, in accordance with Transmission Provider’s scope change process for interconnection projects set forth in the PJM Manuals.

Scope of Work:

“Scope of Work” shall mean that scope of the work attached as a schedule to the Interconnection Construction Service Agreement and to be performed by the Constructing Entity(ies) pursuant to the Interconnection Construction Service Agreement, provided that such Scope of Work may be modified, as required, in accordance with Transmission Provider’s scope change process for interconnection projects set forth in the PJM Manuals.

Seasonal Capacity Performance Resource:

“Seasonal Capacity Performance Resource” shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Secondary Reserve:

“Secondary Reserve” shall mean the reserve capability of generation resources that can be converted fully into energy or Economic Load Response Participant resources whose demand can be reduced within 30 minutes (less the capability of such resources to provide Primary Reserve), from the request of the Office of the Interconnection, regardless of whether the equipment providing the reserve is electrically synchronized to the Transmission System or not.

Secondary Systems:

“Secondary Systems” shall mean control or power circuits that operate below 600 volts, AC or DC, including, but not limited to, any hardware, control or protective devices, cables, conductors, electric raceways, secondary equipment panels, transducers, batteries, chargers, and voltage and current transformers.

Second Incremental Auction:

“Second Incremental Auction” shall mean an Incremental Auction conducted ten months before the Delivery Year to which it relates.

Security:

“Security” shall mean the security provided by the New Service Customer pursuant to Tariff, section 212.4 or Tariff, Part VI, section 213.4 to secure the New Service Customer’s responsibility for Costs under the Interconnection Service Agreement or Upgrade Construction Service Agreement and Tariff, Part VI, section 217.

Segment:

“Segment” shall have the same meaning as described in Operating Agreement, Schedule 1, section 3.2.3(e), and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(e).

Self-Supply:

“Self-Supply” shall mean Capacity Resources secured by a Load-Serving Entity, by ownership or contract, outside a Reliability Pricing Model Auction, and used to meet obligations under this Attachment or the Reliability Assurance Agreement through submission in a Base Residual Auction or an Incremental Auction of a Sell Offer indicating such Market Seller’s intent that such Capacity Resource be Self-Supply. Self-Supply may be either committed regardless of clearing price or submitted as a Sell Offer with a price bid. A Load Serving Entity’s Sell Offer with a price bid for an owned or contracted Capacity Resource shall not be deemed “Self-Supply,” unless it is designated as Self-Supply and used by the LSE to meet obligations under this Attachment or the Reliability Assurance Agreement.

Self-Supply Entity:

“Self-Supply Entity” shall mean the following types of Load Serving Entity that operate under long-standing business models: single customer entity, public power entity, or vertically integrated utility, where “vertically integrated utility” means a utility that owns generation, includes such generation in its regulated rates, and earns a regulated return on its investment in such generation or receives any cost recovery for such generation through bilateral contracts; “single customer entity” means a Load Serving Entity that serves at retail only customers that are under common control with such Load Serving Entity, where such control means holding 51% or more of the voting securities or voting interests of the Load Serving Entity and all its retail customers; and “public power entity” means cooperative and municipal utilities, including public power supply entities comprised of either or both of the same and rural electric cooperatives, and joint action agencies.

Self-Supply Seller:

“Self-Supply Seller” shall mean, for purposes of evaluating Buyer-Side Market Power, the following types of Load Serving Entities that operate under long-standing business models: vertically integrated utility or public power entity, where “vertically integrated utility” means a utility that owns generation, includes such generation in its state-regulated rates, and earns a state-regulated return on its investment in such generation; and “public power entity” means electric cooperatives that are either rate regulated by the state or have their long-term resource plan approved or otherwise reviewed and accepted by a Relevant Electric Retail Regulatory

Authority and municipal utilities or joint action agencies that are subject to direct regulation by a Relevant Electric Retail Regulatory Authority.

Sell Offer:

“Sell Offer” shall mean an offer to sell Capacity Resources in a Base Residual Auction, Incremental Auction, or Reliability Backstop Auction.

Service Agreement:

“Service Agreement” shall mean the initial agreement and any amendments or supplements thereto entered into by the Transmission Customer and the Transmission Provider for service under the Tariff.

Service Commencement Date:

“Service Commencement Date” shall mean the date the Transmission Provider begins to provide service pursuant to the terms of an executed Service Agreement, or the date the Transmission Provider begins to provide service in accordance with Tariff, Part II, section 15.3 or Tariff, Part III, section 29.1.

Short-Term Firm Point-To-Point Transmission Service:

“Short-Term Firm Point-To-Point Transmission Service” shall mean Firm Point-To-Point Transmission Service under Tariff, Part II with a term of less than one year.

Short-term Project:

“Short-term Project” shall have the same meaning provided in the Operating Agreement.

Site:

“Site” shall mean all of the real property, including but not limited to any leased real property and easements, on which the Customer Facility is situated and/or on which the Customer Interconnection Facilities are to be located.

Small Commercial Customer:

“Small Commercial Customer,” as used in RAA, Schedule 6 and Tariff, Attachment DD-1, shall mean a commercial retail electric end-use customer of an electric distribution company that participates in a mass market demand response program under the jurisdiction of a RERRA and satisfies the definition of a “small commercial customer” under the terms of the applicable RERRA’s program, provided that the customer has an annual peak demand no greater than 100kW.

Small Generation Resource:

“Small Generation Resource” shall mean an Interconnection Customer’s device of 20 MW or less for the production and/or storage for later injection of electricity identified in an Interconnection Request, but shall not include the Interconnection Customer’s Interconnection Facilities. This term shall include Energy Storage Resources and/or other devices for storage for later injection of energy.

Small Inverter Facility:

“Small Inverter Facility” shall mean an Energy Resource that is a certified small inverter-based facility no larger than 10 kW.

Small Inverter ISA:

“Small Inverter ISA” shall mean an agreement among Transmission Provider, Interconnection Customer, and Interconnected Transmission Owner regarding interconnection of a Small Inverter Facility under Tariff, Part IV, section 112B.

Special Member:

“Special Member” shall mean an entity that satisfies the requirements of Operating Agreement, Schedule 1, section 1.5A.02, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.02, or the special membership provisions established under the Emergency Load Response and Pre-Emergency Load Response Programs.

Spot Market Backup:

“Spot Market Backup” shall mean the purchase of energy from, or the delivery of energy to, the PJM Interchange Energy Market in quantities sufficient to complete the delivery or receipt obligations of a bilateral contract that has been curtailed or interrupted for any reason.

Spot Market Energy:

“Spot Market Energy” shall mean energy bought or sold by Market Participants through the PJM Interchange Energy Market at System Energy Prices determined as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

Start Additional Labor Costs:

“Start Additional Labor Costs” shall mean additional labor costs for startup required above normal station manning levels.

Start Fuel:

For units without a soak process, “Start Fuel” shall consist of fuel consumed from first fire of the start process to first breaker closing, plus any fuel expended from last breaker opening to shutdown.

For units with a soak process, “Start Fuel” is fuel consumed from first fire of the start process (initial reactor criticality for nuclear units) to dispatchable output (including auxiliary boiler fuel), plus any fuel expended from last breaker opening to shutdown, excluding normal plant heating/auxiliary equipment fuel requirements. Start Fuel included for each temperature state from breaker closure to dispatchable output shall not exceed the unit specific soak time period reviewed and approved as part of the unit-specific parameter process detailed in Tariff, Attachment K-Appendix, section 6.6(c) or the defaults below:

- Cold Soak Time = $0.73 * \text{unit specific Minimum Run Time (in hours)}$
- Intermediate Soak Time = $0.61 * \text{unit specific Minimum Run Time (in hours)}$
- Hot Soak Time = $0.43 * \text{unit specific Minimum Run Time (in hours)}$

Start-Up Costs:

“Start-Up Costs” shall consist primarily of the cost of fuel, as determined by the unit’s start heat input (adjusted by the performance factor) times the fuel cost. It also includes operating costs, Maintenance Adders, emissions allowances/adders, and station service cost. Start-Up Costs can vary with the unit offline time being categorized in three unit temperature conditions: hot, intermediate and cold.

For units with a steam turbine and a soak process (nuclear, steam, and combined cycle), “Start Fuel” is fuel consumed from first fire of start process (initial reactor criticality for nuclear units): Start-Up Costs shall mean the net unit costs from PJM’s notification to the level at which the unit can follow PJM’s dispatch, and from last breaker open to shutdown.

For units without a steam turbine and no soak process (engines, combustion turbines, Intermittent Resources, and Energy Storage Resources): Start-Up Costs shall mean the unit costs from PJM’s notification to first breaker close and from last breaker open to shutdown.

State:

“State” shall mean the District of Columbia and any State or Commonwealth of the United States.

State Commission:

“State Commission” shall mean any state regulatory agency having jurisdiction over retail electricity sales in any State in the PJM Region.

State Estimator:

“State Estimator” shall mean the computer model of power flows specified in Operating Agreement, Schedule 1, section 1.11A and the parallel provisions of Tariff, Attachment K-Appendix, section 1.11A.

State of Charge:

“State of Charge” shall mean the quantity of physical energy stored in an Energy Storage Resource Model Participant or in a storage component of a Hybrid Resource in proportion to its maximum State of Charge capability. State of Charge is quantified as defined in the PJM Manuals.

State of Charge Management:

“State of Charge Management” shall mean the control of State of Charge of an Energy Storage Resource Market Participant or a storage component of a Hybrid Resource using minimum and maximum discharge (and, as applicable, charge) limits, changes in operating mode (as applicable), discharging (and, as applicable, charging) offer curves, and self-scheduling of non-dispatchable sales (and, as applicable, purchases) of energy in the PJM markets. State of Charge Management shall not interfere with the obligation of a Market Seller of an Energy Storage Resource Model Participant or of a Hybrid Resource to follow PJM dispatch, consistent with all other resources.

State Subsidy:

“State Subsidy” shall mean a direct or indirect payment, concession, rebate, subsidy, non-bypassable consumer charge, or other financial benefit that is as a result of any action, mandated process, or sponsored process of a state government, a political subdivision or agency of a state, or an electric cooperative formed pursuant to state law, and that

- (1) is derived from or connected to the procurement of (a) electricity or electric generation capacity sold at wholesale in interstate commerce, or (b) an attribute of the generation process for electricity or electric generation capacity sold at wholesale in interstate commerce; or
- (2) will support the construction, development, or operation of a new or existing Capacity Resource; or
- (3) could have the effect of allowing the unit to clear in any PJM capacity auction.

Notwithstanding the foregoing, State Subsidy shall not include (a) payments, concessions, rebates, subsidies, or incentives designed to incent, or participation in a program, contract or other arrangement that utilizes criteria designed to incent or promote, general industrial development in an area or designed to incent siting facilities in that county or locality rather than another county or locality; (b) state action that imposes a tax or assesses a charge utilizing the parameters of a regional program on a given set of resources notwithstanding the tax or cost having indirect benefits on resources not subject to the tax or cost (e.g., Regional Greenhouse Gas Initiative); (c) any indirect benefits to a Capacity Resource as a result of any transmission project approved as part of the Regional Transmission Expansion Plan; (d) any contract, legally enforceable obligation, or rate pursuant to the Public Utility Regulatory Policies Act or any other state-administered federal regulatory program (e.g., the Cross-State Air Pollution Rule); (e) any revenues from the sale or allocation, either direct or indirect, to an Entity Providing Supply Services to Default Retail Service Provider where such entity’s obligations was awarded through a state default procurement auction that was subject to independent oversight by a consultant or

manager who certifies that the auction was conducted through a non-discriminatory and competitive bidding process, subject to the below condition, and provided further that nothing herein would exempt a Capacity Resource that would otherwise be subject to the minimum offer price rule pursuant to this Tariff; (f) any revenues for providing capacity as part of an FRR Capacity Plan or through bilateral transactions with FRR Entities; or (g) any voluntary and arm's length bilateral transaction (including but not limited to those reported pursuant to Tariff, Attachment DD, section 4.6), such as a power purchase agreement or other similar contract where the buyer is a Self-Supply Entity and the transaction is (1) a short term transaction (one-year or less) or (2) a long-term transaction that is the result of a competitive process that was not fuel-specific and is not used for the purpose of supporting uneconomic construction, development, or operation of the subject Capacity Resource, provided however that if the Self-Supply Entity is responsible for offering the Capacity Resource into an RPM Auction, the specified amount of installed capacity purchased by such Self-Supply Entity shall be considered to receive a State Subsidy in the same manner, under the same conditions, and to the same extent as any other Capacity Resource of a Self-Supply Entity. For purposes of subsection (e) of this definition, a state default procurement auction that has been certified to be a result of a non-discriminatory and competitive bidding process shall:

- (i) have no conditions based on the ownership (except supplier diversity requirements or limits), location (except to meet PJM deliverability requirements), affiliation, fuel type, technology, or emissions of any resources or supply (except state-mandated renewable portfolio standards for which Capacity Resources are separately subject to the minimum offer price rule or eligible for an exemption);
- (ii) result in contracts between an Entity Providing Supply Services to Default Retail Service Provider and the electric distribution company for a retail default generation supply product and none of those contracts require that the retail obligation be sourced from any specific Capacity Resource or resource type as set forth in subsection (i) above; and
- (iii) establish market-based compensation for a retail default generation supply product that retail customers can avoid paying for by obtaining supply from a competitive retail supplier of their choice.

Station Power:

“Station Power” shall mean energy used for operating the electric equipment on the site of a generation facility located in the PJM Region or for the heating, lighting, air-conditioning and office equipment needs of buildings on the site of such a generation facility that are used in the operation, maintenance, or repair of the facility. Station Power does not include any energy (i) used to power synchronous condensers; (ii) used for pumping at a pumped storage facility; (iii) used in association with restoration or black start service; or (iv) that is Direct Charging Energy.

Sub-meter:

“Sub-meter” shall mean a metering point for electricity consumption that does not include all electricity consumption for the end-use customer as defined by the electric distribution company

account number. PJM shall only accept sub-meter load data from end-use customers for measurement and verification of Regulation service as set forth in the Economic Load Response rules and PJM Manuals.

Summer-Period Capacity Performance Resource:

“Summer-Period Capacity Performance Resource” shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Surplus Interconnection Customer:

“Surplus Interconnection Customer” shall mean either an Interconnection Customer whose Generating Facility is already interconnected to the PJM Transmission System or one of its affiliates, or an unaffiliated entity that submits a Surplus Interconnection Request to utilize Surplus Interconnection Service within the Transmission System in the PJM Region. A Surplus Interconnection Customer is not a New Service Customer.

Surplus Interconnection Request:

“Surplus Interconnection Request” shall mean a request submitted by a Surplus Interconnection Customer, pursuant to Tariff, Attachment RR, to utilize Surplus Interconnection Service within the Transmission System in the PJM Region. A Surplus Interconnection Request is not a New Service Request.

Surplus Interconnection Service:

“Surplus Interconnection Service” shall mean any unneeded portion of Interconnection Service established in an Interconnection Service Agreement, such that if Surplus Interconnection Service is utilized, the total amount of Interconnection Service at the Point of Interconnection would remain the same.

Switching and Tagging Rules:

“Switching and Tagging Rules” shall mean the switching and tagging procedures of Interconnected Transmission Owners and Interconnection Customer as they may be amended from time to time.

Synchronized Reserve:

“Synchronized Reserve” shall mean the reserve capability of generation resources that can be converted fully into energy or Economic Load Response Participant resources whose demand can be reduced within ten minutes from the request of the Office of the Interconnection dispatcher, and is provided by equipment that is electrically synchronized to the Transmission System.

Synchronized Reserve Event:

“Synchronized Reserve Event” shall mean a request from the Office of the Interconnection to generation resources and/or Economic Load Response Participant resources able, assigned or self-scheduled to provide Synchronized Reserve in one or more specified Reserve Zones or Reserve Sub-zones, within ten minutes, to increase the energy output or reduce load by a directed amount of the assigned or self-scheduled Synchronized Reserve.

Synchronized Reserve Requirement:

“Synchronized Reserve Requirement” shall mean the megawatts required to be maintained in a Reserve Zone or Reserve Sub-zone as Synchronized Reserve, absent any increase to account for additional reserves scheduled to address operational uncertainty. The Synchronized Reserve Requirement is calculated in accordance with the PJM Manuals. This requirement can only be satisfied by Synchronized Reserve resources.

System Condition:

“System Condition” shall mean a specified condition on the Transmission Provider’s system or on a neighboring system, such as a constrained transmission element or flowgate, that may trigger Curtailment of Long-Term Firm Point-to-Point Transmission Service using the curtailment priority pursuant to Tariff, Part II, section 13.6. Such conditions must be identified in the Transmission Customer’s Service Agreement.

System Energy Price:

“System Energy Price” shall mean the energy component of the Locational Marginal Price, which is the price at which the Market Seller has offered to supply an additional increment of energy from a resource, calculated as specified in Operating Agreement, Schedule 1, section 2 and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

System Impact Study:

“System Impact Study” shall mean an assessment by the Transmission Provider of (i) the adequacy of the Transmission System to accommodate a Completed Application, an Interconnection Request or an Upgrade Request, (ii) whether any additional costs may be incurred in order to provide such transmission service or to accommodate an Interconnection Request, and (iii) with respect to an Interconnection Request, an estimated date that an Interconnection Customer’s Customer Facility can be interconnected with the Transmission System and an estimate of the Interconnection Customer’s cost responsibility for the interconnection; and (iv) with respect to an Upgrade Request, the estimated cost of the requested system upgrades or expansion, or of the cost of the system upgrades or expansion, necessary to provide the requested incremental rights.

System Protection Facilities:

“System Protection Facilities” shall refer to the equipment required to protect (i) the Transmission System, other delivery systems and/or other generating systems connected to the Transmission

System from faults or other electrical disturbance occurring at or on the Customer Facility, and (ii) the Customer Facility from faults or other electrical system disturbance occurring on the Transmission System or on other delivery systems and/or other generating systems to which the Transmission System is directly or indirectly connected. System Protection Facilities shall include such protective and regulating devices as are identified in the Applicable Technical Requirements and Standards or that are required by Applicable Laws and Regulations or other Applicable Standards, or as are otherwise necessary to protect personnel and equipment and to minimize deleterious effects to the Transmission System arising from the Customer Facility.

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 the Transmission Provider 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. The expected life of the Black Start Unit shall take into consideration expectations regarding both the enabling equipment and the generation unit itself.

A Fuel Assured Black Start Unit is a Black Start Unit that is capable of starting without an outside electrical supply and running 16 hours or more at full load and either stores at least 16 hours of fuel on site, can operate independently on 2 or more interstate pipelines, is directly connected to a natural gas gathering system or is an intermittent or hybrid resource that has been evaluated by the Transmission Provider to be capable of providing no less than 16 hours of operation per day, which need not be continuous, at a megawatt level that provides a confidence level of 90% based on an evaluation of the unit's historical operation over a representative period of time, and meets any other requirements specified in the PJM manuals. Distributed energy resources interconnected to distribution facilities may qualify as Fuel Assured Black Start Units under the criteria that applies to all Fuel Assured Black Start Units. Unless otherwise specified as only applicable to Fuel Assured Black Start Units, all terms and conditions set forth in this Tariff, Schedule 6A applicable to Black Start Units shall be deemed to include Fuel Assured Black Start Units.

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 is 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 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, 6, or 6A below.

5. Owners of Black Start Units selected to provide Black Start Service in accordance with Schedule 6A, 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 Provider provides written, one-year advance notice of its intention to terminate the commitment or the commitment is involuntarily terminated pursuant to section 15 of this Schedule 6A. Black Start Units that are selected to provide Black Start Service after June 6, 2021, pursuant to Schedule 6A, section 6 that subsequently transition from the Capital Cost Recovery Rate to the Base Formula Rate shall have a lifetime commitment and can only terminate for the reason specified in Schedule 6A, section 6(ii).

6. (i) Owners of Black Start Units making capital investment prior to June 6, 2021, in order to provide or continue to provide Black Start Service in accordance with section 4 of this Schedule 6A 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 Table in section 18 of this Schedule 6A. 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 Table in section 18 of this Schedule 6A. The Transmission Provider may terminate the commitment with one year advance notice of its intention to the Black Start Unit owner, but the Black Start Unit owner shall be eligible to recover 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 and consent of the Transmission Provider (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) of this Schedule 6A) in excess of the amount that would have been recovered pursuant to section 18 of this Schedule 6A during the same period. At the conclusion of the term of commitment established under this section 6 of this Schedule 6A, a Black Start Unit shall commence a new term of commitment under either section 5 or 6 of this Schedule 6A, as applicable.

(ii) Owners of Black Start Units making capital investment after June 6, 2021, in order to provide Black Start Service, in accordance with Schedule 6A, 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 an initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment. 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 initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment.

(iii) Black Start Units selected to be Fuel Assured Black Start Units in accordance with Schedule 6A, section 4 and electing to recover new or additional Fuel Assurance Capital Costs or new and additional Fuel Assurance Costs and Black Start Capital Costs shall commit to provide Black Start Service from such Black Start Units for an initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment. For those Fuel Assured 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 initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment. For those Fuel Assured Black Start Units that elect to recover new or additional Fuel Assurance Capital Costs, the applicable capital recovery period shall be the fuel assurance capital recovery period based upon the age of the Fuel Assured Black Start Unit .

The Transmission Provider may terminate the commitment with one year advance notice of its intention to the Black Start Unit owner, but the Black Start Unit owner shall be eligible to recover any amount of unrecovered Fixed Black Start Service Costs including any amount of unrecovered Fuel Assurance Capital 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 and consent of the Transmission Provider (or its commitment period may be involuntarily terminated pursuant to the section 15 below), provided the Black Start Unit's owner demonstrates to the satisfaction of the Transmission Provider at least one of the following reasons for such termination apply:

- a. Black Start Unit retirement or deactivation with at least one year's notice;
- b. Expiration of a state, federal, or other governmental agency permit(s) required for Black Start Service with at least one year's notice; or
- c. Additional capital is required by the Black Start Unit owner to maintain Black Start Service capability (in which case, the Black Start Unit will apply for Black Start Service selection in accordance with the procedures set forth in Manual 12 and only continue to provide Black Start Service if selected for Black Start Service by the Transmission Provider).

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 and/or Fuel Assurance Capital Costs recovered under a FERC-approved rate (recovered on an accelerated basis pursuant to the provisions of section 17(i) of this Schedule 6A) in excess of the amount that would have been recovered pursuant to Schedule 6A, section 18 during the same period.

6A. Black Start Units which are owned or contracted for by a Transmission Owner to provide Black Start Service as a result of the black start reliability backstop process defined in the PJM Manuals, shall be subject to cost recovery through such Transmission Owner's annual revenue requirement under such Transmission Owner's Tariff, Attachment H, as filed with, and accepted by, FERC under Section 205 of the Federal Power Act and in accordance with Tariff, Part I, section 9, or through such other cost recovery mechanism, provided that such cost recovery mechanism is filed with and accepted by FERC. The relevant Transmission Owner shall commit to provide, or effectuate the provision of, Black Start Service from such a Black Start Unit for the FERC-approved cost recovery period. The Transmission Provider may terminate the commitment with one year advance notice of its intention to the Transmission Owner. Provision of Black Start Service from a Black Start Unit obtained through the black start reliability backstop process defined in the PJM Manuals shall be subject to sections 7 through 13 of this Schedule 6A. The Revenue Requirements, Credits, and Charges provisions contained in sections 16 through 27 of this Schedule 6A, shall not apply to Black Start Units obtained as a result of the black start reliability backstop process defined in the PJM Manuals.

6B. 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) of this Schedule 6A) in excess of the amount that would have been recovered pursuant to section 18 of this Schedule 6A during the same period, but such unit remains eligible to establish a new commitment under section 5 or 6 of this Schedule 6A. Provided, however, Black Start Units that are selected to provide Black Start Service after June 6, 2021, pursuant to Schedule 6A, section 6 that subsequently transition from the Capital Cost Recovery Rate to the Base Formula Rate shall have a lifetime commitment and can only terminate for a reason specified in Schedule 6A, section 6(ii).

Performance Standards and Outage Restrictions

7. In addition to the performance capabilities set forth in the PJM Manuals, 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 the time specified in the PJM Manuals.
 - 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.
 - d. A Fuel Assured Black Start Unit must meet the fuel assurance requirements as specified in the PJM Manuals.
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 a Generator Planned Outage or Generator Maintenance Outage at any one time without written approval of the Transmission Provider and the Transmission Owner in the Zone receiving Black Start Service from the Black Start Plant. This restriction excludes outages on common plant equipment that may make all units unavailable. A Black Start Unit not selected for providing Black Start Service in accordance with this Schedule 6A, section 4 and the PJM Manuals may be substituted for a Black Start Unit that is subject to a Generator Planned Outage to permit a concurrent planned outage of another critical Black Start Unit at the same Black Start Plant. The Black Start Unit used as a substitute shall not receive compensation for additional capital expenditures to qualify for Black Start Service, will not increase the current Black Start Unit capital recovery commitment period, must be connected at the same voltage level and cranking path, must be similar age as the current Black Start Unit, must provide equivalent Black Start Unit Capacity, and must have had a valid annual test within the previous 13 months. Black Start Unit substitutions may be permitted for reasons other than Generator Planned Outages if requested by the Black Start Unit owner and if approved by the Transmission Provider; provided, however, all requests for Black Start Unit substitutions must be supported by documentation and information demonstrating operational or technical reasons for the substitution satisfactory to the Transmission Provider and may only occur once within a 12-month period.
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 shall be tested annually in accordance with the Tariff and the PJM Manuals. Fuel Assured Black Start Units that are dual fuel must conduct an annual test on both fuels. The Black Start Unit owner shall determine the time of the annual test.

13. Compensation under this Schedule 6A 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. All Black Start Units must have a successful annual test on record with the Transmission Provider within the preceding 13 months. A Black Start Unit receiving revenues under Section 5 or Section 6 above that does not have a successful annual test on record with the Transmission Provider within the preceding 13 months will not qualify to receive Black Start Service revenues. A Fuel Assured Black Start Unit that stores fuel on-site and fails in any month to store the fuel and non-fuel consumables needed to meet its fuel assurance run hour requirements except for allowable conditions specified in the PJM Manuals, and except when the Fuel Assured Black Start Unit can also operate independently on 2 or more interstate pipelines, does not qualify to receive Black Start revenues in that month.

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 under this Schedule 6A 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 does not make the necessary repairs to enable the Black Start Unit to pass the annual test within 90 days of the due date for the annual test pursuant to section 14 above, the Black Start Unit will immediately cease to qualify as a Black Start Unit and, if applicable, will have failed to fulfill its commitment pursuant to section 5 or section 6 above, whichever is applicable, of this Schedule 6A and will be subject to the additional forfeiture of revenues set forth in section 6B of this Schedule 6A. The 90 day period may be extended up to 1 year by the Transmission Provider in accordance with the PJM Manuals. If the 90 day period is extended, the Black Start Unit owner will continue to forfeit all revenues starting in the month of the first failed test until the Black Start Unit has demonstrated to the Transmission Provider that a successful test has been completed.

Revenue Requirements

16. A Black Start Unit Owner's 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 of this Schedule 6A, as applicable, or (ii) the formula rates set forth in section 18 of this Schedule 6A for the commitment term set forth in section 5 or 6 of this Schedule 6A as applicable. Each generator's Black Start Service revenue requirements shall be an annual calculation.

17A. Annual Review for all Black Start Units

Requests for Black Start Service revenue requirements and 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 Tariff, Attachment M-Appendix, section III and the PJM Manuals, with a copy to the Office of the Interconnection, by no later than May 3 of each year. The Market Monitoring Unit and the Black Start Unit owner shall attempt to come to agreement on the level of each component included in the Black Start Service revenue requirements by no later than May 14 of each year. By no later than May 21 of each year, the Black Start Unit owner shall notify the Office of the Interconnection and the Market Monitoring Unit in writing whether it agrees or disagrees with the Market Monitoring Unit's determination of the level of each component included in the Black Start Service revenue requirements. The Black Start Unit owner may also submit Black Start Service revenue requirements that it chooses to the Office of the Interconnection by no later than May 21 of each year, provided that (i) it has participated in good faith with the process described in this section and in Tariff, Attachment M-Appendix, section III (ii) the Black Start Service revenue requirements are no higher than the level defined in any agreement reached by the Black Start Unit 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 and PJM Manuals.

The Office of the Interconnection shall determine whether to accept the values submitted by the Black Start Unit owner subject to the requirements of the Tariff and the PJM Manuals by no later than May 27. If the Office of the Interconnection does not accept the values submitted by the Black Start Unit owner in such case, the Black Start Unit owner may file its proposed values with the Commission for approval. Pursuant to Tariff, Attachment M-Appendix, section III, if the Office of the Interconnection accepts the Black Start Service revenue requirements submitted by the Black Start Unit owner in such case, the Market Monitoring Unit may petition the Commission for an order that would require the Black Start Unit owner to utilize the values determined by the Market Monitoring Unit or the Office of the Interconnection or such other values as determined by the Commission. The annual calculation of Black Start Service revenue requirements shall become effective on June 1 of each year, except that 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. Notwithstanding the foregoing, for the 2025/2026 Delivery Year the annual calculation of Black Start Service revenue requirements that became

effective on June 1, 2025 will be further updated on September 1, 2025 to reflect any FERC approved changes in the Base Formula Rate equation regardless of whether the existing revenue requirement has been effective for at least 12 months; and for the 2026/2027 Delivery Year, the Black Start Service revenue requirement shall become effective June 1, 2026 regardless of whether the existing revenue requirement has been effective for at least 12 months. Notwithstanding the foregoing, the deadlines set forth in this section 17 shall not apply to a Black Start Unit owner's election to select a new method of recovery for its Fixed BSSC.

17B. Initial Review for New Black Start Units or existing Black Starts Units that require Fuel Assured Capital Cost

Requests for new Black Start Service revenue requirements and/or Fuel Assured Capital Costs must be submitted to the Market Monitoring Unit for review and analysis, with supporting data and documentation, pursuant to Tariff, Attachment M–Appendix, section III and the PJM Manuals, with a copy to the Office of the Interconnection, by no later than 90 days after entering Black Start Service or qualifying to be a Fuel Assured Black Start Unit. The Market Monitoring Unit and the Black Start Unit owner shall attempt to come to agreement on the level of each component included in the Black Start Service revenue requirements by no later than 90 days after the Black Start Unit owner's submittal of final black start capital costs (if applicable), variable black start costs, and fuel storage cost documentation. By no later than 90 days of the Black Start Unit owner's submittal of final black start cost documentation, the Market Monitoring Unit shall calculate the new Black Start Unit's annual revenue requirement and submit it to the Office of the Interconnection and the Black Start Unit owner. If more than three Black Start Unit owners submit documentation within a 90-day period, the Market Monitoring Unit shall complete the review of the first three submittals within 90 days and the next set of three within the following three months and so on until all are complete. The Black Start Unit owner shall notify the Office of the Interconnection and the Market Monitoring Unit in writing if it disagrees with the Market Monitoring Unit's determination of the level of any component included in the Black Start Service revenue requirements within 7 days after the Market Monitoring Unit's submittal of the annual revenue requirement to the Office of the Interconnection. The Black Start Unit owner shall also submit Black Start Service revenue requirements that it proposes to the Office of the Interconnection provided that (i) it has participated in good faith with the process described in this section and in Tariff, Attachment M–Appendix, section III; (ii) the Black Start Service revenue requirements are no higher than the level defined in any agreement reached by the Black Start Unit 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 and PJM Manuals.

The Office of the Interconnection shall determine whether to accept the values submitted by the Black Start Unit owner subject to the requirements of the Tariff and the PJM Manuals by no later than 30 days after its receipt of the Black Start Unit owner's written notice of a disagreement. If the Office of the Interconnection does not accept the values submitted by the Black Start Unit owner in such case, the Black Start Unit owner may file its proposed values with the Commission for approval. Pursuant to Tariff, Attachment M–Appendix, section III, if the Office of the Interconnection accepts the Black Start Service revenue requirements submitted by the

Black Start Unit owner in such case, the Market Monitoring Unit may petition the Commission for an order that would require the Black Start Unit owner to utilize the values determined by the Market Monitoring Unit or the Office of the Interconnection or such other values as determined by the Commission. The annual calculation of Black Start Service revenue requirements shall become effective the day the unit enters Black Start Service or becomes fuel assured.

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

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

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

$$(\text{Training Costs}) * (1 + Z)$$

Where:

Fixed BSSC

Black Start Units with a commitment established under section 5 of this Schedule 6A shall calculate Fixed BSSC or "Fixed Black Start Service Costs" in accordance with the following Base Formula Rate:

Base Formula Rate:

$$\text{Fixed Rate} * \text{Black Start Unit Capacity} * X$$

Where:

"Fixed Rate" is a fixed rate for providing Black Start Service (expressed in \$/MW day). This Fixed Rate will be adjusted annually based on the Handy Whitman index. By March 31 of each year, PJM will post the adjusted Fixed Rate on the PJM website. Beginning with the 2025/2026 Delivery Year, the Fixed Rate shall be \$272.62/MW day.

"Black Start Unit Capacity" is either: (i) the Black Start Unit's installed capacity, expressed in MW, for those Black Start Units which are not Fuel Assured Black Start Units that are Generation Capacity Resources; (ii) the awarded MWs in the Transmission Provider's request for proposal process under the PJM Manuals, for those Black Start Units, which are not Fuel Assured Black Start Units, that are Energy Resources; (iii) the Fuel Assured Black Start Unit's installed capacity for fuel assured non-intermittent Capacity Resources; or (iv) the monthly 90% confidence MW value calculated by the Transmission Provider for fuel assured intermittent or hybrid Capacity Resources. The 90% confidence MW value is

calculated using Black Start Unit historical data to determine the hourly MW value the resource can provide each day in each month for 16 hours, which need not be continuous. The hourly MW value is then iterated until the confidence level of the unit providing the MW value on a monthly basis for 16 hours is 90%.

“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 non-fuel assured Black Start Units with a commitment established under Schedule 6A, X shall be .01 for Hydro units, .02 for CT units. For fuel assured Black Start Units with a commitment established under Schedule 6A, X shall be .02 for all units.

Black Start Units with a commitment established under section 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

$$(\text{Fixed Rate} * \text{Black Start NERC-CIP Unit Capacity} * X) + (\text{Incremental Black Start NERC-CIP Capital Costs} * \text{CRF}) + (\text{Fuel Assurance Capital Costs} * \text{CRF})$$

Where:

“Fixed Rate” is a fixed rate for providing Black Start Service (expressed in \$/MW day). This Fixed Rate will be adjusted annually based on the Handy Whitman index. By March 31 of each year, PJM will post the adjusted Fixed Rate on the PJM website. Beginning with the 2025/2026 Delivery Year, the Fixed Rate shall be \$272.62/MW day.

“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 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).

“Fuel Assurance Capital Costs” are the new or additional capital costs documented by the owner for the installation of equipment necessary for the unit to meet the fuel assurance criteria specified in the PJM manuals.

“CRF” or “Capital Recovery Factor” is equal to the levelized CRF as set forth in the applicable CRF table posted on the PJM website in accordance with Tariff, Schedule 6A, section 18 and Manual 15.

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

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

Where:

“FERC-approved rate” is the Black Start Unit’s current FERC-approved recovery of costs to provide Black Start Service, if applicable. To the extent that a Black Start Unit owner is currently recovering black start costs pursuant to a FERC-approved rate, that cost recovery will be included as a formulaic component for calculating the Black Start Unit’s annual revenue requirement pursuant to this section 18. However, under no circumstances will PJM or the Black Start Unit owner restructure or modify that existing FERC-approved rate without FERC approval.

“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 Unit 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.

“Fuel Assurance Capital Costs” are the new or additional capital costs documented by the owner for the installation of equipment necessary for the unit to meet the fuel assurance criteria specified in the PJM manuals. However, Fuel Assurance Capital Costs shall not include any capital costs that the Fuel Assured Black Start Unit owner is recovering for that unit pursuant to a FERC-approved recovery rate.

The Capital Recovery Factor (“CRF”) is equal to the Levelized CRF based on the age of the Black Start Unit, which is modified to provide Black Start Service.

The CRF applicable to Black Start Capital Costs of Black Start Units making capital investment prior to June 6, 2021 in order to provide or continue to provide Black Start Service, shall continue to be determined in accordance with the following table:

Age of Black Start Unit	Term of Black Start Commitment	Levelized CRF
1 to 5	20	0.1180
6 to 10	15	0.1348
11 to 15	10	0.1767
16+	5	0.3097

The CRF applicable to Black Start Capital Costs and/or for Fuel Assurance Capital Costs, of Black Start Units making capital investment after June 6, 2021 to provide or continue to provide Black Start Service, shall be updated annually on March 1 (if March 1 is not a Business day then the first Business Day after March 1) for (i) federal income tax rates as utilized by the U.S. Internal Revenue Service in effect at the time of the annual CRF update; (ii) average state tax rate; and (iii) debt interest rates and shall be posted on the PJM website by March 31 each year as shown in the table below. Interested parties shall have until April 15 of each year to contest PJM's calculation of the annual CRF value before it becomes effective on June 1 of each year.

PJM determines annual CRF inputs	March 1 (if March 1 is not a Business day then the first Business Day after March 1)
PJM posts annual CRF	March 31
Deadline for contesting annual CRF	April 15
Annual revenue requirement calculation	May 3 through May 27
Annual revenue requirement with CRF in effect	June 1

The CRF values shall be calculated for a recovery period based on the age of the Black Start Unit using the equation below:

$$CRF = \frac{r(1+r)^N \left[1 - \frac{sB}{\sqrt{1+r}} - s(1-B)\sqrt{1+r} \sum_{j=1}^L \frac{m_j}{(1+r)^j} \right]}{(1-s)\sqrt{1+r}[(1+r)^N - 1]} \dots$$

Where:

Formula Symbol	Description
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r	After Tax Weighted Average Cost of Capital (ATWACC), which equals (equity percentage)(cost of equity) + (debt percentage)(debt interest rate)(1 – effective tax rate)
s	Effective Tax Rate, which equals (1 – state tax rate)(federal tax rate) + state tax rate
B	Bonus depreciation percent in effect at the Black Start Unit in-service date
N	Cost recovery period based on the age of the unit in years, as established in the Age of Unit/Applicable Recovery Period table below
L	The lesser of N or 16 years
M_j	Modified Accelerated Cost Recovery System (MACRS) depreciation

The following assumptions are used in the calculation:

The current federal tax and depreciation rates are as established by U.S. Internal Revenue Service;

The state tax rate is an average of the income tax rates for all the states in the PJM Region;

The capital investment necessary to make a unit qualify for Black Start Service is made up of 50 percent equity;

The capital investment necessary to make a unit qualify for Black Start Service is made up of 50 percent debt;

The debt interest rate is based on the most recent Net CONE quadrennial review after-tax weighted average cost of capital (ATWACC) and shall be updated as follows:

The debt interest rate will be updated during the Net CONE quadrennial review; and

If the 2-year change in the Moody Utility Index for bonds rated Baa1 is more than 200 basis points, this change will be added to the interest rate used in the most recent Net CONE quadrennial review and will be used as the current year's debt interest rate.

The debt term is equal to the applicable recovery period specified in the Age of Unit/Applicable Recovery Period table below; and

The cost of equity shall be equal to an after tax internal rate of return on equity of 12%.

Any changes to the debt and equity percentages and after tax internal rate of return on equity components stated above shall be included in revisions to this section 18.

Age of the Unit (years)	Incremental Black Start Capital Costs Applicable Recovery Period (years)	Fuel Assurance Capital Costs Recovery Period (years)
1-5	20	20
6-10	15	15
11-15	10	10
16+	5	10

In those circumstances where a Black Start Unit owner has elected to recover Incremental Black Start Capital Costs and/or Fuel assurance 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 set forth in the Age of Unit/Applicable Recovery Period table above.

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

Black Start Units with the demonstrated ability to automatically remain operating, at reduced levels, when disconnected from the grid may receive NERC compliance costs associated with providing Black Start Service in addition to the formula above, if approved in accordance with the procedures in section 17 of this Schedule 6A.

Training Costs:

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

$$50 \text{ staff hours/year/plant} * 75/\text{hour}$$

Fuel Storage Costs:

Black Start Units that store liquefied or compressed natural gas, propane, or oil on site 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 traded the first Business Day on or following April 1.

“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 reported the first Business Day on or following April 1.

“MTSL” is the “minimum tank suction level” and shall apply to oil fired Black Start Units’ storage tanks that have an unusable volume of oil. In the case where a Black Start Unit shares a common fuel tank, the Black Start Unit will be eligible for recovery of the Black Start Energy Tank Ratio of the MTSL in its fuel storage calculation.

$$\text{Black Start Energy Tank Ratio} = \{ (\text{Fuel Burn Rate} * \text{Minimum Run Hours}) / \\ (\text{Tank Capacity} - \text{MTSL}) \}$$

The MTSL fuel storage calculation shall be as follows:
$$\{(\text{Black Start Energy Tank Ratio} * \text{MTSL}) + [(\text{\#Run Hours}) * (\text{Fuel Burn Rate})]\} \\ * (\text{12 Month Forward Strip} + \text{Basis}) * (\text{Bond Rate})$$

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 solely for Black Start Units with a commitment established under section 5 above and shall be ten percent for non-fuel assured Black Start Units and twenty percent for Fuel Assured Black Start Units. For those Black Start Units that elect to recover new or additional Black Start or Fuel Assurance Capital Costs under section 6 above, the incentive factor, Z, shall be equal to zero.

Every five years, PJM shall review the formula and its costs components set forth in this section 18, 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 section 18 of this Schedule 6A no later than thirty (30) days prior to the effective date of the recovery. At the written request of a 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 affected 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. For existing Black Start Units, monthly credits are provided to Black Start Unit owners that submit to the Transmission Provider their annual revenue requirements established pursuant to section 17A 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. For new Black Start Unit owners, monthly credits will be held by the Office of the Interconnection in a non-interest bearing account until the Office of the Interconnection, or the Commission as applicable,

accepts the owner's annual revenue requirement pursuant to section 17B of this Schedule 6A. New Black Start Unit owners will begin to receive monthly credits, including any monthly credits held by the Office of the Interconnection back to the date the unit enters Black Start Service and any required estimated annual revenue requirement true up after the Office of the Interconnection, or the Commission as applicable, accepts the new Black Start Unit owner's annual revenue requirement.

22A. For Fuel Assured Black Start Units that are recovering Fuel Assurance Capital Costs, pursuant to section 17B of this Schedule 6A, shall have its monthly credits reduced, but not less than zero, by the positive net value of the Day-ahead Energy Market and Real-time Energy Market revenues from being committed using the fuel assurance fuel as further described in the PJM manuals minus the cost of running on that fuel. The Black Start Unit's monthly credits shall not be increased. For Fuel Assured Black Start Units that are recovering Fuel Assurance Capital Cost and the Fuel Assurance Capital Costs increased the Installed Capacity Rating (ICAP) of the unit, monthly credits shall be reduced, but not less than zero, by the monthly capacity revenues for the increased ICAP. Monthly credits will only be reduced during the Fuel Assurance Capital Cost recovery period.

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 criteria for Black Start Service and the criteria for Black Start Service in the Applicable Standards 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 or share of generation units designated by the Transmission Provider and allocated to network service customers and point-to-point reservations. Zonal rates will include estimated annual revenue requirements for new Black Start Units from the date the units enter Black Start Service to last day of the month preceding the Office of the Interconnection's acceptance of the unit's annual revenue requirement. The estimated annual revenue requirement will be based on the Black Start Unit owner's best estimate at the time the unit enters Black Start Service. Any estimated annual revenue requirement true up will be included in the monthly bill after the Office of the Interconnection accepts the new Black Start unit's annual revenue requirement.

26. Revenue requirements for Black Start Units designated by the Transmission Provider as critical (regardless of zonal location) will be allocated to the receiving Transmission Owner's zone. Black Start Units that are shared and designated to serve multiple zones will have their annual revenues allocated by Transmission Owner designated critical load percentage.

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 share of 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 Tariff, Part I, 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 for each day of the month (not curtailed by PJM) divided by the number of hours in the day.

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.

1.4B DER Aggregator Participation Model

(a) DER Aggregators providing capacity using a DER Capacity Aggregation Resource shall be subject to the Day-ahead Energy Market must-offer requirement described in Tariff, Attachment K-Appendix, section 1.10.1A(d) and Operating Agreement, Schedule 1, section 1.10.1A(d), based on the technology of the Component DER within the DER Aggregation Resource linked to the DER Capacity Aggregation Resource, in accordance with the PJM Manuals.

(b) DER Aggregation Resources are subject to offer price cap and associated three pivotal supplier test provisions of Operating Agreement, Schedule 1, section 6.4.

(c) A DER Capacity Aggregation Resource shall be subject to a MOPR Floor Offer Price in accordance with the provisions applicable to MOPR Floor Offer Price for Generation Capacity Resources, as described in Tariff, Attachment DD, section 5.14(h-2), and Market Seller Offer Cap for Generation Capacity Resources in a manner consistent with the provisions applicable to Market Seller Offer Cap for Generation Capacity Resources, as described in Tariff, Attachment DD, section 6.4 and Tariff, Attachment M-Appendix, section II.E, based on the underlying technology of the Component DER.

A DER Capacity Aggregation Resource may segment offers for the Component DER subject to mitigation, based on the underlying technology of the Component DER in the DER Capacity Aggregation Resource, and further described in the PJM Manuals.

If a DER Capacity Aggregation Resource is subject to the Minimum Floor Offer Price pursuant to Tariff, Attachment DD, sections 5.14(h-2), the Capacity Market Seller that owns or controls such resources may submit a Sell Offer with a Minimum Floor Offer Price of no lower than the MW-weighted average of the applicable MOPR Floor Offer Prices (zero if not applicable) of the aggregated resources in such Sell Offer.

(d) Projected PJM Market Revenues for DER Capacity Aggregation Resources subject to the Minimum Floor Offer Price or Market Seller Offer Cap shall be determined in accordance with Tariff, Attachment DD, section 6.8(d).

VI. SUPPLEMENTAL CREDIT REQUIREMENTS FOR SCREENED TRANSACTIONS

A. Virtual and Export Transaction Screening

1. Credit for Virtual and Export Transactions

Export Transactions and Virtual Transactions both utilize Credit Available for Virtual Transactions to support their credit requirements.

PJM does not require a Market Participant to establish separate or additional credit for submitting Virtual or Export Transactions; however, once transactions are submitted and accepted by PJM, PJM may require credit supporting those transactions to be held until the transactions are completed and their financial impact incorporated into the Market Participant's Obligations. If a Market Participant chooses to establish additional Collateral and/or Unsecured Credit Allowance in order to increase its Credit Available for Virtual Transactions, the Market Participant's Working Credit Limit for Virtual Transactions shall be increased in accordance with the definition thereof. The Collateral and/or Unsecured Credit Allowance available to increase a Market Participant's Credit Available for Virtual Transactions shall be the amount of Collateral and/or Unsecured Credit Allowance available after subtracting any credit required for Minimum Participation Requirements, FTR, RPM or other credit requirement determinants defined in this Attachment Q, as applicable.

If a Market Participant chooses to provide additional Collateral in order to increase its Credit Available for Virtual Transactions PJM may establish a reasonable timeframe, not to exceed three months, for which such Collateral must be maintained. PJM will not impose such restriction on a deposit unless a Market Participant is notified prior to making the deposit. Such restriction, if applied, shall be applied to all future deposits by all Market Participants engaging in Virtual Transactions.

A Market Participant may increase its Credit Available for Virtual Transactions by providing additional Collateral to PJM. PJM will make a good faith effort to make new Collateral available as Credit Available for Virtual Transactions as soon as practicable after confirmation of receipt. In any event, however, Collateral received and confirmed by noon on a Business Day will be applied (as provided under this Attachment Q) to Credit Available for Virtual Transactions no later than 10:00 am on the following Business Day. Receipt and acceptance of wired funds for cash deposit shall mean actual receipt by PJM's bank, deposit into PJM's customer deposit account, confirmation by PJM that such wire has been received and deposited, and entry into PJM's credit system. Receipt and acceptance of letters of credit or surety bonds shall mean receipt of the original Letter of Credit or surety bond, or amendment thereto, confirmation from PJM's credit and legal staffs that such Letter of Credit or surety bond, or amendment thereto conforms to PJM's requirements, which confirmation shall be made in a reasonable and practicable timeframe, and entry into PJM's credit system. To facilitate this process, bidders submitting additional Collateral for the purpose of increasing their Credit Available for Virtual Transactions are advised to submit such Collateral well in advance of the desired time, and to specifically notify PJM of such submission.

A Market Participant wishing to submit Virtual or Export Transactions must allocate within PJM's credit system the appropriate amount of Credit Available for Virtual Transactions to the virtual and export allocation sections within each customer account in which it wishes to submit such transactions.

2. Virtual Transaction Screening

All Virtual Transactions submitted to PJM shall be subject to a credit screen prior to acceptance in the Day-ahead Energy Market. The credit screen is applied separately for each of a Market Participant's customer accounts. The credit screen process will automatically reject Virtual Transactions submitted by the Market Participant in a customer account if the Market Participant's Credit Available for Virtual Transactions, allocated on a customer account basis, is exceeded by the Virtual Credit Exposure that is calculated based on the Market Participant's Virtual Transactions submitted, as described below.

A Market Participant's Virtual Credit Exposure will be calculated separately for each customer account on a daily basis for all Virtual Transactions submitted by the Market Participant for the next Operating Day using the following equation:

Virtual Credit Exposure = INC and DEC Exposure + Up-to Congestion Exposure

Where:

(a) INC and DEC Exposure for each customer account is calculated as:

(i) ((the total MWh bid or offered, whichever is greater, hourly at each node) x the Nodal Reference Price x 1 day) summed over all nodes and all hours; plus (ii) ((the difference between the total bid MWh cleared and total offered MWh cleared hourly at each node) x Nodal Reference Price) summed over all nodes and all hours for the previous cleared Day-ahead Energy Market.

(b) Up-to Congestion Exposure for each customer account is calculated as:

(i) Total MWh bid hourly for each Up-to Congestion Transaction x (price bid – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours; plus (ii) Total MWh cleared hourly for each Up-to Congestion Transaction x (cleared price – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours for the previous cleared Day-ahead Energy Market, provided that hours for which the calculation for an Up-to Congestion Transaction is negative, it shall be deemed to have a zero contribution to the sum.

3. Export Transaction Screening

Export Transactions in the Real-time Energy Market shall be subject to Export Transaction Screening. Export Transaction Screening may be performed either for the duration of the entire Export Transaction, or separately for each time interval comprising an Export Transaction. PJM

will deny or curtail all or a portion (based on the relevant time interval) of an Export Transaction if that Export Transaction, or portion thereof, would otherwise cause the Market Participant's Export Credit Exposure to exceed its Credit Available for Export Transactions. Export Transaction Screening shall be applied separately for each Operating Day and shall also be applied to each Export Transaction one or more times prior to the market clearing process for each relevant time interval. Export Transaction Screening shall not apply to transactions established directly by and between PJM and a neighboring Balancing Authority for the purpose of maintaining reliability.

A Market Participant's credit exposure for an individual Export Transaction shall be the MWh volume of the Export Transaction for each relevant time interval multiplied by each relevant Export Transaction Price Factor and summed over all relevant time intervals of the Export Transaction.

B. RPM Auction and Price Responsive Demand Credit Requirements

Settlement during any Delivery Year of cleared positions resulting or expected to result from any RPM Auction shall be included as appropriate in Peak Market Activity, and the provisions of this Attachment Q shall apply to any such activity and obligations arising therefrom. In addition, the provisions of this section shall apply to any entity seeking to participate in any RPM Auction, to address credit risks unique to such auctions. The provisions of this section also shall apply under certain circumstances to PRD Providers that seek to commit Price Responsive Demand pursuant to the provisions of the Reliability Assurance Agreement.

Credit requirements described herein for RPM Auctions and RPM bilateral transactions are applied separately for each customer account of a Market Participant. Market Participants wishing to participate in an RPM Auction or enter into RPM bilateral transactions must designate the appropriate amount of credit to each account in which their offers are submitted.

1. Applicability

A Market Participant seeking to submit a Sell Offer in any RPM Auction based on any Capacity Resource for which there is a materially increased risk of nonperformance must satisfy the credit requirement specified herein before submitting such Sell Offer. A PRD Provider seeking to commit Price Responsive Demand for which there is a materially increased risk of non-performance must satisfy the credit requirement specified herein before it may commit the Price Responsive Demand. Credit must be maintained until such risk of non-performance is substantially eliminated, but may be reduced commensurate with the reduction in such risk, as set forth in section VI.B.3 below.

For purposes of this provision, a resource for which there is a materially increased risk of nonperformance shall mean: (i) a Planned Generation Capacity Resource; (ii) a Planned Demand Resource or an Energy Efficiency Resource; (iii) a Qualifying Transmission Upgrade; (iv) an existing or Planned Generation Capacity Resource located outside the PJM Region that at the time it is submitted in a Sell Offer has not secured firm transmission service to the border of the PJM Region sufficient to satisfy the deliverability requirements of the Reliability Assurance Agreement; (v) Price Responsive Demand to the extent the responsible PRD Provider has not registered PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Reliability Assurance Agreement, Schedule 6.1; or (vi) a Planned DER Capacity Aggregation Resource.

2. Reliability Pricing Model Auction and Price Responsive Demand Credit Requirement

Except as provided for Credit-Limited Offers below, for any resource specified in section VI.B.1 above, other than Price Responsive Demand, the credit requirement shall be the RPM Auction Credit Rate, as provided in section VI.B.4 below, times the megawatts to be offered for sale from such resource in an RPM Auction. For Qualified Transmission Upgrades, the credit requirements shall be based on the Locational Deliverability Area in which such upgrade was to increase the Capacity Emergency Transfer Limit. The RPM Auction Credit Requirement for each Market Participant shall be determined on a customer account basis, separately for each customer account of a Market Participant, and shall be the sum of the credit requirements for all such resources to be offered by such Market Participant in the auction or, as applicable, cleared by such Market Participant in the relevant auctions. For Price Responsive Demand, the credit requirement shall be based on the Nominal PRD Value (stated in Unforced Capacity terms) times the Price Responsive Demand Credit Rate as set forth in section VI.B.5 below. Except for Credit-Limited Offers, the RPM Auction Credit requirement for a Market Participant will be reduced for any Delivery Year to the extent less than all of such Market Participant's offers clear in the Base Residual Auction or any Incremental Auction for such Delivery Year. Such reduction shall be proportional to the quantity, in megawatts, that failed to clear in such Delivery Year.

A Sell Offer based on a Planned Generation Capacity Resource, Planned Demand Resource, Energy Efficiency Resource or Planned DER Capacity Aggregation Resource may be submitted as a Credit-Limited Offer. A Market Participant electing this option shall specify a maximum amount of Unforced Capacity, in megawatts, and a maximum credit requirement, in dollars,

applicable to the Sell Offer. A Credit-Limited Offer shall clear the RPM Auction in which it is submitted (to the extent it otherwise would clear based on the other offer parameters and the system's need for the offered capacity) only to the extent of the lesser of: (i) the quantity of Unforced Capacity that is the quotient of the division of the specified maximum credit requirement by the Auction Credit Rate resulting from section VI.B.4.b. below; and (ii) the maximum amount of Unforced Capacity specified in the Sell Offer. For a Market Participant electing this alternative, the RPM Auction Credit requirement applicable prior to the posting of results of the auction shall be the maximum credit requirement specified in its Credit-Limited Offer, and the RPM Auction Credit requirement subsequent to posting of the results will be the Auction Credit Rate, as provided in section VI.B.4.b, c. or d. of this Attachment Q, as applicable, times the amount of Unforced Capacity from such Sell Offer that cleared in the auction. The availability and operational details of Credit-Limited Offers shall be as described in the PJM Manuals.

As set forth in section VI.B.4 below, a Market Participant's Auction Credit requirement shall be determined separately for each Delivery Year.

3. Reduction in Credit Requirement

As specified below, the RPM Auction Credit Rate may be reduced under certain circumstances after the auction has closed.

The Price Responsive Demand credit requirement shall be reduced as and to the extent the PRD Provider registers PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Reliability Assurance Agreement, Schedule 6.1.

In addition, the RPM Auction Credit requirement for a Market Participant for any given Delivery Year shall be reduced periodically, after the Market Participant has provided PJM a written request for each reduction, accompanied by documentation sufficient for PJM to verify attainment of required milestones or satisfaction of other requirements, and PJM has verified that the Market Participant has successfully met progress milestones for its Capacity Resource that reduce the risk of non-performance, as follows:

(a) For Planned Demand Resources, Planned DER Capacity Aggregation Resources and Energy Efficiency Resources, the RPM Auction Credit requirement will be reduced in direct proportion to the megawatts of such Demand Resource and DER Capacity Aggregation Resource that the Resource Provider qualifies as a Capacity Resource, in accordance with the procedures established under the Reliability Assurance Agreement.

(b) For Existing Generation Capacity Resources located outside the PJM Region that have not secured sufficient firm transmission to the border of the PJM Region prior to the auction in which such resource is first offered, the RPM Auction Credit requirement shall be reduced in direct proportion to the megawatts of firm transmission service secured by the Market Participant that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.

(c) For Planned Generation Capacity Resources located in the PJM Region, the RPM Auction Credit requirement shall be reduced as the Capacity Resource attains the milestones stated in the following table and as further described in the PJM Manuals.

Milestones	Increment of reduction from initial RPM Auction Credit requirement
Effective Date of Interconnection Service Agreement, Generation Interconnection Agreement or Wholesale Market Participation Agreement	50%
Financial Close	15%
Full Notice to Proceed and Commencement of Construction (e.g., footers poured)	5%
Main Power Generating Equipment Delivered	5%
Commencement of Interconnection Service	25%

For externally financed projects, the Market Participant must submit with its request for reduction a sworn, notarized certification of a duly authorized independent engineer for the Financial Close, Full Notice to Proceed and Commencement of Construction, and Main Power Generating Equipment Delivered milestones.

For internally financed projects, the Market Participant must submit with its request for reduction a sworn, notarized certification of a duly authorized officer of the Market Participant for the Financial Close milestone and either a duly authorized independent engineer or Professional Engineer for the Full Notice to Proceed and Commencement of Construction and the Main Power Generating Equipment Delivered milestones.

The required certifications must be in a form acceptable to PJM, certifying that the engineer or officer, as applicable, has personal knowledge, or has engaged in a diligent inquiry to determine, that the milestone has been achieved and that, based on its review of the relevant project information, the engineer or officer, as applicable, is not aware of any information that could reasonably cause it to believe that the Capacity Resource will not be in-service by the beginning of the applicable Delivery Year. The Market Participant shall, if requested by PJM, supply to PJM on a confidential basis all records and documents relating to the engineer's and/or officer's certifications.

(d) For Planned External Generation Capacity Resources, the RPM Auction Credit requirement shall be reduced as the Capacity Resource attains the milestones stated in the following table and as further described in the PJM Manuals; provided, however, that the total percentage reduction in the RPM Auction Credit requirement shall be no greater than the quotient of (i) the MWs of firm transmission service that the Market Participant has secured for the complete transmission path divided by (ii) the MWs of firm transmission service required to qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.

Credit Reduction Milestones for Planned External Generation Capacity Resources	
Milestones	Increment of reduction from initial RPM Auction Credit requirement
Effective Date of the equivalent of an Interconnection Service Agreement, Generation Interconnection Agreement or Wholesale Market Participation Agreement	50%
Financial Close	15%
Full Notice to Proceed and Commencement of Construction (e.g., footers poured)	5%
Main Power Generating Equipment Delivered	5%
Commencement of Interconnection Service	25%

To obtain a reduction in its RPM Auction Credit requirement, the Market Participant must demonstrate satisfaction of the applicable milestone in the same manner as set forth for Planned Generation Capacity Resources in subsection (c) above.

(e) For Qualifying Transmission Upgrades, the RPM Auction Credit requirement shall be reduced to 50% of the amount calculated under section VI.B.2 above beginning as of the effective date of the latest associated Interconnection Service Agreement or Generation Interconnection Agreement (or, when a project will have no such agreement, an Upgrade Construction Service Agreement), and shall be reduced to zero on the date the Qualifying Transmission Upgrade is placed in service.

4. RPM Auction Credit Rate

As set forth in the PJM Manuals, a separate Auction Credit Rate shall be calculated for each Delivery Year prior to each RPM Auction for such Delivery Year, as follows:

- (a) Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Auction Credit Rate shall be:
 - (i) For Capacity Performance Resources, the greater of ((A) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in MW-day or (B) \$20 per MW-day) times the number of calendar days in such Delivery Year.
 - (ii) For Seasonal Capacity Performance Resources, the same as the Auction Credit Rate for Capacity Performance Resources, but reduced to be proportional to the number of calendar days in the relevant season.
- (b) Subsequent to the posting of the results from a Base Residual Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:

- (i) For Capacity Performance Resources, the (greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) or (C) the lesser of (1) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (2) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery year or for the Relevant LDA, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of calendar days in such Delivery Year).
 - (ii) For Seasonal Capacity Performance Resources, the same as the Auction Credit Rate for Capacity Performance Resources, but reduced to be proportional to the number of calendar days in the relevant season.
- (c) For any resource not previously committed for a Delivery Year that seeks to participate in an Incremental Auction, the Auction Credit Rate shall be:
 - (i) For Capacity Performance Resources, the (greater of (A) 0.5 times Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA or (B) \$20/MW-day) times the number of calendar days in such Delivery Year.
- (d) Subsequent to the posting of the results of an Incremental Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:
 - (i) For Capacity Performance Resources, the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located or (C) the lesser of (1) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (2) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of calendar days in such Delivery Year); and
 - (ii) For Seasonal Capacity Performance Resources, the same as the Auction Credit Rate for Capacity Performance Resources, but reduced to be proportional to the number of calendar days in the relevant season.
- (e) For the purposes of this section VI.B.4 and section VI.B.5 below, “Relevant LDA” means the Locational Deliverability Area in which the Capacity Performance Resource is located if a separate Variable Resource Requirement Curve has been established for that Locational Deliverability Area for the Base Residual Auction for such Delivery Year.

5. Price Responsive Demand Credit Rate

- (a) For the 2018/2019 through 2022/2023 Delivery Years:
- (i) Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Price Responsive Demand Credit Rate shall be (the greater of (A) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of calendar days in such Delivery Year;
 - (ii) Subsequent to the posting of the results from a Base Residual Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for Price Responsive Demand committed in such auction shall be (the greater of (A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the Price Responsive Demand load is located, in \$/MW-day) times the number of calendar days in such Delivery Year times a final price uncertainty factor of 1.05;
 - (iii) For any additional Price Responsive Demand that seeks to commit in a Third Incremental Auction in response to a qualifying change in the final LDA load forecast, the Price Responsive Demand Credit Rate shall be the same as the rate for Price Responsive Demand that had cleared in the Base Residual Auction; and
 - (iv) Subsequent to the posting of the results of the Third Incremental Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for all Price Responsive Demand, shall be (the greater of (i) \$20/MW-day or (ii) 0.2 times the Final Zonal Capacity Price for the Locational Deliverability Area within which the Price Responsive Demand is located) times the number of calendar days in such Delivery Year, but no greater than the Price Responsive Demand Credit Rate previously established under subsections (a)(i), (a)(ii), or (a)(iii) of this section for such Delivery Year.
- (b) For the 2022/2023 Delivery Year and Subsequent Delivery Years:
- (i) Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Price Responsive Demand Credit Rate shall be (the greater of (A) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (B) \$20 per MW-day) times the number of calendar days in such Delivery Year;
 - (ii) Subsequent to the posting of the results from a Base Residual Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for Price Responsive Demand committed in such auction shall be (the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the Price Responsive Demand is located, in \$/MW-day or (C) the lesser of (1) 0.5 times the Net Cost of

New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (2) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery year or for the Relevant LDA, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the Price Responsive Demand is located)] times the number of calendar days in such Delivery Year;

- (iii) For any additional Price Responsive Demand that seeks to commit in a Third Incremental Auction in response to a qualifying change in the final LDA load forecast, the Price Responsive Demand Credit Rate shall be (the greater of (A) 0.5 times Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (B) \$20/MW-day) times the number of calendar days in such Delivery Year; and
- (iv) Subsequent to the posting of the results of the Third Incremental Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for all Price Responsive Demand committed in such auction shall be the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the Price Responsive Demand is located or (C) the lesser of (1) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day or (2) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery Year or for the Relevant LDA, in \$/MW-day minus (the Capacity Performance Resource Clearing Price in such Incremental Auction for the Locational Deliverability Areas within which the Price Responsive Demand is located)] times the number of calendar days in such Delivery Year.

6. RPM Seller Credit - Additional Form of Unsecured Credit for RPM

In addition to the forms of credit specified elsewhere in this Attachment Q, RPM Seller Credit shall be available to Market Participants, but solely for purposes of satisfying RPM Auction Credit requirements. If a supplier has a history of being a net seller into PJM Markets, on average, over the past 12 months, then PJM will count as available Unsecured Credit twice the average of that Market Participant's total net monthly PJM bills over the past 12 months. This RPM Seller Credit shall be subject to the cap on available Unsecured Credit as established in section II.G.3 above.

RPM Seller Credit is calculated as a single value for each Market Participant, not separately by account, and must be designated to specific customer accounts in order to be available to satisfy RPM Auction Credit requirements that are calculated in each such customer account.

7. Credit Responsibility for Traded Planned RPM Capacity Resources

PJM may require that credit and financial responsibility for planned Capacity Resources that are traded remain with the original party (which for these purposes, means the party bearing credit

responsibility for the planned Capacity Resource immediately prior to trade) unless the receiving party independently establishes consistent with this Attachment Q, that it has sufficient credit with PJM and agrees by providing written notice to PJM that it will fully assume the credit responsibility associated with the traded planned Capacity Resource.

8. Credit Review of Bilateral Capacity Transactions

To the extent the capacity that is the subject of a bilateral capacity transaction already has cleared an auction under Tariff, Attachment DD, such bilateral capacity transactions shall be subject to the prior consent of the Office of the Interconnection and its determination that sufficient credit is in place for the buyer and/or the seller with respect to the credit exposure associated with such obligations.

The following terms shall apply to credit reviews of Section 4.6(b) Bilateral transactions and Locational UCAP bilateral transactions:

- (a) The Office of the Interconnection shall complete its review of an anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction by no later than the close of the next Business Day if such Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction has been received by the Office of the Interconnection's Credit Department for review by 1:00 p.m. Eastern Prevailing Time.
- (b) The Office of the Interconnection shall complete its review of an anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction by no later than the close of the second (2nd) Business Day if such Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction has been received by the Office of the Interconnection's Credit Department for review after 1:00 p.m. Eastern Prevailing Time.
- (c) The timing of the Market Participants' submission of an anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction to the Office of the Interconnection's Credit Department for review, relative to the desired transaction start date, is at the Market Participants' discretion. The Market Participants, however, assume all risk in delaying the submission to the Office of the Interconnection and the Market Participants hold the Office of the Interconnection harmless from any consequences of such delay.
- (d) The Office of the Interconnection will make reasonable efforts to communicate its credit determination and any associated requirements regarding the anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction with the buyer and seller in advance of the deadlines set forth in subparts (a) and (b) above.
- (e) Each submission of an anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction to the Office of the Interconnection for its review shall contain the following information supplied by the buyer and/or seller: (i) seller's account; (ii) buyer's account; (iii) auction/resource; (iv) quantity (MWs); (v) price; (vi) total notional value; and (vii) start and end dates.

(f) All credit reviews of Section 4.6(b) Bilateral transactions and Locational UCAP bilateral transactions, including, but not limited to, with respect to the creditworthiness of the buyer and seller, the impact of the anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction on the buyer and seller, and the determination and timing requirements of any additional credit that the Office of the Interconnection may require from one or both of buyer and seller as a condition for its consenting to the transaction, shall be performed by the Office of the Interconnection in accordance with the provisions of this Attachment Q.

(g) For anticipated Section 4.6(b) Bilateral transactions and Locational UCAP bilateral transactions in which (i) both the buyer and seller have external “investment grade” ratings and (ii) the total notional value of the anticipated Section 4.6(b) Bilateral transaction or Locational UCAP bilateral transaction is less than the Unsecured Credit Allowance for each of the buyer and seller, the Office of the Interconnection will be deemed to have consented to such transaction unless the Office of the Interconnection has informed the buyer and seller otherwise in advance of the applicable deadline under subparts (a) and (b) above.

C. Financial Transmission Right Auctions

Credit requirements described herein for FTR activity are applied separately for each customer account of a Market Participant, unless specified otherwise in this section C. FTR Participants must designate the appropriate amount of credit to each separate customer account in which any activity occurs or will occur.

1. FTR Credit Limit.

Participants must maintain their FTR Credit Limit at a level equal to or greater than their FTR Credit Requirement for each applicable account. FTR Credit Limits will be established only by a Participant providing Collateral and designating the available credit to specific accounts.

2. FTR Credit Requirement.

For each Market Participant with FTR activity, PJM shall calculate an FTR Credit Requirement. The FTR Credit Requirement shall be calculated on a portfolio basis for each Market Participant based on (a) initial margin, (b) Auction Revenue Right Credits, (c) Mark-to-Auction Value, (d) application of a 10¢ per MWh minimum value adjustment, and (e) realized gains and/or losses, as set forth in subsections (a)-(e) of this subsection, employing the formula:

$$\text{Max} \{ \text{Max} (\text{IM} - \text{ARR} - \text{MTA}, \text{Ten Cent per Mwh Minimum}) - \text{Realized Gains and/or Losses}, 0 \}$$

Where IM is the initial margin, ARR is Auction Revenue Rights Credits and MTA is the Mark-to-Auction Value. The FTR Credit Requirement may be increased to reflect any change in the value of a Market Participant’s portfolio requiring an increase in Collateral as further described below.

(a) Initial Margin

Initial margin shall be calculated in accordance with the following formula:

$$\text{IM} = \text{FTR Obligations IM} + \text{FTR Options IM}$$

The model will employ a confidence interval of 99 percent.

(i) FTR Obligations IM

Initial margin values for Financial Transmission Right Obligations shall be determined utilizing a historical simulation value-at-risk methodology that calculates the size and value at risk of the applicable FTR portfolio based on a defined confidence interval and subject to a weighted aggregation method that is represented by a straight sum for long term positions and a combination of straight sum (20%) and weighted root sum of squares (80%) for balance of planning period positions.

(ii) FTR Options IM

The initial margin for Financial Transmission Right Options shall be calculated as the FTR cost minus the FTR Historical Values. FTR Historical Values shall be calculated separately for weekend on-peak, weekday on-peak, off-peak, and 24-hour FTRs for each month of the year. FTR Historical Values shall be adjusted by plus or minus ten percent for cleared counter flow or prevailing flow FTRs, respectively, in order to mitigate exposure due to uncertainty and fluctuations in actual FTR value. Historical values used in the calculation of FTR Historical Values shall be adjusted when the network simulation model utilized in PJM's economic planning process indicates that transmission congestion will decrease due to certain transmission upgrades that are in effect or planned to go into effect for the following Planning Period. The transmission upgrades to be modeled for this purpose shall only include those upgrades that, individually, or together, have 10% or more impact on the transmission congestion on an individual constraint or constraints with congestion of \$5 million or more affecting a common congestion path. The adjustments to historical values shall be the dollar amount of the adjustment shown in the network simulation model.

(b) Auction Revenue Rights Credits

For a given month for which initial margin is calculated, the prorated value of any Auction Revenue Rights Credits held by a Market Participant with Financial Transmission Right Obligations shall be subtracted from the initial margin for that month. In accordance with subsection 3 below, PJM may recalculate Auction Revenue Rights Credits at any time, but shall do so no less frequently than subsequent to each annual FTR auction. If a reduction in such ARR credits at any time increases an FTR Participant's FTR Credit Requirements beyond its credit available for FTR activity, the FTR Participant must increase its Collateral or the FTR Credit Limit.

(c) Mark-to-Auction Value

A Mark-to-Auction Value shall be calculated for each Market Participant in accordance with subsection 7 below.

(d) Ten Cent (10¢) per MWh Minimum Value Adjustment

If the FTR Credit Requirement as calculated pursuant to subsections (a)-(c) above, results in a value that is less than ten cents (10¢) per MWh, the FTR Credit Requirement shall be increased to ten cents (10¢) per MWh. When calculating the portfolio MWh for this comparison, for cleared “Sell” FTRs, the MWh shall be subtracted from the portfolio total; prior to clearing, the MWh for “Sell” FTRs shall not be included in the portfolio total.

(e) Realized Gains and/or Losses

Any realized gains and/or losses resulting from the settlement of Financial Transmission Right Obligations that have not been paid out will be subtracted from the FTR Credit Requirement. A realized gain will decrease the FTR Credit Requirement (but not below \$0.00), whereas a realized loss will increase the FTR Credit Requirement.

3. Rejection of FTR Bids.

Bids submitted into an auction will be rejected if the Market Participant’s FTR Credit Requirement including such submitted bids would exceed the Market Participant’s FTR Credit Limit, or if the Market Participant fails to provide additional Collateral as required pursuant to provisions related to mark-to-auction.

4. FTR Credit Collateral Returns.

A Market Participant may request from PJM the return of any Collateral no longer required for the FTR markets. PJM is permitted to limit the frequency of such requested Collateral returns, provided that Collateral returns shall be made by PJM at least once per calendar quarter, if requested by a Market Participant.

5. Credit Responsibility for Bilateral Transfers of FTRs.

PJM may require that credit responsibility associated with an FTR bilaterally transferred to a new Market Participant remain with the original party (which for these purposes, means the party bearing credit responsibility for the FTR immediately prior to bilateral transfer) unless and until the receiving party independently establishes, consistent with this Attachment Q, sufficient credit with PJM and agrees through confirmation of the bilateral transfer in PJM's FTR reporting tool that it will meet in full the credit requirements associated with the transferred FTR.

6. FTR Administrative Charge Credit Requirement

In addition to any other credit requirements, PJM may apply a credit requirement to cover the maximum administrative fees that may be charged to a Market Participant for its bids and offers.

7. Mark-to-Auction

A Mark-to-Auction Value shall be calculated separately for each customer account of a Market Participant. For each such customer account, the Mark-to-Auction Value shall be a single number equal to the sum, over all months remaining in the applicable FTR period and for all cleared FTRs in the customer account, of the most recently available cleared auction price applicable to the FTR minus the original transaction price of the FTR, multiplied by the transacted quantity.

The FTR Credit Requirement, as otherwise described above, shall be increased when the Mark-to-Auction Value is negative and decreased when the Mark-to-Auction Value is positive. The increase shall equal the absolute value of the negative Mark-to-Auction Value less the value of ARR credits that are held in the customer account and have not been used to reduce the FTR Credit Requirement prior to application of the Mark-to-Auction Value. PJM shall recalculate ARR credits held by each Market Participant after each annual FTR auction and may also recalculate such ARR credits at any other additional time intervals it deems appropriate. Application of the Mark-to-Auction Value, including the effect from ARR application, shall not decrease the FTR Credit Requirement below the Ten Cent (10¢) per MWh Minimum.

For Market Participant customer accounts for which FTR bids have been submitted into the current FTR auction, if the Market Participant's FTR Credit Requirement exceeds its credit available for the Market Participant's portfolio of FTRs in the tentative cleared solution for an FTR auction (or auction round), PJM shall issue a Collateral Call to the Market Participant, and the Market Participant must fulfill such demand before 4:00 p.m. Eastern Prevailing Time on the following Business Day. If a Market Participant does not timely satisfy such Collateral Call,

PJM shall, in coordination with PJM, cause the removal of all of that Market Participant's bids in that FTR auction (or auction round), submitted from such Market Participant's customer account, and a new cleared solution shall be calculated for the FTR auction (or auction round).

If necessary, PJM shall repeat the auction clearing calculation. PJM shall repeat these mark-to-auction calculations subsequent to any secondary clearing calculation, and PJM shall require affected Market Participants to establish additional credit.

Subsequent to final clearing of an FTR auction or an annual FTR auction round, PJM shall recalculate the FTR Credit Requirement for all FTR portfolios, and, as applicable, issue to each Market Participant a request for Collateral for the total amount by which the FTR Credit Requirement exceeds the credit allocated in any of the Market Participant's accounts. The Market Participant must fulfill such demand by 4:00 p.m. Eastern Prevailing Time on the following Business Day.

If the request for Collateral is not satisfied within the applicable cure period referenced in Operating Agreement, section 15, then such Market Participant shall be restricted in all of its credit-screened transactions. Specifically, such Market Participant may not engage in any Virtual Transactions or Export Transactions, or participate in RPM Auctions or other RPM activity. Such Market Participant may engage only in the selling of open FTR positions, either in FTR auctions or bilaterally, provided such sales would reduce the Market Participant's FTR Credit Requirements. PJM shall not return any Collateral to such Market Participant, and no payment shall be due or payable to such Market Participant, until its credit shortfall is remedied. Market Participant shall allocate any excess or unallocated Collateral to any of its account in which there is a credit shortfall. Market Participants may remedy their credit shortfall at any time through provision of sufficient Collateral.

If a Market Participant fails to satisfy a request for Collateral for two consecutive auctions of overlapping periods, e.g. two balance of Planning Period auctions, an annual FTR auction and a balance of Planning Period auction, or two long term FTR auctions, (for this purpose the four rounds of an annual FTR auction shall be considered a single auction), the Market Participant shall be declared in default of this Attachment Q.

5.5A Capacity Resource Types

(a) Capacity Performance Resources

Capacity Performance Resources are Capacity Resources which, to the extent such resources cleared in a Reliability Pricing Model Auction or are otherwise committed as a Capacity Resource, are obligated to deliver energy during the relevant Delivery Year as scheduled and/or dispatched by the Office of Interconnection during the Performance Assessment Intervals. As further detailed in Tariff, Attachment DD, section 10A, Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Charge, unless excused pursuant to Tariff, Attachment DD, section 10A(d). Subject to 5.5A(a)(i), the following types of Capacity Resources are eligible to submit a Sell Offer as a Capacity Performance Resource: internal or external Generation Capacity Resources; Annual Demand Resources; Capacity Storage Resources; Annual Energy Efficiency Resources; and Qualifying Transmission Upgrades. To the extent the underlying Capacity Resource is an external Generation Capacity Resource, such resource must meet, to the extent subsection (b) or (c) of this section is applicable to offers from such resource, meet the applicable requirements of such subsection, and if neither subsection (b) or (c) is applicable, then offers from such resource must meet the criteria for obtaining an exception to the Capacity Import Limit as contained in RAA, Article 1.

(i) Process for Support and Review of Capacity Performance Resource Offers

A. The Capacity Market Seller shall provide to the Office of the Interconnection and the Market Monitoring Unit, upon their request, all supporting data and information requested by either the Office of the Interconnection or the Market Monitoring Unit to evaluate whether the underlying Capacity Resource can meet the operational and performance requirements of Capacity Performance Resources. The Capacity Market Seller shall have an ongoing obligation through the closing of the offer period for the RPM Auction to update the request to reflect any material changes.

B. The Office of the Interconnection and the Market Monitoring Unit shall review any requested supporting data and information, and the Office of the Interconnection, considering advice and recommendation from the Market Monitoring Unit, shall reject a request for a resource to offer as a Capacity Performance Resource if the Capacity Market Seller does not demonstrate that it can reasonably be expected to meet its Capacity Performance obligations consistent with the resource's offer by the relevant Delivery Year. The Office of Interconnection shall provide its determination to reject eligibility of the resource as a Capacity Performance Resource, and notify the Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences. A Capacity Market Seller that is dissatisfied with any determination hereunder may seek any remedies available to it from FERC; provided, however, that the Office of the Interconnection will proceed with administration of the Tariff and market rules unless and until ordered to do otherwise by FERC.

(b) Offers from External Generation Capacity Resources for the 2020/2021 Delivery Year

and Subsequent Delivery Years—General Rule

For the 2020/2021 Delivery Year and any subsequent Delivery Year and for Capacity Performance Resource Sell Offers in any RPM Auction conducted for the 2018/2019 Delivery Year or 2019/2020 Delivery Year after May 9, 2017, unless excepted pursuant to subsection (c) below, a Capacity Market Seller may submit a Sell Offer for an external Generation Capacity Resource in an RPM Auction if the Capacity Market Seller demonstrates to PJM, by no later than five (5) business days prior to the commencement of the offer period for the relevant RPM Auction, that such resource meets all of the following requirements:

(i) The Capacity Market Seller has obtained a determination that the Pseudo-Tie required for its external Generation Capacity Resource is feasible, including (without limitation) that such Pseudo-Tie meets the following requirements:

(A) the external Generation Capacity Resource must have a minimum Electrical Distance impedance equal to or less than 0.065 p.u.; or is within one station of a transmission bus that has a minimum Electrical Distance impedance equal to or less than 0.065 p.u. With regard to this Electrical Distance requirement, the Office of the Interconnection shall:

- (1) post on its website the material assumptions, applicable to all tested generators, implemented in the modeling software used to conduct the Electrical Distance analysis (e.g., the general process used to define the facilities included in the Electrical Distance requirement and analysis for each Pseudo-Tie applicant);
- (2) upon request by an applicant for a Pseudo-Tie, provide that applicant a copy of the results of the Electrical Distance analysis conducted by the Office of the Interconnection for the specific Pseudo-Tie requested by the applicant, as well as related work papers; and
- (3) upon request by an applicant for a Pseudo-Tie, meet with that applicant to discuss specific modeling assumptions and the results of the Electrical Distance analysis for the specific Pseudo-Tie requested by that applicant;

(B) at least one generation resource that has a historic economic minimum offer lower than its historic economic maximum offer, located inside the metered boundaries of the PJM Region, has a minimum flow distribution impact of 1.5 percent on each eligible coordinated flowgate resulting from such Pseudo-Tie. With regard to this requirement, the Office of the Interconnection shall:

- (1) post on its website the material assumptions, applicable to all tested generators, that have been implemented in the modeling software used to conduct the analysis to determine whether the requirement has been met (e.g., the definitions of the sink and source used in the market-to-

market analysis and the definition of eligible coordinated flowgates as applicable to the requirement);

(2) upon request by an applicant for a Pseudo-Tie, provide that applicant a copy of the results of the market-to-market flowgate analysis conducted by the Office of the Interconnection for the specific Pseudo-Tie requested by the applicant, as well as related work papers; and

(3) upon request by an applicant for a Pseudo-Tie, meet with that applicant to discuss specific modeling assumptions and the results of the market-to-market flowgate analysis conducted for the specific Pseudo-Tie requested by that applicant;

(C) each external entity with which PJM may be required to coordinate flowgates under an agreed congestion management process maintains a network model that produces results for such flowgates that are within two percent of the results produced by the PJM network model for such flowgates;

(D) the Capacity Market Seller has secured written acknowledgement from the external Balancing Authority Areas that such Pseudo-Tie does not require tagging and that firm allocations associated with any coordinated flowgates applicable to the external Generation Capacity Resource under any agreed congestion management process then in effect between PJM and such Balancing Authority Area will be allocated to PJM.

and the Capacity Market Seller has committed in writing that it will take all steps necessary to implement such Pseudo-Tie prior to the start of the relevant Delivery Year;

(ii) it has, for transmission outside PJM, obtained long-term firm point-to-point transmission service (evaluated for deliverability from the unit-specific physical location of the resource to PJM load pursuant to a study that is reviewed and approved by PJM in accordance with PJM deliverability criteria to ensure uniformity for internal and external resource deliverability requirements), with rollover rights for the term of the transmission service that is confirmed by the Balancing Authority for the Balancing Authority Area where such resource is geographically located; and, as to transmission within PJM, has obtained Network External Designated Transmission Service; and

(iii) it is, by written commitment of the Capacity Market Seller, subject to the same obligations imposed on Generation Capacity Resources located in the PJM Region by Tariff, Attachment DD, section 6.6 to offer their capacity into RPM Auctions.

A Capacity Market Seller that satisfies the above requirements with respect to an external Generation Capacity Resource Sell Offer submitted in an RPM Auction for a Delivery Year shall be required to demonstrate satisfaction of such requirements for any Sell Offer with respect to such resource submitted in an RPM Auction for any subsequent Delivery Year, including, without limitation, demonstration that the required external transmission service continues to

satisfy PJM's deliverability standards.

(c) Offers from external Generation Capacity Resources for the 2020/2021 Delivery Year and Subsequent Delivery Years—Exception.

A Capacity Market Seller of a Prior CIL Exception External Resource may continue to submit Sell Offers for such resource for any RPM Auction for any Delivery Year up to and including the 2021/2022 Delivery Year (or, solely for any such resource that is (1) owned by a Load Serving Entity and used to self-supply (under arrangements initiated before June 1, 2016, with a duration of at least ten years) such entity's PJM Region load or (2) the subject of a contract for energy or capacity or equivalent written agreement entered into on or before June 1, 2016 for a term of ten years or longer with a purchaser that is an internal PJM load customer, for any Delivery Year during the life of such resource for subparagraph (1) or for the term of the agreement under subparagraph (2)) so long as it continues to comply with all conditions on the grant of its exception to the Capacity Import Limit, subject to the following additional conditions:

(i) for any Delivery Year, beginning with the 2017/2018 Delivery Year, for which such Prior CIL Exception External Resource has cleared an RPM Auction, PJM may in its sole judgment determine that the resource is not Operationally Deliverable for such Delivery Year because it does not satisfy the requirements of subsection (b). If PJM determines a Prior CIL Exception External Resource is not Operationally Deliverable for a Delivery Year, it must notify the Capacity Market Seller of its determination by no later than October 1 immediately preceding such Delivery Year. After receiving such notice, the Capacity Market Seller may elect to:

(A) take the necessary actions to make the Prior CIL Exception External Resource Operationally Deliverable, in PJM's sole judgment, prior to the beginning of such Delivery Year, provided that PJM will, if transmission upgrades are required to make such resource Operationally Deliverable, facilitate the performance of transmission studies and otherwise cooperate with the external Transmission Provider of the system on which such upgrades are required to identify the upgrades required to meet PJM's deliverability standards;

(B) be relieved of its capacity obligation for such Delivery Year by providing written notice of such election to the Office of the Interconnection no later than seven (7) days prior to the posting of planning parameters for the Third Incremental Auction for such Delivery Year as PJM will procure the replacement capacity in the Third Incremental Auction in accordance with Tariff, Attachment DD, sections 5.12(b)(ii) and 5.12(b)(iii), with no entitlement to any capacity revenues based on such resource, with no requirement to seek replacement for such capacity for such Delivery Year, with no penalty for non-performance or lack of commitment for such Delivery Year, and with no further must-offer obligation that would otherwise arise solely from clearing such capacity for such Delivery Year; or

(C) procure, by purchase or otherwise, replacement in a sufficient quantity to replace the capacity that would have been provided by the Prior CIL Exception External Resource but for PJM's determination that such resource is not Operationally Deliverable.

(ii) Such Capacity Market Seller's continued ability to offer such resource under this exception is conditioned on external Transmission Providers continuing to honor the firm status of the Capacity Market Seller's transmission service for all Delivery Years for which such seller offers such resource under the exceptions provided in this subsection (c).

(iii) A Capacity Market Seller offering and clearing a Prior CIL Exception External Resource pursuant to this subsection (c) shall be relieved of its must-offer obligation that would otherwise arise solely from clearing such capacity. Such relief of the must-offer obligation shall be for any Delivery Year after the last Delivery Year for which it is permitted to offer such resource under this subsection (c).

(iv) PJM will determine key triggers for when a Prior CIL Exception External Resource will not be Operationally Deliverable, including the need for: (1) a remedial action scheme or manual generation dump protocol to manage external transmission emergencies; (2) transmission facility switching arrangements that would have the effect of radializing load in order to manage external transmission emergencies; and (3) "out of market" external Balancing Authority or Transmission Operator directed dispatch instructions to manage excessive or unacceptable frequency of external regional reliability limit violations or (outside an interregional agreed congestion management process) of local reliability limit violations.

(d) Seasonal Capacity Performance Resource

For the 2020/2021 Delivery Year and subsequent Delivery Years, a Seasonal Capacity Performance Resource shall mean a Summer-Period Capacity Performance Resource or Winter-Period Capacity Performance Resource, as defined below.

i) Summer-Period Capacity Performance Resource

For the 2020/2021 Delivery Year and subsequent Delivery Years, the following types of Capacity Resources are eligible to submit a Sell Offer as a Summer-Period Capacity Performance Resource: Summer Period Demand Resource, Summer-Period Energy Efficiency Resource, and Capacity Storage Resource, Intermittent Resource, or Environmentally-Limited Resource that has an average expected energy output during summer peak-hour periods consistently and measurably greater than its average expected energy output during winter peakhour periods. To the extent such resource clears an RPM Auction or is otherwise committed as a Summer-Period Capacity Performance Resource, it is obligated to deliver energy as scheduled and/or dispatched by the Office of Interconnection during Performance Assessment Intervals occurring in the calendar months of June through October and the following May of the Delivery Year, and must

satisfy the requirements of a Capacity Performance Resource for such period of time. As further detailed in Tariff, Attachment DD, section 10A, Summer-Period Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Charge, unless excused pursuant to Tariff, Attachment DD, section 10A(d).

ii) Winter-Period Capacity Performance Resource

The following types of Capacity Resources are eligible to submit a Sell Offer as a Winter-Period Capacity Performance Resource: Intermittent Resource that has been granted additional Capacity Interconnection Rights related to the winter-period. To the extent such resource clears an RPM Auction or is otherwise committed as a Winter-Period Capacity Performance Resource, it is obligated to deliver energy as scheduled and/or dispatched by the Office of Interconnection during Performance Assessment Intervals occurring in the calendar months of November through April of the Delivery Year, and must satisfy the requirements of a Capacity Performance Resource for such period of time. As further detailed in Tariff, Attachment DD, section 10A, Winter-Period Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Charge, unless excused pursuant to Tariff, Attachment DD, section 10A(d).

Revisions to the
PJM Operating Agreement
Effective March 10, 2026

(Clean Format)

Definitions S – T

Sector Votes:

“Sector Votes” shall mean the affirmative and negative votes of each sector of a Senior Standing Committee, as specified in Operating Agreement, section 8.4.

Securities:

“Securities” shall mean negotiable or non-negotiable investment or financing instruments that can be sold and bought. Securities include bonds, stocks, debentures, notes and options.

Segment:

“Segment” shall have the same meaning as described in Operating Agreement, Schedule 1, section 3.2.3(e) and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(e).

Senior Standing Committees:

“Senior Standing Committees” shall mean the Members Committee, and the Markets and Reliability Committee, as established in Operating Agreement, section 8.1 and Operating Agreement, section 8.6.

SERC:

“SERC” or “Southeastern Electric Reliability Council” shall mean the reliability council under section 202 of the Federal Power Act established pursuant to the SERC Agreement dated January 14, 1970, or any successor thereto.

Short-term Project:

“Short-term Project” shall mean a transmission enhancement or expansion with an in-service date of more than three years but no more than five years from the year in which, pursuant to Operating Agreement, Schedule 6, section 1.5.8(c), the Office of the Interconnection posts the violations, system conditions, or Public Policy Requirements to be addressed by the enhancement or expansion.

Special Member:

“Special Member” shall mean an entity that satisfies the requirements of Operating Agreement, Schedule 1, section 1.5A.02, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.02, or the special membership provisions established under the Emergency Load Response and Pre-Emergency Load Response Programs.

Spot Market Backup:

“Spot Market Backup” shall mean the purchase of energy from, or the delivery of energy to, the PJM Interchange Energy Market in quantities sufficient to complete the delivery or receipt obligations of a bilateral contract that has been curtailed or interrupted for any reason.

Spot Market Energy:

“Spot Market Energy” shall mean energy bought or sold by Market Participants through the PJM Interchange Energy Market at System Energy Prices determined as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

Standing Committees:

“Standing Committees” shall mean the Members Committee, the committees established and maintained under Operating Agreement, section 8.6, and such other committees as the Members Committee may establish and maintain from time to time.

Start Fuel:

For units without a soak process, “Start Fuel” shall consist of fuel consumed from first fire of the start process to first breaker closing, plus any fuel expended from last breaker opening to shutdown.

For units with a soak process, “Start Fuel” is fuel consumed from first fire of the start process (initial reactor criticality for nuclear units) to dispatchable output (including auxiliary boiler fuel), plus any fuel expended from last breaker opening to shutdown, excluding normal plant heating/auxiliary equipment fuel requirements. Start Fuel included for each temperature state from breaker closure to dispatchable output shall not exceed the unit specific soak time period reviewed and approved as part of the unit-specific parameter process detailed in Tariff, Attachment K-Appendix, section 6.6(c) or the defaults below:

- Cold Soak Time = $0.73 \times \text{unit specific Minimum Run Time (in hours)}$
- Intermediate Soak Time = $0.61 \times \text{unit specific Minimum Run Time (in hours)}$
- Hot Soak Time = $0.43 \times \text{unit specific Minimum Run Time (in hours)}$

Start-Up Costs:

“Start-Up Costs” shall consist primarily of the cost of fuel, as determined by the unit’s start heat input (adjusted by the performance factor) times the fuel cost. It also includes operating costs, Maintenance Adders, emissions allowances/adders, and station service cost. Start-Up Costs can vary with the unit offline time being categorized in three unit temperature conditions: hot, intermediate and cold.

For units with a steam turbine and a soak process (nuclear, steam, and combined cycle), “Start Fuel” is fuel consumed from first fire of start process (initial reactor criticality for nuclear units):

Start-Up Costs shall mean the net unit costs from PJM's notification to the level at which the unit can follow PJM's dispatch, and from last breaker open to shutdown.

For units without a steam turbine and no soak process (engines, combustion turbines, Intermittent Resources, and Energy Storage Resources): Start-Up Costs shall mean the unit costs from PJM's notification to first breaker close and from last breaker open to shutdown.

State:

"State" shall mean the District of Columbia and any State or Commonwealth of the United States.

State Certification:

"State Certification" shall mean the Certification of an Authorized Commission, pursuant to Operating Agreement, section 18, the form of which is appended to the Operating Agreement as Operating Agreement, Schedule 10A, wherein the Authorized Commission identifies all Authorized Persons employed or retained by such Authorized Commission, a copy of which shall be filed with FERC.

State Consumer Advocate:

"State Consumer Advocate" shall mean a legislatively created office from any State, all or any part of the territory of which is within the PJM Region, and the District of Columbia established, inter alia, for the purpose of representing the interests of energy consumers before the utility regulatory commissions of such states and the District of Columbia and the FERC.

State Estimator:

"State Estimator" shall mean the computer model of power flows specified in Operating Agreement, Schedule 1, section 1.11A, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.11A.

State of Charge:

"State of Charge" shall mean the quantity of physical energy stored in an Energy Storage Resource Model Participant or in a storage component of a Hybrid Resource in proportion to its maximum State of Charge capability. State of Charge is quantified as defined in the PJM Manuals.

State of Charge Management:

"State of Charge Management" shall mean the control of State of Charge of an Energy Storage Resource Market Participant or a storage component of a Hybrid Resource using minimum and maximum discharge (and, as applicable, charge) limits, changes in operating mode (as applicable), discharging (and, as applicable, charging) offer curves, and self-scheduling of non-

dispatchable sales (and, as applicable, purchases) of energy in the PJM markets. State of Charge Management shall not interfere with the obligation of a Market Seller of an Energy Storage Resource Model Participant or of a Hybrid Resource to follow PJM dispatch, consistent with all other resources.

Station Power:

“Station Power” shall mean energy used for operating the electric equipment on the site of a generation facility located in the PJM Region or for the heating, lighting, air-conditioning and office equipment needs of buildings on the site of such a generation facility that are used in the operation, maintenance, or repair of the facility. Station Power does not include any energy (i) used to power synchronous condensers; (ii) used for pumping at a pumped storage facility; (iii) used in association with restoration or black start service; or (iv) that is Direct Charging Energy.

Sub-meter:

“Sub-meter” shall mean a metering point for electricity consumption that does not include all electricity consumption for the end-use customer as defined by the electric distribution company account number. PJM shall only accept sub-meter load data from end-use customers for measurement and verification of Regulation service as set forth in the Economic Load Response rules and PJM Manuals.

Subregional RTEP Project:

“Subregional RTEP Project” shall mean a transmission expansion or enhancement rated below 230 kV which is required for compliance with the following PJM criteria: system reliability, operational performance or economic criteria, pursuant to a determination by the Office of the Interconnection.

Supplemental Project:

“Supplemental Project” shall mean a transmission expansion or enhancement that is not required for compliance with the following PJM criteria: system reliability, operational performance or economic criteria, pursuant to a determination by the Office of the Interconnection and is not a state public policy project pursuant to Operating Agreement, Schedule 6, section 1.5.9(a)(ii). Any system upgrades required to maintain the reliability of the system that are driven by a Supplemental Project are considered part of that Supplemental Project and are the responsibility of the entity sponsoring that Supplemental Project.

Synchronized Reserve:

“Synchronized Reserve” shall mean the reserve capability of generation resources that can be converted fully into energy or Economic Load Response Participant resources whose demand can be reduced within ten minutes from the request of the Office of the Interconnection dispatcher, and is provided by equipment that is electrically synchronized to the Transmission System.

Synchronized Reserve Event:

“Synchronized Reserve Event” shall mean a request from the Office of the Interconnection to generation resources and/or Economic Load Response Participant resources able, assigned or self-scheduled to provide Synchronized Reserve in one or more specified Reserve Zones or Reserve Sub-zones, within ten minutes, to increase the energy output or reduce load by a directed amount of the assigned or self-scheduled Synchronized Reserve.

Synchronized Reserve Requirement:

“Synchronized Reserve Requirement” shall mean the megawatts required to be maintained in a Reserve Zone or Reserve Sub-zone as Synchronized Reserve, absent any increase to account for additional reserves scheduled to address operational uncertainty. The Synchronized Reserve Requirement is calculated in accordance with the PJM Manuals. This requirement can only be satisfied by Synchronized Reserve resources.

System:

“System” shall mean the interconnected electric supply system of a Member and its interconnected subsidiaries exclusive of facilities which it may own or control outside of the PJM Region. Each Member may include in its system the electric supply systems of any party or parties other than Members which are within the PJM Region, provided its interconnection agreements with such other party or parties do not conflict with such inclusion.

System Energy Price:

“System Energy Price” shall mean the energy component of the Locational Marginal Price, which is the price at which the Market Seller has offered to supply an additional increment of energy from a resource, calculated as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

Target Allocation:

“Target Allocation” shall mean the allocation of Transmission Congestion Credits as set forth in Operating Agreement, Schedule 1, section 5.2.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.3 or the allocation of Auction Revenue Rights Credits as set forth in Operating Agreement, Schedule 1, section 7.4.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.3.

Third Party Request:

“Third Party Request” shall mean any request or demand by any entity upon an Authorized Person or an Authorized Commission for release or disclosure of confidential information provided to the Authorized Person or Authorized Commission by the Office of the Interconnection or the Market Monitoring Unit. A Third Party Request shall include, but shall not be limited to, any subpoena,

discovery request, or other request for confidential information made by any: (i) federal, state, or local governmental subdivision, department, official, agency or court, or (ii) arbitration panel, business, company, entity or individual.

Tie Line:

“Tie Line” shall have the same meaning provided in the Open Access Transmission Tariff.

Total Lost Opportunity Cost Offer:

“Total Lost Opportunity Cost Offer” shall mean the applicable offer used to calculate lost opportunity cost credits. For pool-scheduled resources specified in PJM Operating Agreement, Schedule 1, section 3.2.3(f-1) and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(f-1), the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, as determined by the greater of the Committed Offer or last Real-Time Offer submitted for the offer on which the resource was committed in the Day-ahead Energy Market for each hour in an Operating Day. For all other pool-scheduled resources, the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, as determined by the offer curve associated with the greater of the Committed Offer or Final Offer for each hour in an Operating Day. For self-scheduled generation resources, the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, where for self-scheduled generation resources (a) operating pursuant to a cost-based offer, the applicable offer curve shall be the greater of the originally submitted cost-based offer or the cost-based offer that the resource was dispatched on in real-time; or (b) operating pursuant to a market-based offer, the applicable offer curve shall be determined in accordance with the following process: (1) select the greater of the cost-based day-ahead offer and updated costbased Real-time Offer; (2) for resources with multiple cost-based offers, first, for each cost-based offer select the greater of the day-ahead offer and updated Real-time Offer, and then select the lesser of the resulting cost-based offers; and (3) compare the offer selected in (1), or for resources with multiple cost-based offers the offer selected in (2), with the market-based day-ahead offer and the market-based Real-time Offer and select the highest offer.

Total Operating Reserve Offer:

“Total Operating Reserve Offer” shall mean the applicable offer used to calculate Operating Reserve credits. The Total Operating Reserve Offer shall equal the sum of all individual Real-time Settlement Interval energy offers, inclusive of Start-Up Costs (shut-down costs for Demand Resources) and No-load Costs, for every Real-time Settlement Interval in a Segment, integrated under the applicable offer curve up to the applicable megawatt output as further described in the PJM Manuals. The applicable offer used to calculate day-ahead Operating Reserve credits shall be the Committed Offer, and the applicable offer used to calculate balancing Operating Reserve credits shall be lesser of the Committed Offer or Final Offer for each hour in an Operating Day.

Transmission Congestion Charge:

“Transmission Congestion Charge” shall mean a charge attributable to the increased cost of energy delivered at a given load bus when the transmission system serving that load bus is operating under constrained conditions, or as necessary to provide energy for third-party transmission losses, which shall be calculated and allocated as specified in Operating Agreement, Schedule 1, section 5.1, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.1.

Transmission Congestion Credit:

“Transmission Congestion Credit” shall mean the allocated share of total Transmission Congestion Charges credited to each FTR Holder, calculated and allocated as specified in Operating Agreement, Schedule 1, section 5.2 and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.

Transmission Customer:

“Transmission Customer” shall have the meaning set forth in the PJM Tariff.

Transmission Facilities:

“Transmission Facilities” shall mean facilities that: (i) are within the PJM Region; (ii) meet the definition of transmission facilities pursuant to FERC’s Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities; and (iii) have been demonstrated to the satisfaction of the Office of the Interconnection to be integrated with the PJM Region transmission system and integrated into the planning and operation of the PJM Region to serve all of the power and transmission customers within the PJM Region.

Transmission Forced Outage:

“Transmission Forced Outage” shall mean an immediate removal from service of a transmission facility by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the transmission facility, as specified in the relevant portions of the PJM Manuals. A removal from service of a transmission facility at the request of the Office of the Interconnection to improve transmission capability shall not constitute a Forced Transmission Outage.

Transmission Loading Relief:

“Transmission Loading Relief” shall mean NERC’s procedures for preventing operating security limit violations, as implemented by PJM as the security coordinator responsible for maintaining transmission security for the PJM Region.

Transmission Loss Charge:

“Transmission Loss Charge” shall mean the charges to each Market Participant, Network Customer, or Transmission Customer for the cost of energy lost in the transmission of electricity from a generation resource to load as specified in Operating Agreement, Schedule 1, section 5, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.

Transmission Operator:

“Transmission Operator” shall have the same meaning set forth in the NERC Glossary of Terms used in NERC Reliability Standards.

Transmission Owner:

“Transmission Owner” shall mean a Member that owns or leases with rights equivalent to ownership Transmission Facilities and is a signatory to the PJM Transmission Owners Agreement. Taking transmission service shall not be sufficient to qualify a Member as a Transmission Owner.

Transmission Owner Upgrade:

“Transmission Owner Upgrade” shall mean an upgrade to a Transmission Owner’s own transmission facilities, which is an improvement to, addition to, or replacement of a part of, an existing facility and is not an entirely new transmission facility.

Transmission Planned Outage:

“Transmission Planned Outage” shall mean any transmission outage scheduled in advance for a pre-determined duration and which meets the notification requirements for such outages specified in Operating Agreement, Schedule 1, and the parallel provisions of Tariff, Attachment K-Appendix, or the PJM Manuals.

Turn Down Ratio:

“Turn Down Ratio” shall mean the ratio of a generating unit’s economic maximum megawatts to its economic minimum megawatts.

1.4B DER Aggregator Participation Model

(a) DER Aggregators providing capacity using a DER Capacity Aggregation Resource shall be subject to the Day-ahead Energy Market must-offer requirement described in Tariff, Attachment K-Appendix, section 1.10.1A(d) and Operating Agreement, Schedule 1, section 1.10.1A(d), based on the technology of the Component DER within the DER Aggregation Resource linked to the DER Capacity Aggregation Resource, in accordance with the PJM Manuals.

(b) DER Aggregation Resources are subject to offer price cap and associated three pivotal supplier test provisions of Operating Agreement, Schedule 1, section 6.4.

(c) A DER Capacity Aggregation Resource shall be subject to a MOPR Floor Offer Price in accordance with the provisions applicable to MOPR Floor Offer Price for Generation Capacity Resources, as described in Tariff, Attachment DD, section 5.14(h-2), and Market Seller Offer Cap for Generation Capacity Resources in a manner consistent with the provisions applicable to Market Seller Offer Cap for Generation Capacity Resources, as described in Tariff, Attachment DD, section 6.4 and Tariff, Attachment M-Appendix, section II.E, based on the underlying technology of the Component DER.

A DER Capacity Aggregation Resource may segment offers for the Component DER subject to mitigation, based on the underlying technology of the Component DER in the DER Capacity Aggregation Resource, and further described in the PJM Manuals.

If a DER Capacity Aggregation Resource is subject to the Minimum Floor Offer Price pursuant to Tariff, Attachment DD, sections 5.14(h-2), the Capacity Market Seller that owns or controls such resources may submit a Sell Offer with a Minimum Floor Offer Price of no lower than the MW-weighted average of the applicable MOPR Floor Offer Prices (zero if not applicable) of the aggregated resources in such Sell Offer.

(d) Projected PJM Market Revenues for DER Capacity Aggregation Resources subject to the Minimum Floor Offer Price or Market Seller Offer Cap shall be determined in accordance with Tariff, Attachment DD, section 6.8(d).

Revisions to the
PJM Open Access Transmission Tariff
Effective February 1, 2028

(Clean Format)

ATTACHMENT N-4

**FORM DER AGGREGATOR PARTICIPATION
SERVICE AGREEMENT**

Service Agreement No. []

DER AGGREGATOR PARTICIPATION SERVICE AGREEMENT
Among
PJM INTERCONNECTION, L.L.C.
And
[Name of DER Aggregator]

DER AGGREGATOR PARTICIPATION SERVICE AGREEMENT

**By and Among
PJM Interconnection, L.L.C.
And
[Name of DER Aggregator]**

- 1.0 This DER Aggregator Participation Service Agreement (“DAPSA”), dated and effective as of _____, is entered into, by and between, the following entities (hereinafter referred to individually as “Party” or collectively as “the Parties”), for purposes of facilitating the participation of a DER Aggregator in the energy, capacity, and/or ancillary services markets of PJM through the DER Aggregator Participation Model, as described in Tariff, Attachment K-Appendix, Operating Agreement, Schedule 1, and the PJM Manuals (“DER Aggregator Participation Service”).
- a. PJM Interconnection, L.L.C. (“PJM”), the Regional Transmission Organization for the PJM Region, administrator of the DER Aggregator Participation Model, provider of DER Aggregator Participation Service, and a NERC-registered Reliability Coordinator, Balancing Authority, and Transmission Operator; and
 - b. [Name of DER Aggregator], the DER Aggregator taking DER Aggregator Participation Service from PJM; and
- 2.0 In consideration of the mutual covenants herein contained, together with other good and valuable consideration, the receipt and sufficiency of which is hereby mutually acknowledged by PJM and the DER Aggregator the Parties agree as follows:
- a. PJM shall provide DER Aggregator Participation Service to the DER Aggregator, in accordance with the applicable provisions of the PJM Tariff, Attachment K-Appendix, Operating Agreement, Schedule 1, and the PJM Manuals.
 - b. The DER Aggregator has met all requisite qualification and eligibility criteria for receiving DER Aggregator Participation Service from PJM, shall comply with all operational and safety directives of PJM, and shall comply with all applicable provisions of the PJM Tariff, Attachment K-Appendix, Operating Agreement, Schedule 1, and the PJM Manuals. The DER Aggregator attests that it is currently, and will remain, in full compliance with the tariffs, agreements, and operating procedures of the applicable Electric Distribution Company, and the rules and regulations of any Relevant Electric Retail Regulatory Authority, during the term of this DAPSA.
- 3.0 Service under this DAPSA shall commence on the later of: (i) the date it is executed and made effective by the Parties, as indicated below in Section 6.0 and above in Section 1.0; or (ii) if this DAPSA is filed with the Commission unexecuted by one

Party, upon the date it is permitted to become effective by the Commission. Service under this DAPSA shall terminate in accordance with the applicable provisions of the PJM Tariff and Operating Agreement, including, but not limited to, Operating Agreement, section 15.1, on such date as mutually agreed upon by the Parties, or as otherwise established by the Commission.

4.0 All portions of the Tariff and the Operating Agreement pertinent to the subject matter of this DAPSA and not otherwise made a part hereof are hereby incorporated herein and made a part hereof.

5.0 Any notice or request made to or by any Party regarding this DAPSA shall be made to the representatives of another Party as indicated below.

PJM:

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403-2497

DER Aggregator:

6.0 IN WITNESS WHEREOF, the Parties have caused this DAPSA to be executed by their respective authorized officials.

PJM: **PJM Interconnection, L.L.C.**

By: _____
Name Title Date

Printed name of signer:

DER Aggregator: **[Name]**

By: _____
Name Title Date

Printed name of signer:

11B DER CAPACITY AGGREGATION RESOURCE TEST FAILURE CHARGE

Each DER Capacity Aggregation Resource committed in a Delivery Year shall be obligated to simultaneously test all applicable Component DER within the aggregation, on an annual basis, as described in the PJM Manuals. The DER Aggregator may perform an unlimited number of tests during each such period. The Office of Interconnection may, at its discretion, cancel a test and allow a retest, to ensure system reliability. The DER Aggregator shall notify the applicable electric distribution company at least seven business days prior to each such test, and the electric distribution company may cancel the test consistent with Tariff, Attachment K-Appendix, section 1.4B(f). If none of the tests during a testing period certify full delivery of the megawatt amount of nominated capacity the DER Aggregator committed, for such Delivery Year, the DER Aggregator shall be assessed a DER Capacity Aggregation Resource Test Failure Charge equal to the net capability testing shortfall, multiplied by the DER Capacity Aggregation Resource Test Failure Charge rate.

The DER Capacity Aggregation Resource Test Failure Charge rate shall equal such Seller's Weighted Daily Revenue Rate in such Zone for the DER Capacity Aggregation Resource that tested plus the greater of (0.20 times the Weighted Daily Revenue Rate in such Zone for the product(s) tested or \$20/MW-day); provided, however, if a resource is unavailable during the Delivery Year at less than the level committed in the Market Seller's cleared Sell Offer or Locational UCAP Seller's Location UCAP sale, then such seller shall not be assessed a charge under this section to the extent (i.e., for the same megawatts and time period) that such seller is assessed a Capacity Resource deficiency charge pursuant to Tariff, Attachment DD, section 8 for such unavailability; and provided further that a resource that is subject to a charge under this section that is also subject to a charge under Tariff, Attachment DD, section 10A hereof for a Performance Shortfall during one or more Performance Assessment Intervals occurring during the period of testing shortfall addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Tariff, Attachment DD, section 10A, but shall not be assessed a charge under both this section and Tariff, Attachment DD, section 10A for such simultaneous occurrence of a testing shortfall and Performance Shortfall. Such charge shall be assessed daily and charged monthly (or otherwise in accordance with customary PJM billing practices in effect at the time); provided, however, that a lump sum payment may be required to reflect amounts due, as a result of a test failure, from the start of the Delivery Year to the day that charges are reflected in regular billing.

Revenues collected from assessment of DER Capacity Aggregation Resource Test Failure Charges shall be distributed to Load Serving Entities that were charged a Locational Reliability Charge for the Delivery Year for which the DER Aggregation Test Failure Charge was assessed, pro-rata based on such Load Serving Entities' Daily Unforced Capacity Obligations.

Revisions to the
PJM Reliability Assurance Agreement
Effective February 1, 2028

(Clean Format)

G. Capacity Resource Performance

1. Any Capacity Resource committed by an FRR Entity in an FRR Capacity Plan for a Delivery Year shall be subject during such Delivery Year to the charges set forth in Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 10A, Tariff, Attachment DD, section 11A, Tariff, Attachment DD, section 11B, and Tariff, Attachment DD, section 13; provided, however: (i) the Daily Deficiency Rate under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 11A, and Tariff, Attachment DD, section 13, and the Daily Revenue Rate under Tariff, Attachment DD, section 11B shall be 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions); and (ii) the charges set forth in Tariff, Attachment DD, section 10A shall apply, only to those FRR Entities which opted to be subject to the Non-Performance Charge under section C.1 of this Schedule 8.1. An FRR Entity shall have the same opportunities to cure deficiencies and avoid or reduce associated charges during the Delivery Year that a Market Seller has under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 10A, Tariff, Attachment DD, section 11A, and Tariff, Attachment DD, section 11B. An FRR Entity may cure deficiencies and avoid or reduce associated charges prior to the Delivery Year by procuring replacement Unforced Capacity outside of any RPM Auction and committing such capacity in its FRR Capacity Plan.

2. For any FRR Entity which opted to be subject to physical non-performance assessments under RAA, Schedule 8.1, section C.1, such FRR Entity will not be subject to charges under Tariff, Attachment DD, section 10A, but, rather, it will be required to update its FRR Capacity Plan with additional megawatts of Capacity Performance Resources or Seasonal Capacity Performance Resources determined in accordance with the following: For each Performance Assessment Interval, the Actual Performance and Expected Performance of each resource contained in an FRR Entity's FRR Capacity Plan or Price Responsive Demand committed to reduce the FRR Entity's unforced capacity obligation (for the 2022/2023 Delivery Year and subsequent Delivery Years) will be determined in the same fashion as prescribed by the Tariff, Attachment DD, section 10A, and for such hour, a net Performance Shortfall shall be determined separately for Capacity Performance Resources and for Base Capacity Resources. If, for a Performance Assessment Interval, the combined Actual Performance of all an FRR Entity's committed Capacity Performance Resources or Price Responsive Demand committed by the FRR Entity (for the 2022/2023 Delivery Year and subsequent Delivery Years) exceeds the Expected Performance of such resources or Price Responsive Demand, then such over-performance may be applied to any Performance Shortfall experienced by such FRR Entity's Base Capacity Resources for such hour. If, for a Performance Assessment Interval, the combined Actual Performance of all an FRR Entity's committed Base Capacity Resources exceeds the Expected Performance of such resources, then such over-performance may be applied to any Performance Shortfall experienced by such FRR Entity's Capacity Performance Resources or Price Responsive Demand committed by the FRR Entity (for the 2022/2023 Delivery Year and subsequent Delivery Years) for such hour. For the 2020/2021 Delivery Year, the net Performance Shortfall determined for Capacity Performance Resources and Price Responsive Demand shall include the performance of Seasonal Capacity Performance Resources contained in the FRR Capacity Plan.

The FRR Entity's net Performance Shortfall among Capacity Performance Resources or Price Responsive Demand, if any, for each such Performance Assessment Interval shall be multiplied by a rate of 0.00139 MWs/Performance Assessment Interval to establish the additional MW quantities of Capacity Performance Resources, Seasonal Capacity Performance Resources, or Price Responsive Demand that such FRR Entity must add to its FRR Capacity Plan for the next Delivery Year. Notwithstanding the foregoing, the total additional MWs required as a result of non-performance by the FRR Entity's Capacity Performance Resources in any Delivery Year shall not exceed a MW quantity equal to 0.5 times the MW quantity of the Capacity Performance Resources and Seasonal Capacity Performance Resources that were committed in the FRR Capacity Plan for such Delivery Year and Price Responsive Demand committed such Delivery Year (for the 2022/2023 Delivery Year and subsequent Delivery Years). The FRR Entity's net Performance Shortfall among Base Capacity Resources, if any, for each such Performance Assessment Interval shall be multiplied by a rate of $[(0.00139 \text{ MWs/Performance Assessment Interval}) \times (\text{the Base Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions, divided by the Net CONE established for such LDA for the Delivery Year})]$ to establish the additional MW quantities of Capacity Performance Resources or Seasonal Capacity Performance Resources that such FRR Entity must add to its FRR Capacity Plan for the next Delivery Year. Notwithstanding the foregoing, the total additional MWs required as a result of non-performance by the FRR Entity's Base Capacity Resources in any Delivery Year shall not exceed a MW quantity equal to $[(0.5 \text{ times the MW quantity of the Base Capacity Resources that were committed in the FRR Capacity Plan for such Delivery Year}) \times (\text{the Base Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions, divided by the Net CONE established for such LDA for the Delivery Year})]$.

An FRR Entity that elects the physical option shall not be eligible for, or subject to, the revenue allocation described in Tariff, Attachment DD, section 10A(g).

Attachment C - Item 3 - GDECS Chart of Tariff Revisions

H	Governing Document, Agreement, Attachment, Section, Title	Current Language	Proposed Revisions	Rationale/Notes
1	Tariff, Att. DD, Section 5.5A (d) (ii)	<p>ii) Winter-Period Capacity Performance Resource</p> <p>For the 2020/2021 Delivery Year and subsequent Delivery Years, the following types of Capacity Resources are eligible to submit a Sell Offer as a Winter-Period Capacity Performance Resource: Capacity Storage Resource, Intermittent Resource, and Environmentally-Limited Resource that has an average expected energy output during winter peak-hour periods consistently and measurably greater than its average expected energy output during summer peak-hour periods. To the extent such resource clears an RPM Auction or is otherwise committed as a Winter-Period Capacity Performance Resource, it is obligated to deliver energy as scheduled and/or dispatched by the Office of Interconnection during Performance Assessment Intervals occurring in the calendar months of November through April of the Delivery Year, and must satisfy the requirements of a Capacity Performance Resource for such period of time. As further detailed in Tariff, Attachment DD, section 10A, Winter-Period Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Charge, unless excused pursuant to Tariff, Attachment DD, section 10A(d).</p>	<p>ii) Winter-Period Capacity Performance Resource</p> <p>For the 2020/2021 Delivery Year and subsequent Delivery Years, The following types of Capacity Resources are eligible to submit a Sell Offer as a Winter-Period Capacity Performance Resource: Capacity Storage Resource, Intermittent Resource that has been granted additional Capacity Interconnection Rights related to the winter-period, and Environmentally-Limited Resource that has an average expected energy output during winter peak-hour periods consistently and measurably greater than its average expected energy output during summer peak-hour periods. To the extent such resource clears an RPM Auction or is otherwise committed as a Winter-Period Capacity Performance Resource, it is obligated to deliver energy as scheduled and/or dispatched by the Office of Interconnection during Performance Assessment Intervals occurring in the calendar months of November through April of the Delivery Year, and must satisfy the requirements of a Capacity Performance Resource for such period of time. As further detailed in Tariff, Attachment DD, section 10A, Winter-Period Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Charge, unless excused pursuant to Tariff, Attachment DD, section 10A(d).</p>	<p>Updates needed to align with removal of categorical must offer exception for Capacity Storage Resources, Intermittent Resources, and Environmentally-Limited Resources in ER25-785. Existing Capacity Storage and Environmentally-Limited Resources are now required to offer in on annual basis. Only Intermittent Resource granted additional CIRs for winter-period will be able to offer in as Winter-Period Capacity Resource.</p>

Item 3 - GDECS Chart of Tariff Revisions

H	Governing Document, Agreement, Attachment, Section, Title	Current Language	Proposed Revisions	Rationale/Notes
2	Tariff, Attachment N-4 (2.0) (b)	b. The DER Aggregator has met all requisite qualification and eligibility criteria for receiving DER Aggregator Participation Service from PJM, shall comply with all operational and safety directives of PJM, and shall comply with all applicable provisions of the PJM Tariff, Attachment K-Appendix, Operating Agreement, Schedule 1, and the PJM Manuals. The DER Aggregator attests that it is currently, and will remain, in full compliance with the tariffs, agreements, and operating procedures of the applicable electric distribution company, and the rules and regulations of any Relevant Electric Retail Regulatory Authority, during the term of this DAPSA.	b. The DER Aggregator has met all requisite qualification and eligibility criteria for receiving DER Aggregator Participation Service from PJM, shall comply with all operational and safety directives of PJM, and shall comply with all applicable provisions of the PJM Tariff, Attachment K-Appendix, Operating Agreement, Schedule 1, and the PJM Manuals. The DER Aggregator attests that it is currently, and will remain, in full compliance with the tariffs, agreements, and operating procedures of the applicable E electric D istribution C ompany, and the rules and regulations of any Relevant Electric Retail Regulatory Authority, during the term of this DAPSA.	“Electric Distribution Company” is a defined terms in the Tariff. As such, it needs to be capitalized. “Electric Distribution Company” will be a defined term in the Tariff, effective February 1, 2028, pursuant to FERC’s acceptance of PJM’s compliance filing in Docket No. ER22-962-008. As such, it needs to be capitalized, effective February 1, 2028.
3	Tariff, Attachment Q (VI) (B) (3) (a)	(a) For Planned Demand Resources and Energy Efficiency Resources, the RPM Auction Credit requirement will be reduced in direct proportion to the megawatts of such Demand Resource that the Resource Provider qualifies as a Capacity Resource, in accordance with the procedures established under the Reliability Assurance Agreement.	(a) For Planned Demand Resources, Planned DER Capacity Aggregation Resources and Energy Efficiency Resources, the RPM Auction Credit requirement will be reduced in direct proportion to the megawatts of such Demand Resource and DER Capacity Aggregation Resource that the Resource Provider qualifies as a Capacity Resource, in accordance with the procedures established under the Reliability Assurance Agreement.	PJM erroneously did not include language regarding ability of a Planned DER Capacity Aggregation Resource to reduce its credit requirement. <i>See also</i> RAA, Article 1, Definitions “Planned DER Capacity Aggregation Resource”.
4	Tariff, Article 1, Definitions R-S and parallel provisions in OA, Article 1, Definitions S-T	State Estimator: "State Estimator" shall mean the computer model of power flows specified in Operating Agreement, Schedule 1, section 2.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.3.	State Estimator: "State Estimator" shall mean the computer model of power flows specified in Operating Agreement, Schedule 1, section 1.11A2.3 , and the parallel provisions of Tariff, Attachment K-Appendix, section 1.11A2.3 .	On May 17, 2021, in Docket No. ER21-1919-000, PJM moved the explanation of State Estimator from Tariff, Attachment K-Appendix, section 2.3, and OA, Schedule 1, section 2.3, to section 1.11A of those sections, respectively. However, that filing erroneously did not correct the reference citation in the definition.

Item 3 - GDECS Chart of Tariff Revisions

H	Governing Document, Agreement, Attachment, Section, Title	Current Language	Proposed Revisions	Rationale/Notes
5	Tariff, Attachment DD, section 11B	The DER Capacity Aggregation Resource Test Failure Charge rate shall equal such Seller’s Weighted Daily Revenue Rate in such Zone for the DER Capacity Aggregation Resource that tested plus the greater of (0.20 times the Weighted Daily Revenue Rate in such Zone for the product(s) tested or \$20/MW-day). Such charge shall be assessed daily and charged monthly (or otherwise in accordance with customary PJM billing practices in effect at the time); provided, however, that a lump sum payment may be required to reflect amounts due, as a result of a test failure, from the start of the Delivery Year to the day that charges are reflected in regular billing.	The DER Capacity Aggregation Resource Test Failure Charge rate shall equal such Seller’s Weighted Daily Revenue Rate in such Zone for the DER Capacity Aggregation Resource that tested plus the greater of (0.20 times the Weighted Daily Revenue Rate in such Zone for the product(s) tested or \$20/MW-day); provided, however, if a resource is unavailable during the Delivery Year at less than the level committed in the Market Seller’s cleared Sell Offer or Locational UCAP Seller’s Location UCAP sale, then such seller shall not be assessed a charge under this section to the extent (i.e., for the same megawatts and time period) that such seller is assessed a Capacity Resource deficiency charge pursuant to Tariff, Attachment DD, section 8 for such unavailability; and provided, however, further that a resource that is subject to a charge under this section that is also subject to a charge under Tariff, Attachment DD, section 10A hereof for a Performance Shortfall during one or more Performance Assessment Intervals occurring during the period of resource deficiency testing shortfall addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Tariff, Attachment DD, section 10A, but shall not be assessed a charge under both this section and Tariff, Attachment DD, section 10A for such simultaneous occurrence of a resource deficiency testing shortfall and Performance Shortfall. Such charge shall be assessed daily and charged monthly (or otherwise in accordance with customary PJM billing practices in effect at the time); provided, however, that a lump sum payment may be required to reflect amounts due, as a result of a test	This correction conforms with existing language located in Tariff, Attachment DD, sections 7.1(b-1) and 8.2 that is applied to all other committed Capacity Resources to ensure that resources are not double penalized for both (1) Capacity Resource Deficiency Charges and Test Failure Charges and (2) Non-Performance Charges and Test Failure Charges. Instead, a resource would simply not be charged Test Failure Charges if charged Capacity Resource Deficiency Charges for same megawatts and time period and would be charged the higher of the two Test Failure Charges or Non-Performance Charges, consistent with the approach for all committed Capacity Resources. As this section becomes effective February 1, 2028, pursuant to FERC’s acceptance of PJM’s compliance filing in Docket No. ER22-962-008, this proposed clarification would also become effective February 1, 2028.

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H	Governing Document, Agreement, Attachment, Section, Title	Current Language	Proposed Revisions	Rationale/Notes
			failure, from the start of the Delivery Year to the day that charges are reflected in regular billing.	
6	Tariff, Schedule 6A(6)(i)	6. (i) Owners of Black Start Units selected to provide Black Start Service prior to June 6, 2021, in accordance with section 4 of this Schedule 6A 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 Table in section 18 of this Schedule 6A.	6. (i) Owners of Black Start Units selected to provide Black Start Service making capital investment prior to June 6, 2021, in order to provide or continue to provide Black Start Service in accordance with section 4 of this Schedule 6A 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 Table in section 18 of this Schedule 6A.	<p>The proposed language aligns with PJM's intent and provides clarification related to capital investments for Black Start units. This clarification will align the time period of the capital investment to the currently effective CRF.</p> <p>The proposed GDECS changes align with FERC's Order in Docket No. ER21-1635-001 and EL21-91-000, deciding that the CRF should align with when the capital investment was made and not when the unit was originally selected for Black Start.</p>
7	Tariff, Schedule 6A(6)(ii)	(ii) Owners of Black Start Units selected to provide Black Start Service after June 6, 2021, in accordance with Schedule 6A, 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 an initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment.	(ii) Owners of Black Start Units selected making capital investment after June 6, 2021, in order to provide Black Start Service after June 6, 2021 , in accordance with Schedule 6A, 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 an initial capital recovery period based upon the age of the Black Start Unit plus the remaining life of the Black Start equipment.	<p>The proposed language aligns with PJM's intent and provides clarification related to capital investments for Black Start units. This clarification will align the time period of the capital investment to the currently effective CRF.</p> <p>The proposed GDECS changes align with FERC's Order in Docket No. ER21-1635-001 and EL21-91-000, deciding that the CRF should align with when the capital</p>

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H	Governing Document, Agreement, Attachment, Section, Title	Current Language	Proposed Revisions	Rationale/Notes
				investment was made and not when the unit was originally selected for Black Start.
8	Tariff, Schedule 6A(18)	<p>The CRF applicable to Black Start Capital Costs of Black Start Units selected for Black Start Service prior to June 6, 2021, shall continue to be determined in accordance with the following table:</p> <p style="text-align: center;">-----</p> <p>The CRF applicable to Black Start Capital Costs and/or for Fuel Assurance Capital Costs, of Black Start Units selected for Black Start Service after June 6, 2021, shall be updated annually on March 1 (if March 1 is not a Business day then the first Business Day after March 1) for (i) federal income tax rates as utilized by the U.S. Internal Revenue Service in effect at the time of the annual CRF update; (ii) average state tax rate; and (iii) debt interest rates and shall be posted on the PJM website by March 31 each year as shown in the table below.</p>	<p>The CRF applicable to Black Start Capital Costs of Black Start Units selected for Black Start Servicemaking capital investment prior to June 6, 2021 in order to provide or continue to provide Black Start Service, shall continue to be determined in accordance with the following table:</p> <p style="text-align: center;">-----</p> <p>The CRF applicable to Black Start Capital Costs and/or for Fuel Assurance Capital Costs, of Black Start Units making capital investment after June 6, 2021 to provide or continue to provide selected for Black Start Service after June 6, 2021, shall be updated annually on March 1 (if March 1 is not a Business day then the first Business Day after March 1) for (i) federal income tax rates as utilized by the U.S. Internal Revenue Service in effect at the time of the annual CRF update; (ii) average state tax rate; and (iii) debt interest rates and shall be posted on the PJM website by March 31 each year as shown in the table below.</p>	<p>The proposed language aligns with PJM's intent and provides clarification related to capital investments for Black Start units. This clarification will align the time period of the capital investment to the currently effective CRF.</p> <p>The proposed GDECS changes align with FERC's Order in Docket No. ER21-1635-001 and EL21-91-000, deciding that the CRF should align with when the capital investment was made and not when the unit was originally selected for Black Start.</p>
9	Tariff, Attachment K-Appendix, section 1.4B and Operating Agreement,	(d) Projected PJM Market Revenues for DER Capacity Aggregation Resources subject to the Minimum Floor Offer Price or Market Seller Offer Cap shall be determined in accordance with Tariff, Attachment DD, section 6.8(d-1). The determination of PJM Market Revenues by the Market Monitoring Unit or the Office of the Interconnection shall utilize either the hourly output profiles, or the Projected EAS Dispatch, as appropriate.	(d) Projected PJM Market Revenues for DER Capacity Aggregation Resources subject to the Minimum Floor Offer Price or Market Seller Offer Cap shall be determined in accordance with Tariff, Attachment DD, section 6.8(d-1). The determination of PJM Market Revenues by the Market Monitoring Unit or the Office of the Interconnection shall utilize either the hourly output profiles, or the Projected EAS Dispatch, as appropriate.	This language updates the reference from Tariff, Attachment DD, section 6.8(d-1), which is no longer effective, to the currently effective methodology for calculating energy and ancillary service revenues specified in Tariff, Attachment DD, section 6.8(d). The removal of the last sentence is also consistent with updating the language to reflect the currently

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	Schedule 1, section 1.4B			effective methodology for calculating energy and ancillary service revenues.
10	RAA, Schedule 8.1 G (1)	Any Capacity Resource committed by an FRR Entity in an FRR Capacity Plan for a Delivery Year shall be subject during such Delivery Year to the charges set forth in Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 10A, Tariff, Attachment DD, section 11A, and Tariff, Attachment DD, section 13; provided, however: (i) the Daily Deficiency Rate under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 11A, and Tariff, Attachment DD, section 13 shall be 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions); and (ii) the charges set forth in Tariff, Attachment DD, section 10A shall apply, only to those FRR Entities which opted to be subject to the Non-Performance Charge under section C.1 of this Schedule 8.1. An FRR Entity shall have the same opportunities to cure deficiencies and avoid or reduce associated charges during the Delivery Year that a Market Seller has under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 10A, and Tariff, Attachment DD, section 11A. An FRR Entity may cure deficiencies and avoid or reduce associated charges prior to the Delivery Year by procuring replacement Unforced Capacity outside of any RPM Auction and committing such capacity in its FRR Capacity Plan.	Any Capacity Resource committed by an FRR Entity in an FRR Capacity Plan for a Delivery Year shall be subject during such Delivery Year to the charges set forth in Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 10A, Tariff, Attachment DD, section 11A, Tariff, Attachment DD, section 11B , and Tariff, Attachment DD, section 13; provided, however: (i) the Daily Deficiency Rate under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 11A, and Tariff, Attachment DD, section 13, and the Daily Revenue Rate under Tariff, Attachment DD, section 11B shall be 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions); and (ii) the charges set forth in Tariff, Attachment DD, section 10A shall apply, only to those FRR Entities which opted to be subject to the Non-Performance Charge under section C.1 of this Schedule 8.1. An FRR Entity shall have the same opportunities to cure deficiencies and avoid or reduce associated charges during the Delivery Year that a Market Seller has under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 7A, Tariff, Attachment DD, section 10A, and Tariff, Attachment DD, section 11A, and Tariff Attachment DD, section 11B . An FRR Entity may cure deficiencies and avoid or reduce associated charges prior to the	This amendment is needed to clarify the test failure charge rate that is applicable to a DER Capacity Aggregation Resource committed in an FRR Plan and provides the applicable FRR Entity with the same opportunities that a Capacity Market Seller has to cure deficiencies for DER Capacity Aggregation Resource committed through the RPM Auctions. As section Tariff, Attachment DD, section 11B becomes effective February 1, 2028, pursuant to FERC's acceptance of PJM's compliance filing in Docket No. ER22-962-008, this proposed clarification would also become effective February 1, 2028.

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			Delivery Year by procuring replacement Unforced Capacity outside of any RPM Auction and committing such capacity in its FRR Capacity Plan.	