



1200 G Street, N.W., Suite 600
Washington, D.C. 20005-3898
Phone: 202.393.1200
Fax: 202.393.1240
wrightlaw.com

August 14, 2024

VIA ELECTRONIC FILING

Honorable Debbie-Anne A. Reese, Acting Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Re: *PJM Interconnection, L.L.C., Docket No. EL21-91-003*
Notice of Settlement Filing

Dear Secretary Reese:

This letter, being served on all parties to the above-referenced proceeding, confirms that PJM Interconnection, L.L.C. submitted today an eTariff filing of an Offer of Settlement in Docket No. ER21-1635-009 (Accession No. 202408145139) to resolve the issues in the above-referenced docket.

Respectfully submitted,

By: /s/ Ruth M. Porter
Wendy B. Warren
Ruth M. Porter
Wright & Talisman, P.C.
1200 G Street N.W., Suite 600
Washington, D.C. 20005-3802
(202) 393-1200
warren@wrightlaw.com
porter@wrightlaw.com

***Attorneys for
PJM Interconnection, L.L.C.***

August 14, 2024

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service lists compiled by the Secretary in these proceedings.

Dated at Washington, DC, this 14th day of August 2024.

/s/ Ruth M. Porter

Ruth M. Porter
WRIGHT & TALISMAN, P.C.
1200 G Street, N.W., Suite 600
Washington, DC 20005-3898
(202) 393-1200

Attorney for PJM Interconnection, L.L.C.



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Washington, D.C. 20005-3898
Phone: 202.393.1200
Fax: 202.393.1240
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VIA ELECTRONIC FILING

Honorable Debbie-Anne A. Reese, Acting Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Re: *PJM Interconnection, L.L.C., Docket No. ER21-1635-009*
Offer of Settlement in Docket No. EL21-91-003

Dear Secretary Reese:

Pursuant to Rule 602 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.602, PJM Interconnection, L.L.C. ("PJM") hereby files the attached Offer of Settlement ("Settlement") to resolve all issues in the above-referenced proceedings. PJM respectfully requests that these materials be transmitted to the Presiding Judge Joel deJesus in accordance with Rule 602(b)(2)(i).¹

I. DOCUMENTS ENCLOSED

This filing consists of the following:

- This transmittal letter;
- Offer of Settlement;
- Explanatory Statement;
- Attachment A: Affidavit of Glen Boyle;
- Attachment B: Affidavit of Michael Bryson;
- Attachment C: Affidavit of Walter Graf;
- Attachment D: Affidavit of Adrian Kimbrough;
- Attachment E: Affidavit of Christopher Norton;

¹ Rule 602(b)(2)(i) directs the filing of an Offer of Settlement with the Secretary and the Secretary transmits the offer to the presiding officer if the offer is filed after a hearing has been ordered but before the presiding officer certifies the record to the Commission. 18 C.F.R. § 385.602(b)(2)(i).

Honorable Debbie-Anne A. Reese, Acting Secretary

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- Attachment F: Pro forma Tariff Revisions (redline); and
- Attachment G: Pro forma Tariff Revisions (clean).

II. SERVICE

Copies of the Settlement will be electronically served on all parties in the above-referenced proceedings and all persons required to be served in accordance with Rule 602(d).² In accordance with Rule 602(f), comments on this Settlement may be filed not later than September 3, 2024 and reply comments may be filed not later than September 13, 2024, unless otherwise provided by the Commission or the presiding officer.³

Respectfully submitted,

By: /s/ Ruth M. Porter

Ruth M. Porter

Wendy B. Warren

Wright & Talisman P.C.

1200 G Street N.W., Suite 600

Washington, D.C.

porter@wrightlaw.com

warren@wrightlaw.com

Attorneys for

PJM Interconnection, L.L.C.

August 14, 2024

² 18 C.F.R. § 385.602(d).

³ 18 C.F.R. § 385.602(f).

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, DC, this 14th day of August 2024.

/s/ Ruth M. Porter

Ruth M. Porter
WRIGHT & TALISMAN, P.C.
1200 G Street, N.W., Suite 600
Washington, DC 20005-3898
(202) 393-1200

***Attorney for the
PJM Interconnection, L.L.C.***

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.	)	Docket Nos.	EL21-91-003
	)		ER21-1635-00_

OFFER OF SETTLEMENT

August 14, 2024

This Offer of Settlement (“Settlement”) is entered into as of August 14, 2024 by and among PJM Interconnection, L.L.C. (“PJM”), American Municipal Power, Inc., Dynegy Marketing and Trade, LLC, Hazleton Generation, LLC, J-POWER USA Development Co., Ltd., LS Power Development, LLC, PJM Industrial Customer Coalition, and Vistra Corp. (collectively the “Settling Parties”).

This Settlement is filed with the Federal Energy Regulatory Commission (“Commission” or “FERC”), pursuant to Rule 602 of the Commission’s Rules of Practice and Procedure, 18 C.F.R. § 385.602, to resolve all issues in Commission Docket Nos. EL21-91-003, ER21-1635-000, and all related subdockets (the “above-captioned dockets”). The Settling Parties are not aware of any opposition to the Settlement, except by Monitoring Analytics, LLC in its capacity as the Independent Market Monitor (“IMM”) for PJM. The terms and conditions of this Settlement comprise an interrelated package that reflects negotiated compromises among the Settling Parties to achieve an agreed resolution, thereby avoiding the time, expense, and uncertainty of protracted litigation. The Settlement is subject in every particular respect to the conditions set forth herein, and is made with the understanding that each term, including the attachments to this Settlement, is material and integral to the Settlement as a whole.

ARTICLE I BACKGROUND

- 1.1. On April 7, 2021,¹ as amended June 11, 2021,² pursuant to section 205 of the Federal Power Act (“FPA”), PJM filed revisions to Schedule 6A of its Open Access Transmission Tariff (“Tariff”) seeking to revise certain rate and non-rate terms and conditions for the provision of Black Start Service³ in competitive solicitations.⁴ Specifically, PJM proposed to offer a formula-based rate option applicable to generators that PJM selects for Black Start Service in competitive solicitations held after the proposed effective date of June 6, 2021.⁵
- 1.2. On August 10, 2021, the Commission accepted PJM’s proposed revisions to Schedule 6A of its Tariff effective June 6, 2021, to provide a formula-based rate option for Black Start Service on a going-forward basis,⁶ but initiated this proceeding pursuant to FPA section 206 to investigate whether PJM’s existing Capital Recovery Factors (“Legacy CRFs”) in Schedule 6A for units selected to provide Black Start Service prior to the June 6, 2021 effective date for the formula rate, remain just and reasonable following the Tax Cuts and Jobs Act of 2017’s

¹ *PJM Interconnection, L.L.C.*, Tariff, Schedule 6A, Black Start Revisions of PJM Interconnection, L.L.C., Docket No. ER21-1635-000 (Apr. 7, 2021) (“Black Start Filing”).

² *PJM Interconnection, L.L.C.*, Submission of Response to Deficiency Letter, Docket No. ER21-1635-000 (June 11, 2021).

³ Capitalized terms used, but not defined, in this motion have the meaning set forth in the Tariff.

⁴ Black Start Filing at 1-2.

⁵ See Black Start Filing at 1-3.

⁶ *PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,080, at P 1 (2021).

reduction in the federal corporate income tax rate from “a maximum 35% to a flat 21% rate.”⁷ The Commission directed PJM to either “(1) propose revisions to its Black Start Service rates to reflect changes in the federal corporate income tax rate and describe the methodology used for making those revisions; or (2) show cause why it should not be required to do so.”⁸

1.3. The Settling Parties each filed a timely motion to intervene.⁹

1.4. On October 12, 2021, PJM responded to the Commission’s August 10, 2021 order.¹⁰

1.5. On March 24, 2023, the Commission issued an order establishing hearing and settlement judge procedures to determine whether the Legacy CRFs remain just and reasonable in light of the change in the federal corporate income tax rate.¹¹

1.6. On March 31, 2023, the Chief Judge designated Judge Patricia E. Hurt the Settlement Judge and directed Judge Hurt to report on the status of settlement discussions within 60 days.¹²

⁷ *Id.* at PP 46-47.

⁸ *Id.*

⁹ See *PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,194, at P 8, *order on reh’g*, 184 FERC ¶ 61,077 (2023).

¹⁰ *PJM Interconnection, L.L.C.*, PJM Interconnection, L.L.C. Response to Commission’s Show Cause Order, Docket No. EL21-91-000 (Oct. 12, 2021).

¹¹ See generally *PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,194.

¹² *PJM Interconnection, L.L.C.*, Order of Chief Judge Designating Settlement Judge, Docket No. EL21-91-000 (Mar. 31, 2023).

- 1.7. On April 21, 2023, Vistra Corp. and Dynegy Marketing and Trade, LLC (collectively “Vistra”) filed a request for rehearing of the Commission’s March 24, 2023 order establishing a hearing.¹³ The Commission denied Vistra’s request for rehearing by operation of law on May 22, 2023.¹⁴ Vistra filed a petition for review of the March 24, 2023 order and the notice denying rehearing by operation of law on July 17, 2023 in the U.S. Court of Appeals for the District of Columbia Circuit (“D.C. Circuit”).¹⁵
- 1.8. On August 4, 2023, the Commission issued an order addressing the arguments raised by Vistra on rehearing and denied rehearing.¹⁶ Vistra timely filed a petition for review of the August 4, 2023 order in the D.C. Circuit.¹⁷ The D.C. Circuit consolidated Vistra’s petitions for review on August 23, 2023.¹⁸ The consolidated petitions for review remain pending before the D.C. Circuit.
- 1.9. Judge Hurt convened formal settlement conferences on April 25, July 18, and August 22, 2023.¹⁹ The participants were unable to reach an agreement during

¹³ *PJM Interconnection, L.L.C.*, Request for Rehearing of Vistra Corp. and Dynegy Marketing and Trade, LLC, Docket No. EL21-91-000 (Apr. 21, 2023).

¹⁴ *PJM Interconnection, L.L.C.*, 183 FERC ¶ 62,094 (2023).

¹⁵ Petition for Review, *Vistra Corp. v. FERC*, Case No. 23-1186 (D.C. Cir. July 17, 2023).

¹⁶ *PJM Interconnection, L.L.C.*, 184 FERC ¶ 61,077 (2023).

¹⁷ Petition for Review, *Vistra Corp. v. FERC*, Case No. 23-1228 (D.C. Cir. Aug. 22, 2023).

¹⁸ *Vistra Corp. v. FERC*, Case No. 23-1186 (D.C. Cir. Aug. 23, 2023) (order consolidating Nos. 23-1186 & 23-1228).

¹⁹ *PJM Interconnection, L.L.C.*, Order Declaring Impasse, Docket No. EL21-91-000, at P 2 (Aug. 23, 2023).

those conferences and therefore requested that Judge Hurt declare an impasse.²⁰

Judge Hurt issued an order declaring an impasse and recommending the termination of settlement procedures on August 23, 2023.²¹

1.10. On August 25, 2023, the Chief Judge terminated settlement procedures, designated Judge Joel deJesus the presiding administrative law judge, and set this proceeding for a Track III procedural schedule.²²

1.11. Following further settlement discussions, the Settling Parties reached a settlement in principle. Accordingly, Commission Trial Staff filed a motion to suspend the procedural schedule on January 10, 2024.²³ On January 16, 2024, the Chief Judge granted the motion to suspend the procedural schedule.²⁴

1.12. On January 31, 2024, PJM submitted an offer of settlement, motion to place settlement rates into effect on an interim basis, and request for expedited action.²⁵ On February 1, 2024, the Chief Judge issued an order granting PJM's motion to

²⁰ *Id.*

²¹ *Id.*

²² *PJM Interconnection, L.L.C.*, Order of Chief Judge Terminating Settlement Judge Procedures, Designating Presiding Administrative Law Judge, and Establishing Track III Procedural Time Standards, Docket Nos. EL21-91-000, -003 (Aug. 25, 2023).

²³ *PJM Interconnection, L.L.C.*, Motion of Commission Trial Staff to Suspend the Procedural Schedule and Shorten Answer Period, Docket No. EL21-91-003 (Jan. 10, 2024).

²⁴ *PJM Interconnection, L.L.C.*, Order of Chief Judge Suspending Procedural Schedule, Docket No. EL21-91-003 (Jan. 16, 2024) (advising the Participants either to file this Settlement by January 31, 2024 or a status report detailing progress made on the preparation of settlement documents).

²⁵ *PJM Interconnection, L.L.C.*, Settlement Agreement and Offer of Settlement of PJM Interconnection, L.L.C., Docket No. ER21-1635-005 (Jan. 31, 2024); *PJM Interconnection, L.L.C.*, Motion to Implement Interim Settlement Rates, Request to Waive Answer Period, and Request for Expedited Treatment, Docket No. ER21-1635-006 (Feb. 1, 2024).

implement the settlement rates on an interim basis effective January 1, 2024.²⁶

The Chief Judge authorized the interim settlement rate to remain effective “pending consideration of the Settlement.”²⁷

1.13. On March 13, 2024, after the settlement was protested by the IMM, the Presiding Judge issued an order finding that the Settling Parties had failed to demonstrate that the settlement met the standards for certification of contested settlements.²⁸ The Presiding Judge emphasized, however, that such order did not preclude the participants from re-submitting the settlement with the additional evidence needed to support certification.²⁹

1.14. After appeals of the March 13 Order were exhausted such that the settlement was no longer under consideration,³⁰ the Chief Judge lifted the suspension of the

²⁶ *PJM Interconnection, L.L.C.*, 186 FERC ¶ 63,007 (2024).

²⁷ *PJM Interconnection, L.L.C.*, 186 FERC ¶ 63,007, at P 4.

²⁸ *PJM Interconnection, L.L.C.*, 186 FERC ¶ 63,019, at P 135 (2024) (“March 13 Order”).

²⁹ *Id.* at P 135.

³⁰ See *PJM Interconnection, L.L.C.*, Motion to Permit Interlocutory Appeal of the Independent Market Monitor for PJM, Docket Nos. EL21-91-003 & ER21-1635-005 (Apr. 1, 2024); *PJM Interconnection, L.L.C.*, The Settling Parties’ Interlocutory Appeal, Docket Nos. EL21-91-003 & ER21-1635-005 (Apr. 5, 2024); *PJM Interconnection, L.L.C.*, Notice of Determination by the Chairman, Docket Nos. EL21-91-003 & ER21-1635-005 (Apr. 8, 2024); *PJM Interconnection, L.L.C.*, Notice of Determination by the Chairman, Docket Nos. EL21-91-003 & ER21-1635-005 (Apr. 12, 2024).

procedural schedule.³¹ PJM subsequently made clean-up filings to conform the Tariff to the Legacy CRFs.³²

- 1.15.** The Settling Parties submit this Settlement, and formally request that the Presiding Judge certify it to the Commission.

ARTICLE II RATE MATTERS

- 2.1** *Settlement Rates.* The Settlement revises Schedule 6A of the PJM Tariff to replace the Legacy CRFs with the following CRFs effective January 1, 2024 (“Settlement Rates”):

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

These changes are reflected in redline and clean on the *pro forma* tariff sheets provided as Attachments F and G, respectively.³³ Within thirty (30) days of the

³¹ *PJM Interconnection, L.L.C.*, Order of Chief Judge Terminating Suspension and Establishing Procedural Time Standards, Docket No. EL21-91-003, at P 2 (Apr. 16, 2024).

³² *PJM Interconnection, L.L.C.*, Tariff Clean-Up Filing for Capital Recovery Factor Rate, Docket No. ER21-1635-007 (June 7, 2024); *PJM Interconnection, L.L.C.*, Revision to Clean-Up Tariff Filing for Capital Recovery Factor Rate, Docket No. ER21-1635-008 (June 10, 2024).

³³ These *pro forma* sheets assume the Commission accepts PJM’s pending clean up Tariff filings in dockets ER21-1635-007 and ER21-1635-008 prior to any filings to implement the Settlement.

Settlement Effective Date, PJM will make the appropriate filing with the Commission to conform Schedule 6A of the PJM Tariff with the Settlement Rates. If the presiding judge certifies the Settlement to the Commission (“the “Certification Decision”), PJM will file a motion to place these Settlement Rates in effect by the next monthly invoice that is issued at least sixty (60) days following issuance of the Certification Decision on an interim basis pending the Commission’s approval of this Settlement (“Interim Settlement Rates”) within seven (7) days of such certification. If the Commission subsequently rejects the Settlement or the Settlement is otherwise of no force and effect pursuant to Section 4.1, PJM will reinstate the Legacy CRFs consistent with Section 2.4 of this Settlement.

2.2 *Effective Date of Settlement Rates.* Subject to this Settlement becoming effective in accordance with Article III below, the Settlement Rates shall be effective on a permanent basis as of January 1, 2024.

2.3 *Re-Settlement Where Settlement Is Ultimately Effective.* No refunds will be required for Black Start Service rendered prior to January 1, 2024 under the Legacy CRFs under this Settlement. To the extent the motion contemplated in Section 2.1 above to place the Interim Settlement Rates into effect is denied, or the Interim Settlement Rates are permitted to take effect later than January 1, 2024, provided the Settlement subsequently becomes effective in accordance with Article III below, PJM will re-settle any and all amounts collected in excess of the Settlement Rates from January 1, 2024 or later. PJM will perform this re-settlement by collecting and distributing amounts collected in excess of the

Settlement Rates plus interest calculated in accordance with 18 C.F.R. § 35.19a. Such re-settlements will be issued in the next billing cycle under the Tariff occurring sixty (60) days of the Settlement Effective Date as defined in Section 3.1. PJM will file an appropriate report with the Commission within thirty (30) days following re-settlement.

2.4 *Re-Settlement in the Event of Commission Rejection or Material Modification.*

It is expressly agreed and understood that, in the event that either the Commission rejects this Settlement by final order or the Settlement is otherwise of no force and effect pursuant to Section 4.1, PJM shall file if necessary with the Commission, and the other Settling Parties will not oppose, a request to reinstate, effective January 1, 2024, the Legacy CRFs, pending the outcome of the administrative proceedings in Commission Docket Nos. EL21-91 and ER21-1635 (the “Proceeding”). Under such circumstances, upon the outcome of the Proceeding, PJM shall re-settle the amounts collected during any period when the Interim Settlement Rates were in effect by collecting and distributing amounts that would have been collected under the Legacy CRF rates in effect prior to filing the Interim Settlement Rates plus interest calculated in accordance with 18 C.F.R. § 35.19a. PJM will file an appropriate report with the Commission within thirty (30) days following re-settlement.

**ARTICLE III
EFFECTIVE DATE**

3.1 *Severability and Effective Date.* The various provisions of this Settlement are not severable, and shall become binding and effective upon issuance of a Commission

order approving this Settlement without material modification or condition or subject to modification or condition acceptable to all Settling Parties, including as provided in Article IV hereof, and such Commission order becomes final and non-appealable (“Final Commission Order”). For the purposes of this Settlement, the Commission order shall be deemed a Final Commission Order on one of the following dates, whichever is applicable (the “Settlement Effective Date”): (1) the date on which all requests for rehearing of the Commission order approving the Settlement are denied and the right to petition for review expires; (2) in the absence of any requests for rehearing, the date on which the right to request rehearing expires; or (3) if a petition for review of a rehearing order is filed in any federal court of appeals, the date that proceedings on review are complete or any orders on remand are not subject to further rehearing or review.

- 3.2 *Withdrawal of Petition for Review.*** Within ten (10) days of the Settlement Effective Date, Vistra will file to withdraw the pending petitions for review described in Sections 1.7 and 1.8 herein from the D.C. Circuit.

ARTICLE IV MODIFICATION OR CONDITION OF SETTLEMENT

- 4.1 *Conditions to Effectiveness of the Settlement.*** This Settlement is expressly conditioned upon the approval of all provisions in the Settlement by the Commission in accordance with Rule 602, without modification, provided that, if the Commission conditions its approval of this Settlement or requires modification of the Settlement, any Settling Party may notify the other Settling Parties within five (5) business days of the issuance of such order that it opposes the Settlement

as so conditioned or modified. In such event, the Settling Parties shall meet or confer within ten (10) business days after such notification is provided to evaluate whether the concerns of the Settling Party(ies) can be addressed through a revision to the Settlement. If a revised offer of settlement cannot be reached and the concerns of the Settling Party(ies) cannot otherwise be adequately addressed within five (5) business days of such meeting or conference (unless mutually extended by the Settling Parties), the Settlement shall be of no force and effect and the objecting Settling Party(ies) shall so inform the Commission. Any Settling Party that does not so communicate its objections to any such condition or modification in accordance with this Section 4.1 shall be deemed to have waived all objections and may not seek rehearing of the Commission order conditioning its approval of this Settlement or modifying this Settlement. No Settling Party shall be bound by any part of this Settlement and the Settlement shall be null and void unless it becomes effective in the manner provided by Article III and this Article IV.

4.2 *Cooperation in Filing and Approval of the Settlement.* Each Settling Party shall cooperate with, and shall not take any action inconsistent with: (i) the filing of this Settlement with the Commission, or (ii) efforts to obtain Commission approval of this Settlement and any Tariff revisions required by the Settlement.

4.3 *Support for the Settlement.* The Settling Parties are obligated to make reasonable efforts to support and defend the terms of the Settlement against any attempt to modify or nullify any terms of the Settlement at the Commission, before other regulatory agencies, or in the courts. This Settlement will not limit any Settling Party's right to respond to any pleading or other filing, submitted by a participant

other than a Settling Party, to the Commission or in any other forum that seeks to alter or terminate the effectiveness of any term or provision of the Settlement, provided that any such response is consistent with the Settling Party's obligation to support and defend the terms of the Settlement.

ARTICLE V MISCELLANEOUS PROVISIONS AND RESERVATIONS

5.1 *Entire Agreement.* This Settlement, including any exhibits or attachments, constitutes the entire agreement with regard to the matters in the captioned proceeding and implies no right, duties, or other restrictions not expressly set forth herein. No other agreement with regard to these matters shall be binding on the Settling Parties except by written amendment agreed to by all Settling Parties. The terms of this Settlement may only be submitted as an integrated whole, and it is understood that each provision of this Settlement is in consideration and support of all the other provisions, and expressly conditioned upon approval by the Commission as provided for herein. Except for the terms and conditions enumerated herein, the Settling Parties acknowledge and agree that they have not made any other promises, warranties, or representations to each other regarding any aspect of the resolution of the matters addressed in this Settlement. Each Settling Party acknowledges that it has read this Settlement and executed it without relying upon any other promise, warranty, or representation, written or otherwise, of any other party.

5.2 *Filing Rights.* Provided the Settlement becomes effective in accordance with Article III of this Settlement, the Settling Parties agree to refrain from making any

filings pursuant to section 205 or 206 of the FPA to modify the Settlement Rates for a period of two years following the Settlement Effective Date (“Keep-Out Period”). After the Keep-Out Period, nothing contained in this Settlement shall be construed as affecting in any way PJM’s right unilaterally to make an application to the FERC to seek a prospective change to the Settlement Rates under section 205 of the FPA, or as affecting in any way any Settling Party’s right to comment upon or protest any such application. After the Keep-Out Period, nothing contained in this Settlement will be construed as affecting in any way any Settling Party’s rights to unilaterally submit filings to FERC under section 206 of the FPA seeking a prospective change in concerning PJM’s rates, terms or conditions of service.

5.3 *Declaration of Privilege.* The discussions that produced this Settlement have been conducted with the explicit understanding that all such discussions and documents not publicly filed in the above-captioned dockets, including drafts of the offers of settlement and explanatory statements, are and shall remain privileged, and shall be without prejudice to the positions of any Settling Party or participant presenting any such offer or participating in any such discussion, and are not to be publicly disclosed, except that the Settlement as filed at the Commission and as approved by the Commission may be publicly disclosed; provided however that Settling Parties may introduce matters pertaining to the Settlement in any proceeding seeking to enforce the terms hereof. In the event the Commission rejects the Settlement, Rule 602(e) of the Commission’s Rules of Practice and Procedure will apply to bar the admissibility, in this proceeding or otherwise, of this Settlement

and of any data submissions, document submissions, and/or negotiations leading up to this Settlement.

5.4 *No Admission.* This Settlement is entered into upon the understanding that it constitutes an integrated, negotiated agreement and, except as explicitly set forth herein, no Settling Party shall be deemed to have approved, accepted, agreed to, or consented to any principle or position advanced or taken in this proceeding by any other participant, or to have prejudiced positions taken or that may be taken by such Settling Party in this or any other proceeding.

5.5 *No Precedent or Settled Practice.* This Settlement shall not be cited or relied upon as precedent for any purpose or as establishing any issue or principle. Neither the Settling Parties nor the Commission shall be deemed to have approved, accepted, agreed, or otherwise consented to any ratemaking principle or methodology or to any Tariff interpretation or modification or to any other factor or concept underlying or supposed to underlie any of the matters herein, unless expressly provided in this Settlement. The Commission's approval of this Settlement shall not constitute precedent nor be used to prejudice any otherwise available rights or arguments of any party in a future proceeding (including but not limited to proceedings before the Commission or other regulatory bodies or proceedings in a court), other than to enforce the terms of this Settlement, and shall not be used as evidence that a particular method is a "long standing practice" as that term is used in *Columbia Gas Transmission Corp. v. FERC*, 628 F.2d 578 (D.C. Cir. 1979), or a "settled practice" as that term is used in *Public Service Commission of New York v. FERC*, 642 F.2d 1335 (D.C. Cir. 1980).

5.6 *Standard of Review.* The standard of review for any proposed changes to the terms of this Settlement unilaterally sought by any party to this proceeding shall be the “public interest” application of the just and reasonable standard of review commonly referred to as the “*Mobile Sierra*” standard of review.³⁴ The standard of review for any modifications to this Settlement proposed by any other person or entity, including any modifications resulting from the Commission acting *sua sponte*, will be the ordinary just and reasonable standard. For clarification, nothing in this Section 5.6 is intended to limit a Settling Party’s future filing rights pursuant to Section 5.2 of this Settlement.

5.7 *Waiver.* No provision of this Settlement may be waived if such waiver would cause financial injury to any other party to this Settlement, unless the injured party consents in writing.³⁵ No provision of this Settlement may be waived except through a writing signed by an authorized representative of the waiving party. Waiver of any one provision of this Settlement shall not be deemed to waive any other provision.

5.8 *Successors and Assigns.* This Settlement is binding upon and for the benefit of the Settling Parties and their successors and assigns.

³⁴ See *NRG Power Mktg., LLC v. Me. Pub. Utils. Comm’n*, 558 U.S. 165 (2010); *Morgan Stanley Cap. Grp. Inc. v. Pub. Util. Dist. No. 1*, 554 U.S. 527 (2008); *United Gas Pipe Line Co. v. Mobile Gas Serv. Corp.*, 350 U.S. 332 (1956); *FPC v. Sierra Pacific Power Co.*, 350 U.S. 348 (1956).

³⁵ See *CPV Fairview, LLC*, 174 FERC ¶ 61,029, at P 12 (2021); *Midcontinent Indep. Sys. Operator, Inc.*, 154 FERC ¶ 61,059, at P 7 (2016).

5.9 *Requisite Waivers.* The Commission's approval of this Settlement shall constitute the requisite grant of any waivers of any regulations as may be necessary to permit the implementation of the provisions of this Settlement by its terms.

5.10 *Ambiguities.* This Settlement is the result of negotiations among, and has been reviewed by, each Settling Party and its respective counsel. Accordingly, no ambiguity shall be construed in favor of or against any Settling Party on the basis that a particular party was or was not the drafter.

5.11 *Headings.* Section headings are used in this Settlement solely for convenience of reference and shall not be used to interpret or modify the terms of this Settlement.

IN WITNESS WHEREOF, this Settlement is entered into as of the date first written above by and between the Settling Parties through their authorized representatives, who represent that they are fully authorized to do so on behalf of their principals.

Respectfully submitted,

By: /s/ Neil Levy

By: /s/ Kenneth Stark

Date: August 14, 2024

Date: August 14, 2024

Neil Levy

Kenneth Stark

Partner, McDermott Will & Emery LLP
on behalf of LS Power Development,
LLC

Member/Attorney, McNeese Wallace &
Nurick LLC, on behalf of the PJM
Industrial Customer Coalition

By: /s/ Neil Levy

By: /s/ Jason Gray

Date: August 14, 2024

Date: August 14, 2024

Neil Levy

Jason Gray

Partner, McDermott Will & Emery LLP
on behalf of J-POWER USA
Development Co., Ltd.

Partner, Duncan & Allen LLP
on behalf of American Municipal Power,
Inc.

By: /s/ Stephen Hug

By: /s/ Allison Salvia

Date: August 14, 2024

Date: August 14, 2024

Stephen Hug

Allison Salvia

Partner, Akin Gump Strauss Hauer &
Feld LLP
on behalf of Vistra Corp.

Counsel, Eversheds Sutherland (US) LLP
on behalf of Hazleton Generation, LLC

By: /s/ Emily Mallen

By: /s/ Michael Bryson

Date: August 14, 2024

Date: August 14, 2024

Emily Mallen

Michael Bryson

Partner, Akin Gump Strauss Hauer &
Feld LLP
on behalf of Dynegy Marketing and
Trade, LLC

Senior Vice President, Operations
PJM Interconnection, L.L.C.

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.	)	Docket Nos. EL21-91-003
	)	ER21-1635-00_

EXPLANATORY STATEMENT OF THE SETTling PARTIES

Pursuant to Rule 602 of the Federal Energy Regulatory Commission's ("Commission") Rules of Practice and Procedure,¹ PJM Interconnection, L.L.C. ("PJM"), on behalf of itself, American Municipal Power, Inc. ("AMP"), Dynegy Marketing and Trade, LLC and Vistra Corp. (together, "Vistra"), Hazleton Generation LLC ("Hazleton"), J-POWER USA Development Co., Ltd. ("J-POWER"), LS Power Development, LLC ("LS Power"), and PJM Industrial Customer Coalition (collectively, the "Settling Parties" and each a "Settling Party"), submits this Explanatory Statement regarding the accompanying Offer of Settlement ("Settlement").²

The Settlement is being filed with the support of five affidavits representing a broad range of interests including that of PJM and Black Start Service³ providers, along with load serving entities and other customer representatives that have been adverse to the Black Start Service providers in these proceedings. In addition to the Settling Parties, the Public Utilities Commission of Ohio Office of the Federal Energy Advocate does not

¹ 18 C.F.R. § 385.602.

² To the extent any language in this Explanatory Statement differs from language in the Settlement, the Settlement controls.

³ Capitalized terms not defined herein have the meaning set forth in the Settlement or PJM's Open Access Transmission Tariff ("Tariff").

oppose the Settlement. To the Settling Parties' knowledge, the Settlement is only opposed by the Independent Market Monitor for PJM (the "IMM").

As explained herein, the Settlement is in the public interest and satisfies the standard for the certification and approval of contested settlements, as set forth in the Commission's regulations,⁴ and its precedent in *Trailblazer Pipeline Co.*⁵ The revised Capital Recovery Factor ("CRF") rates set forth in the Settlement ("Settlement CRFs" or "Settlement Rates") address the sole issue set for hearing and settlement judge procedures in these proceedings. Moreover, there is no genuine issue of material fact that precludes certification under the Commission's settlement rules.⁶ The Presiding Judge could, in the alternative, certify the Settlement to the Commission by finding: (1) good cause exists to grant the motion that is being filed under Rule 710(d)⁷ (which notably is supported by Trial Staff and opposed by no party to the proceeding other than the IMM) and waive the initial decision, and (2) that substantial evidence exists for the Commission to reach a reasoned decision.⁸ The Settling Parties thus request that the Presiding Judge certify and the Commission approve the Settlement without modification or condition to resolve all issues in Docket Nos. EL21-91-000 and ER21-1635-000, and their respective sub-dockets.

⁴ 18 C.F.R. § 385.602(h)(1)(i).

⁵ *Trailblazer Pipeline Co.*, 85 FERC ¶ 61,345, at 62,339 (1998) ("*Trailblazer I*"), order on reh'g, 87 FERC ¶ 61,110 (1999) ("*Trailblazer II*"), reh'g denied, 88 FERC ¶ 61,168 (1999) (collectively, "*Trailblazer*"); see also, e.g., *PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,168, at P 38 (2018) ("PJM 2018 Order"), reh'g denied, 169 FERC ¶ 61,238 (2019), reh'g dismissed, 171 FERC ¶ 61,161 (2020), rev'd in part & remanded sub nom. *Long Island Power Auth. v. FERC*, 27 F.4th 705 (D.C. Cir. 2022), order on remand, *PJM Interconnection, L.L.C.*, 184 FERC ¶ 61,064 (2023).

⁶ See 18 C.F.R. § 385.602(h)(2)(ii).

⁷ 18 C.F.R. § 385.710(d).

⁸ See 18 C.F.R. § 385.602(h)(2)(iii).

I. PROCEDURAL BACKGROUND

This case concerns the CRF rates for Black Start Units selected by PJM prior to June 6, 2021.⁹ Specifically, the Commission initiated this case to investigate whether the CRF rates for Black Start Units selected prior to June 6, 2021, remain just and reasonable in light of the reduction in the federal corporate tax rate from the Tax Cuts and Jobs Act of 2017 (“TCJA”).¹⁰

Under Schedule 6A of the Tariff, Black Start Units have the option of recovering their Black Start Capital Costs based on the CRF rates established in Schedule 6A. Prior to June 6, 2021, Schedule 6A contained only a set of stated CRF rates that depended on the age of the Black Start Unit.¹¹

On April 7, 2021,¹² as amended June 11, 2021,¹³ pursuant to section 205 of the Federal Power Act (“FPA”), PJM filed revisions to Schedule 6A of its Tariff seeking to revise certain rates, terms, and conditions for resources selected to provide Black Start Service.¹⁴ Specifically, PJM proposed a formula-based CRF option applicable to generators that PJM selected to provide Black Start Service after the proposed effective date of June 6, 2021.¹⁵

⁹ See *PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,080, at P 2 (2021) (“August 2021 Order”).

¹⁰ See *id.*

¹¹ See *PJM Interconnection, L.L.C.*, Tariff, Schedule 6A, Black Start Revisions, Docket No. ER21-1635-000, Attachment C, section 18 (Apr. 7, 2021) (“Black Start Filing”).

¹² See *id.*

¹³ *PJM Interconnection, L.L.C.*, Submission of Response to Deficiency Letter, Docket No. ER21-1635-001 (June 11, 2021).

¹⁴ See Black Start Filing at 1-2.

¹⁵ See *id.* at 1-3, 12-14.

On August 10, 2021, the Commission accepted PJM's proposed revisions to Schedule 6A to provide a formula-based CRF rate option for Black Start Service on a going-forward basis effective June 6, 2021.¹⁶ However, the Commission initiated a proceeding pursuant to FPA section 206 in Docket No. EL21-91-000 to investigate the singular issue of whether the existing CRF rates set forth in Schedule 6A of the Tariff for units selected to provide Black Start Service prior to June 6, 2021, remain just and reasonable.¹⁷ In particular, the Commission instituted the section 206 proceeding to investigate whether PJM's existing rates for units providing Black Start Service "which are based on a federal corporate income tax rate that pre-dates the [TCJA], remain just and reasonable."¹⁸ The Commission directed PJM to either "(1) propose revisions to its Black Start Service rates to reflect changes in the federal corporate income tax rate and describe the methodology used for making those revisions; or (2) show cause why it should not be required to do so."¹⁹ On October 12, 2021, PJM responded to the Commission's August 2021 Order.²⁰

On March 24, 2023, the Commission issued an order establishing hearing and settlement judge procedures "to determine whether, as a result of changes from the [TCJA], the existing CRF values result in a Capital Cost Recovery Rate for generating units that were selected to provide Black Start Service prior to June 6, 2021, that is unjust

¹⁶ See August 2021 Order, 176 FERC ¶ 61,080, at P 1.

¹⁷ See *id.* at P 2.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *PJM Interconnection, L.L.C.*, PJM Interconnection, L.L.C. Response to Commission's Show Cause Order, Docket No. EL21-91-000 (Oct. 12, 2021).

and unreasonable.”²¹ The Commission noted in particular that there was a “disputed issue of material fact as to whether changes to the tax rate render the existing CRF values unjust and unreasonable.”²² On March 31, 2023, the Chief Judge designated Judge Patricia E. Hurt as the Settlement Judge and directed Judge Hurt to report on the status of settlement discussions within sixty days.²³

On April 21, 2023, Vistra filed a request for rehearing of the Commission’s March 2023 Order.²⁴ The Commission denied Vistra’s request for rehearing by operation of law on May 22, 2023.²⁵ Vistra filed a petition for review of the March 2023 Order and the Rehearing Notice in the U.S. Court of Appeals for the District of Columbia Circuit (“D.C. Circuit”).²⁶

On August 4, 2023, the Commission issued an order addressing the arguments raised by Vistra on rehearing and denied rehearing.²⁷ Vistra timely filed a petition for review of the August 2023 Order in the D.C. Circuit.²⁸ The D.C. Circuit consolidated Vistra’s petitions for review on August 23, 2023.²⁹ The consolidated petitions for review remain pending before the D.C. Circuit.

²¹ *PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,194, at P 1 (2023) (“March 2023 Order”).

²² *Id.* at P 32.

²³ *PJM Interconnection, L.L.C.*, Order of Chief Judge Designating Settlement Judge, Docket No. EL21-91-000 (Mar. 31, 2023).

²⁴ *PJM Interconnection, L.L.C.*, Request for Rehearing of Vistra Corp. and Dynegy Marketing and Trade, LLC, Docket No. EL21-91-002 (Apr. 21, 2023).

²⁵ *PJM Interconnection, L.L.C.*, 183 FERC ¶ 62,094 (2023) (“Rehearing Notice”).

²⁶ *Vistra Corp. v. FERC*, Petition for Review, No. 23-1186 (D.C. Cir. July 17, 2023).

²⁷ *PJM Interconnection, L.L.C.*, 184 FERC ¶ 61,077 (2023) (“August 2023 Order”).

²⁸ *Vistra Corp. v. FERC*, Petition for Review, No. 23-1228 (D.C. Cir. Aug. 22, 2023).

²⁹ *Vistra Corp. v. FERC*, No. 23-1186 (D.C. Cir. Aug. 23, 2023) (order consolidating Nos. 23-1186 & 23-1228).

Judge Hurt convened formal settlement conferences on April 25, July 18, and August 22, 2023.³⁰ The participants were unable to reach an agreement during those conferences.³¹ Judge Hurt issued an order declaring an impasse and recommended the termination of settlement procedures on August 23, 2023.³² On August 25, 2023, the Chief Judge terminated settlement procedures, designated Judge Joel deJesus as the Presiding Administrative Law Judge, and established a Track III procedural schedule.³³

Following further settlement discussions, the Settling Parties reached a settlement in principle. On January 31, 2024, PJM filed, on behalf of the Settling Parties, an offer of settlement (“Prior Settlement”) that included, among other elements, reduced CRF rates negotiated on a black-box basis.³⁴ The Prior Settlement was opposed by the IMM.³⁵

On March 13, 2024, Presiding Judge deJesus declined to certify the Prior Settlement.³⁶ The Presiding Judge noted, however, that denial of certification of the Prior Settlement was without prejudice and the Settling Parties could re-file the Settlement with additional support.³⁷

³⁰ See *PJM Interconnection, L.L.C.*, Order Declaring Impasse, Docket No. EL21-91-000, at P 2 (Aug. 23, 2023).

³¹ See *id.* at PP 2-3.

³² See *id.* at P 4.

³³ *PJM Interconnection, L.L.C.*, Order of Chief Judge Terminating Settlement Judge Procedures, Designating Presiding Administrative Law Judge, and Establishing Track III Procedural Time Standards, Docket Nos. EL21-91-000, et al. (Aug. 25, 2023).

³⁴ *PJM Interconnection, L.L.C.*, Settlement Agreement and Offer of Settlement, Docket No. ER21-1635-005 (Jan. 31, 2024).

³⁵ See *PJM Interconnection, L.L.C.*, Comments of the Independent Market Monitor for PJM in Opposition to Offer of Settlement, Docket No. EL21-91-003 (Feb. 20, 2024) (“IMM Comments on Prior Settlement”).

³⁶ *PJM Interconnection, L.L.C.*, 186 FERC ¶ 63,019 (2024) (“March 13 Order”).

³⁷ See *id.* at P 135.

On June 5, 2024, the IMM and Trial Staff submitted direct testimony in Docket No. EL21-91. Both the IMM's and Trial Staff's direct testimony argued that the existing CRF rates are not just and reasonable because of the TCJA tax rate reduction.³⁸ Trial Staff's direct testimony also provided calculations demonstrating various potential CRF replacement rates using different methodologies.³⁹ The IMM's direct testimony stated that the existing CRF rates had been calculated with a formula, and that such rates should be recalculated individually for each unit "using the formula and the correct inputs" in such a way as to "reflect the return of capital already received by existing black start units."⁴⁰ The IMM proposed that this recalculation would use "the original financial parameters and the state income tax rate assumption, updated federal income tax rules and a revised recovery period equal to the time remaining in the original capital recovery period."⁴¹ However, the IMM did not provide specific CRF values for application to units PJM selected to provide Black Start Service prior to June 6, 2021.

PJM submitted answering testimony on July 17, 2024, responding to the IMM and Trial Staff supporting the existing stated CRF rates as just and reasonable, arguing that they are within a range of just and reasonable values.⁴² On that same day, Hazleton, J-

³⁸ *PJM Interconnection, L.L.C.*, Prepared Direct Testimony of Commission Trial Staff Witness Raymond He, Exhibit No. S-0001, Docket No. EL21-91-003 (June 5, 2024) ("Exhibit No. S-0001"); *PJM Interconnection, L.L.C.*, Prepared Direct Testimony of Commission Trial Staff Witness Robert J. Keyton, Exhibit No. S-0024, Docket No. EL21-91-003 (June 5, 2024); *PJM Interconnection, L.L.C.*, Direct Testimony of Joseph E. Bowring on Behalf of the Independent Market Monitor for PJM, Exhibit No. IMM-0001 REV, Docket Nos. EL21-91-000, et al. (June 10, 2024) ("Exhibit No. IMM-0001").

³⁹ See Exhibit No. S-0001 at 27:14, Table 7; *id.* at 31:1-3, Table 9.

⁴⁰ See Exhibit No. IMM-0001 at 14:16-24.

⁴¹ *Id.* at 15:12-14.

⁴² See Attachment A, Affidavit of Glen Boyle on Behalf of PJM Interconnection, L.L.C. ("Boyle Aff."), Exhibit No. 1 (PJM-0001); Attachment B, Affidavit of Michael E. Bryson of Behalf of PJM Interconnection, L.L.C. ("Bryson Aff."), Exhibit No. 1 (PJM-0010); Attachment C, Affidavit of Dr. Walter Graf on Behalf of PJM Interconnection, L.L.C. ("Graf Aff."), Exhibit No. 1 (PJM-0011).

POWER, LS Power, and Vistra (collectively, the “Indicated Suppliers”) also filed answering testimony, arguing that the TCJA changes did not make the existing CRF rates unjust and unreasonable and supporting CRF values higher than the existing stated CRFs.⁴³

II. THE SETTLEMENT IS CONSISTENT WITH THE PUBLIC INTEREST, PROVIDES A JUST AND REASONABLE RESOLUTION OF THIS SECTION 206 INVESTIGATION, IS SUPPORTED BY SUBSTANTIAL EVIDENCE, AND SHOULD BE CERTIFIED TO THE COMMISSION

Consistent with the Presiding Judge’s March 13 Order,⁴⁴ the Settling Parties are filing the Settlement, which proposes revised CRFs—i.e., the Settlement CRFs—applicable to Black Start Units selected prior to June 6, 2021. The Settlement CRFs are identical to those proposed in the Prior Settlement. Moreover, the Settlement is substantively the same as the Prior Settlement, subject to minor clarifying and ministerial changes. In addition to the Settlement itself, the Settling Parties are submitting additional evidentiary support demonstrating that the Settlement provides for a just, reasonable, and nondiscriminatory resolution of these proceedings in accordance with the Commission’s *Trailblazer* precedent. The Settlement should therefore be certified to and approved by the Commission.

⁴³ See *PJM Interconnection, L.L.C.*, Prepared Answering Testimony of Adrian Kimbrough on Behalf of the Indicated Suppliers, Exhibit No. IS-0001, Docket No. EL21-91-003 (July 17, 2024) (“Exhibit No. IS-0001”); *PJM Interconnection, L.L.C.*, Prepared Answering Testimony of Kevin Collins on Behalf of Hazleton Generation LLC, Exhibit No. HAZ-0001, Docket No. EL21-91-003 (July 17, 2024) (“Exhibit No. HAZ-0001”); *PJM Interconnection, L.L.C.*, Prepared Answering Testimony of William Taylor on Behalf of J-POWER USA Development Co., Ltd., Exhibit No. JP-0001, Docket No. EL21-91-003 (July 17, 2024) (“Exhibit No. JP-0001”); *PJM Interconnection, L.L.C.*, Prepared Answering Testimony of Nathan Dixon on Behalf of LS Power Development, LLC, Exhibit No. LS-0001, Docket No. EL21-91-003 (July 17, 2024) (“Exhibit No. LS-0001”); *PJM Interconnection, L.L.C.*, Prepared Answering Testimony of Sean Allen on Behalf of Vistra Corp. and Dynegy Marketing and Trade, LLC, Exhibit No. VIS-0001 REV, Docket No. EL21-91-003 (July 18, 2024).

⁴⁴ See March 13 Order, 186 FERC ¶ 63,019, at P 135.

A. There Is Substantial Evidence Demonstrating that the Settlement Is Just and Reasonable.

Under Rule 602, “the Commission may decide the merits of the contested settlement issues, if the record contains substantial evidence upon which to base a reasoned decision”⁴⁵ To demonstrate that the Settlement is just and reasonable, the Settling Parties are attaching five affidavits that demonstrate that the Settlement provides a just, reasonable, and non-discriminatory resolution of these proceedings. These include three affidavits on behalf of PJM, an affidavit on behalf of the Indicated Suppliers, and an affidavit on behalf of AMP.

Attachment A presents the Affidavit of Glen Boyle on behalf of PJM (“Boyle Affidavit”). Mr. Boyle provides analysis comparing the revenue requirements under the existing stated CRFs in the Tariff, the Settlement CRFs, and the CRFs proposed by the IMM in opposition to the Prior Settlement. Mr. Boyle’s analysis shows the Settlement CRFs would result in a revenue requirement that is \$15.35 million lower than the existing Tariff CRFs’ total revenue requirement from January 1, 2024 through December 31, 2040, and that this is only \$2.8 million higher than the IMM CRFs’ revenue requirement would yield under a litigated outcome from June 1, 2026 (the date when prospective relief is conservatively anticipated to be available). This is exclusive of any refund exposure under a fully litigated outcome, which would likely be, at least, partially offset by the early reduction in revenues the Settlement provides in 2024 and 2025. Based on this comparison and other considerations, Mr. Boyle concludes that the Settlement represents a just and reasonable resolution to these proceedings.

⁴⁵ 18 C.F.R. § 385.602(h)(1)(i).

Attachment B presents the Affidavit of Michael E. Bryson on behalf of PJM (“Bryson Affidavit”). Mr. Bryson explains the critical role of Black Start Service in reliable system operation and the need to respect prior long-term commitments of Black Start Units to balance the need to secure this critical resource while containing the cost of service paid by customers. Mr. Bryson expresses his concern that the litigation in this proceeding going on for three years and the prospect of continuing litigation may produce uncertainty regarding Black Start compensation and negatively affect PJM’s ability to procure Black Start Service in the future. Finally, Mr. Bryson explains how settling this matter will be beneficial because it will allow PJM to devote its resources to its core mission instead of litigation.

Attachment C represents the Affidavit of Dr. Walter Graf on behalf of PJM (“Graf Affidavit”). Dr. Graf argues that the IMM errs in insisting that the stated CRFs in the Tariff are a formula rate and that there can be only one just and reasonable set of capital recovery factors to be applied to the Existing Black Start Investment. Further, Dr. Graf explains that there is a range of just and reasonable capital recovery factors that can be calculated and the bounds of that range are not fixed. Dr. Graf places the stated CRFs in context within a range of other potentially reasonable capital recovery factors, including capital recovery factors used in other settings in PJM and CRFs calculated by Trial Staff. Dr. Graf also compares the revenues resulting from the stated CRFs to the revenues produced by the application of other capital recovery factors and discusses the asymmetric risks associated with overestimating the Black Start capital recovery factors as opposed to underestimating them. Finally, Dr. Graf concludes that the inputs to Black Start Units’ cost of capital Trial Staff proposes for use in calculating one set of capital

recovery factors are artificially low, based on reference to a transmission owner proxy group rather than a merchant generator proxy group.

Attachment D presents the Affidavit of Adrian Kimbrough on behalf of the Indicated Suppliers (“Kimbrough Affidavit”),⁴⁶ which explains that the Settlement CRFs are black-box rates, but are nonetheless consistent with the CRFs that would result if the stated CRFs in the Tariff were recalculated using the IMM’s purported formula with a 21 percent tax rate.

Attachment E presents the Affidavit of Christopher Norton on behalf of AMP (“Norton Affidavit”).⁴⁷ Mr. Norton explains that the Settlement is of benefit to AMP because it provides immediate certainty and material rate reductions while avoiding the risk and uncertainty associated with litigation. Mr. Norton also compares the Settlement results to results under other scenarios to support AMP’s conclusion that the Settlement CRFs provide a reasonable outcome when compared against the uncertainty and timing associated with litigated outcomes.

In addition, the Presiding Judge and the Commission will have before them this Explanatory Statement and all comments on the Settlement permitted under Rule 602(f), as well as any materials attached thereto or those portions of materials from the underlying proceedings referenced therein (collectively, the “Settlement Record”).⁴⁸ The

⁴⁶ See Attachment D, Affidavit of Adrian Kimbrough of Behalf of Indicated Suppliers (“Kimbrough Aff.”).

⁴⁷ See Attachment E, Affidavit of Christopher Norton of Behalf of American Municipal Power, Inc. (“Norton Aff.”).

⁴⁸ The March 13 Order raised certain questions regarding the admissibility of evidence submitted in conjunction with the Prior Settlement. See March 13 Order, 186 FERC ¶ 63,019, at P 117 n.201. For avoidance of doubt, the Settling Parties hereby clarify that the entire Settlement Record may be considered by the Presiding Judge in determining whether to certify the Settlement and by the Commission in its review of the Settlement. In addition, the Settling Parties further clarify that nothing herein is intended to preclude any participant from seeking leave from the presiding officer or Commission to file additional

attached affidavits and the Settlement Record as a whole will ensure that the Commission has the substantial evidence necessary to conclude that the Settlement is just and reasonable and to make a reasoned decision on the merits of any contested issues. In this respect, “[t]he substantial evidence standard ‘requires more than a scintilla, but can be satisfied by less than a preponderance of evidence.’”⁴⁹ In contrast to the preponderance of the evidence standard which requires proof that the existence of a fact is more probable than its nonexistence,⁵⁰ the substantial evidence standard requires only “such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.”⁵¹

The substantial evidence inquiry turns not on how many discrete pieces of evidence the arbiter relies on, but on whether that evidence adequately supports its ultimate decision.⁵² Nor does the substantial evidence standard, applied under the second approach of *Trailblazer*, require evidence on every element of a rate that would need to be decided if a case were litigated.⁵³ Instead, the standard requires that there be sufficient

comments on the Settlement, which, if accepted, would also constitute part of the record that may assist the Presiding Judge’s and the Commission’s decision-making with respect to the Settlement.

⁴⁹ *ISO New England Inc.*, 158 FERC ¶ 61,138, at P 19 n.45 (2017) (quoting *La. Pub. Serv. Comm’n v. FERC*, 522 F.3d 378, 395 (D.C. Cir. 2008)).

⁵⁰ See *Sw. Power Pool, Inc.*, 180 FERC ¶ 61,192, at P 52 n.122 (2022) (citing *San Diego Gas & Elec. Co.*, 149 FERC ¶ 61,116, at P 45 (2014)).

⁵¹ *Murray Energy Corp. v. FERC*, 629 F.3d 231, 235 (D.C. Cir. 2011) (quoting *Colo. Interstate Gas Co. v. FERC*, 599 F.3d 698, 704 (D.C. Cir. 2010)).

⁵² See *Fla. Gas Transmission Co. v. FERC*, 604 F.3d 636, 645 (D.C. Cir. 2010).

⁵³ See *PJM Interconnection, L.L.C.*, 170 FERC ¶ 61,258, at P 43 (2020) (citing *Trailblazer I*, 85 FERC ¶ 61,345, at 62,343).

evidence that would allow a reasonable mind to reach the conclusion that the settlement, as a whole, produces a just and reasonable result.⁵⁴

Importantly, the existence of contrary views or evidence in the record does not prevent a finding that the Commission's decision is supported by substantial evidence. As the courts have recognized, the "possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence."⁵⁵ A Commission decision "does not lack substantial evidence simply because [a party] offer[s] 'some contradictory evidence.'"⁵⁶ Hence, for the purpose of applying the substantial evidence standard, it is necessary only that there is evidence in the record to support a finding that the Settlement is just and reasonable.⁵⁷ That standard is more than satisfied here.

⁵⁴ See *Trailblazer I*, 85 FERC ¶ 61,345, at 62,339 ("[W]here a settlement is contested, the Commission must make an independent finding supported by substantial evidence on the record as a whole that the proposal will establish just and reasonable rates." (internal quotation marks omitted)); see also, e.g., *PJM Interconnection, L.L.C.*, 170 FERC ¶ 61,258, at P 43 (2020) ("Under the second approach described in *Trailblazer* . . . the Commission does not need to render a merits decision on whether each element of a settlement package is just and reasonable, so long as the overall package falls within a broad ambit of various rates which may be just and reasonable."); *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,079, at P 60 (2013) ("2013 PJM Order") ("[T]he Commission need only find that the settlement rate falls within a range of reasonableness.").

⁵⁵ *Consolo v. Fed. Mar. Comm'n*, 383 U.S. 607, 620 (1966).

⁵⁶ *Ariz. Corp. Comm'n v. FERC*, 397 F.3d 952, 954 (D.C. Cir. 2005).

⁵⁷ See, e.g., *Devon Power LLC*, 115 FERC ¶ 61,340, at P 60 (2006) ("*Devon Power*") (explaining that under *Trailblazer* Approach No. 2, the Commission "need not find that the settlement rate is exactly the rate the Commission would find just and reasonable on the merits after litigation and need only find that the settlement rate falls within a zone of reasonableness"), *on reh'g and clarification*, 117 FERC ¶ 61,133 (2006).

B. The Settlement Meets the Commission's Standards for Certification and Approval Under Trailblazer.

The Settlement satisfies the standard for Commission approval of contested settlements, as set forth in the Commission's regulations⁵⁸ and its *Trailblazer* precedent. After a threshold determination that resolving a matter via a contested settlement is consistent with the public interest,⁵⁹ there are four approaches that the Commission may use to approve a contested settlement under *Trailblazer*:⁶⁰

1. address contesting parties' arguments on the merits and approve the settlement on the basis that each contesting party's arguments lacks merit;⁶¹
2. approve the settlement as a package on the basis that the settlement's overall result is just and reasonable even if some of contesting party's objections have merit;⁶²
3. approve the settlement where the Commission (a) determines that a contesting party's interest is sufficiently attenuated that the settlement can be analyzed under the fair and reasonable standard applicable to uncontested settlements, and (b) satisfies its obligation to make an independent finding that the settlement benefits the directly affected settling parties;⁶³ or
4. sever the contesting party and approve the settlement as uncontested for the settling parties.⁶⁴

⁵⁸ 18 C.F.R. § 385.602(h)(1)(i).

⁵⁹ See *Trailblazer I*, 85 FERC ¶ 61,345, at 62,341 ("When presented with a settlement, the first issue for the Commission is whether the settlement presents an acceptable outcome for the case that is consistent with the public interests protected by the Commission.").

⁶⁰ See, e.g., *id.* at 62,342-44; *Tri-State Generation & Transmission Ass'n*, 181 FERC ¶ 61,255, at PP 68-73 (2022), *order on reh'g*, 183 FERC ¶ 61,054 (2023); *Sw. Power Pool Inc.*, 174 FERC ¶ 61,116, at P 31, *order on reh'g*, 175 FERC ¶ 61,235 (2021); PJM 2018 Order, 163 FERC ¶ 61,168, at P 38 n.52.

⁶¹ See *Trailblazer I*, 85 FERC ¶ 61,345, at 62,342.

⁶² See *id.*

⁶³ See *id.* at 62,343.

⁶⁴ See *id.* at 62,344.

In this case, the Commission should approve the Settlement pursuant to *Trailblazer* Approach No. 2.⁶⁵

1. Resolution via Settlement is consistent with the public interest.

When presented with a settlement, the Commission first determines whether resolving the matter via settlement is consistent with the public interest.⁶⁶ The Commission and reviewing courts have recognized that resolving complex controversies, even those achieved through contested settlements, serves the public interest regardless of limited opposition to the end result.⁶⁷ In those rare cases where the Commission or courts invoke the public interest as the basis for rejecting a settlement, the settlements have “affect[ed] the ability of participants in the market to compete on even terms” or had an anticompetitive effect on terms of service.⁶⁸ That is not the case here. There is broad support for this Settlement from parties with competing interests. Moreover, the Commission encourages settlement regarding the level of rates, as opposed to terms of service.⁶⁹ The appropriate CRF for Black Start Service is precisely the type of

⁶⁵ The Settling Parties also anticipate, based on the IMM’s prior filings in this case, that the Commission could approve the Settlement based on *Trailblazer* Approach No. 1 by addressing and rejecting the IMM’s objections to the Settlement on the merits. Nonetheless, the Settling Parties cannot predict all of the IMM’s objections and all or some of the Settling Parties will respond to them in reply comments or otherwise if necessary. Similarly, some or all of the Settling Parties may on reply or otherwise argue that the Settlement may be approved under *Trailblazer* Approach No. 3.

⁶⁶ See *Trailblazer I*, 85 FERC ¶ 61,345, at 62,341 (“When presented with a settlement, the first issue for the Commission is whether the settlement presents an acceptable outcome for the case that is consistent with the public interests protected by the Commission.”).

⁶⁷ See *id.* at 62,340 (citing *Pa. Gas and Water Co. v. FPC*, 463 F.2d 1242, 1246 (D.C. Cir. 1972)).

⁶⁸ *Id.* at 62,341 (collecting cases).

⁶⁹ See *id.* at 62,341 (“Where only rate levels, as opposed to terms of service, are at issue, settlement may be an appropriate resolution. For example, the Rate Design Policy Statement expressly encouraged settlement of cost-of-service issues.” (footnote omitted)).

ratemaking issue the Commission encourages for settlement.⁷⁰ Moreover, the Presiding Judge and the Commission encouraged settlement of this case in particular.⁷¹ Resolution of these proceedings via settlement is consistent with the public interest and will result in a rate reduction effective January 1, 2024,⁷² thereby providing rate certainty,⁷³ and removing litigation cost and litigation risk at the agency and appellate level for all participants.⁷⁴

2. *The Settlement should be approved pursuant to Trailblazer Approach No. 2.*

The Settlement is just and reasonable and should be approved under the second *Trailblazer* approach. This approach permits the Commission to approve a contested settlement when it determines, based on substantial evidence, that (1) “the overall result of the [s]ettlement is just and reasonable”⁷⁵ after independently evaluating the costs and

⁷⁰ See, e.g., *Sentinel Energy Ctr., LLC*, 186 FERC ¶ 61,014, at P 31 (2024) (setting a black start service dispute for hearing and encouraging the participants to reach settlement); *Marsh Landing LLC*, 171 FERC ¶ 61,080, at P 29 (2020) (same); *Russell City Energy Co., LLC*, 169 FERC ¶ 61,097, at P 33 (2019) (same); see also *Trailblazer I*, 85 FERC ¶ 61,345, at 62,341 (“The Commission has long recognized the value of settlements, both in enabling the Commission to resolve more efficiently the large number of cases it must process and in enabling . . . ratepayers to obtain greater rate certainty and minimize . . . litigation costs.”); *Enbridge Energy, Ltd. P’ship*, 148 FERC ¶ 61,082, at P 11 (2014) (noting the “Commission’s policy of favoring settlements as a means for parties to avoid litigation and thereby lessen the regulatory burdens of all concerned”).

⁷¹ March 2023 Order, 182 FERC ¶ 61,194, at P 33 (“While we are setting these matters for a trial-type evidentiary hearing, we encourage efforts to reach settlement”); see also March 13 Order, 186 FERC ¶ 63,019, at P 73 (“I recognize that the Commission has a longstanding policy of promoting settlements as a way of providing rate certainty, reducing litigation costs, and facilitating reasonable compromise in resolving complex issues.”); *id.* at P 135 (“Nothing . . . precludes the participants from re-submitting the Settlement with the additional substantial evidence needed to . . . approve the Settlement under an appropriate *Trailblazer* approach.”); *PJM Interconnection, L.L.C.*, Order Scheduling Prehearing Conference, at P 4, Docket No. EL21-91-003 (Aug. 1, 2024) (Presiding Judge scheduling prehearing conference to discuss, among other things, “the prospects of settling this case”).

⁷² See Settlement, Arts. 2.1, 2.2.

⁷³ See *id.*, Art. 5.2; Norton Aff. ¶ 7.

⁷⁴ See Settlement, Art. 3.2; Norton Aff. ¶ 7; see also *Vistra Corp. v. FERC*, No. 23-1186 (D.C. Cir. Aug. 23, 2023).

⁷⁵ *Trailblazer I*, 85 FERC ¶ 61,345, at 62,342.

benefits “of approving the settlement versus continued litigation;”⁷⁶ and (2) “the contesting party would be in no worse position under the terms of the settlement than if the case were litigated.”⁷⁷ Although the second *Trailblazer* approach “may involve some analysis of the specific issues raised” by the settlement,⁷⁸ the Commission does not need to make a merits decision on whether each element of the settlement is just and reasonable as long as there is substantial evidence supporting the determination that the settlement is an overall just and reasonable resolution.⁷⁹ The Settlement meets this standard.

(a) The overall result of the Settlement is just and reasonable.

As described further below, there is more than sufficient information for the Commission to reach a reasoned decision based on substantial evidence that the

⁷⁶ *Id.*

⁷⁷ *Trailblazer II*, 87 FERC ¶ 61,110, at 61,439; *see also, e.g., Sw. Power Pool, Inc.*, 161 FERC ¶ 63,013, at PP 272-74 (2017) (“*SPP*”) (concluding that the contesting parties would not be in a worse position under the settlement because their claims were speculative, and it was not clear that litigation would put them in the same or better position); *El Paso Nat. Gas. Co.*, 132 FERC ¶ 61,139, at P 101 (2010) (“*El Paso*”) (“The 2006 Settlement provides a reasonable resolution to these issues and received wide-spread support, even though no party obtained everything it wanted. By arguing that it would be better off litigating all of these issues anew in the hope of a better result, Phelps Dodge disregards all of the beneficial trade-offs and peace-saving benefits of the 2006 Settlement.”), *order on reh’g*, 133 FERC ¶ 61,116 (2010), *pet’n for rev. denied sub nom. Freeport-McMoRan Corp. v. FERC*, 669 F.3d 302 (2012); *GenOn Power Midwest, LP*, 149 FERC ¶ 61,218, at PP 33-36 (2014) (“*GenOn*”) (concluding that the contesting parties would be no worse off under the settlement on the basis that the settlement rate was substantially below the initial rate and after “[b]alancing the benefits of the settlement against the costs and potential effect of continued litigation”).

⁷⁸ PJM 2018 Order, 163 FERC ¶ 61,168, at P 38 (“[T]he Commission does not need to render a merits decision on whether each element of a settlement package is just and reasonable, so long as the overall package falls within a broad ambit of various rates which may be just and reasonable.”).

⁷⁹ *See id.*; *see also, e.g., Trailblazer I*, 85 FERC ¶ 61,345, at 62,342-43; *Mobil Oil Corp. v. FPC*, 417 U.S. 283, 313-14 (1974) (“*Mobil Oil*”) (“[E]ven if there is a lack of unanimity, [a settlement] may be adopted as a resolution on the merits, if [the Commission] makes an independent finding supported by ‘substantial evidence on the record as a whole’ that the proposal will establish ‘just and reasonable’ rates for the area” (citation omitted)); *GenOn*, 149 FERC ¶ 61,218, at P 33 (“Under the second *Trailblazer* approach, even if some individual aspects of a settlement may be problematic, the Commission may still approve a contested settlement as a package if the overall result of the settlement is just and reasonable.” (footnote omitted)).

Settlement is just and reasonable.⁸⁰ Specifically, the five affidavits attached hereto demonstrate that (1) the Settlement CRFs account for the reduction in the corporate income tax rate adopted by the TCJA; (2) the Settlement will provide concrete and immediate rate relief for customers; (3) further litigation is unlikely to result in additional savings for customers; and (4) the Settlement will advance system reliability and efficiency.

- (i) *The Settlement CRFs are comparable to the values that would result from recalculating the CRFs based on a 21 percent tax rate.*

The Settlement provides a just and reasonable overall result to resolve these proceedings. Under the second *Trailblazer* approach, the Commission “need not find that the settlement rate is exactly the rate the Commission would find just and reasonable on the merits after litigation” and instead “need only find that the settlement rate falls within a range of reasonableness”⁸¹ There is ample evidence demonstrating that Settlement CRFs are just and reasonable.

First, the Settlement CRFs are consistent with the values that result from recalculating the CRFs based on a 21 percent federal income tax rate.⁸² For instance, the Kimbrough Affidavit (Attachment D) shows that the Settlement CRFs are *lower* than the values that result from adjusting the IMM’s model to include a 21 percent tax rate.⁸³ The Boyle Affidavit (Attachment A) similarly shows that the Settlement CRFs align with the

⁸⁰ See 18 C.F.R. §§ 385.602(h)(1)(i), (h)(2)(iii)(B).

⁸¹ 2013 PJM Order, 142 FERC ¶ 61,079, at P 60 (explaining that “even if some individual aspects of a settlement may be problematic, the Commission still may approve a contested settlement as a package if the overall result of the settlement is just and reasonable” (footnote omitted)).

⁸² See Boyle Aff. ¶ 7.

⁸³ See Kimbrough Aff. ¶ 7 & Table 3.

values that result from recalculating the CRFs using an after tax weighted average cost of capital (“ATWACC”) model.⁸⁴ Collectively, this evidence shows that the Settlement will result in a reduction in rates that is consistent with, or greater than, the reduction in the federal corporate tax rate adopted as part of the TCJA.⁸⁵

This is a critical point. The Commission set this case for hearing “to determine whether the existing rates for generating units providing Black Start Service . . . , which are based on a federal corporate income tax rate that pre-dates the [TCJA], remain just and reasonable.”⁸⁶ Now, after months of negotiation, the Settling Parties have agreed to a Settlement that: (1) modifies the CRFs applicable to units selected to provide Black Start Service prior to June 6, 2021; and (2) adopts values that are consistent with the CRFs that result from recalculating the CRF values using the TCJA 21 percent federal income tax rate, regardless of whether the IMM’s model or a ATWACC model is used. The Settlement thus fully addresses the concerns that led the Commission to establish the proceeding under FPA section 206 and hearing and settlement judge procedures in Docket No. EL21-91-000.

In addition, there is ample reason for the Commission to find that the Settlement CRFs fall within a range of reasonableness. As noted, the Settlement CRFs are consistent with the values that result from recalculating the CRFs to incorporate a 21 percent federal

⁸⁴ See Boyle Aff. ¶ 7. The results of Mr. Boyle’s analysis are consistent with Trial Staff’s direct testimony in this case, which confirms that the Settlement CRFs align with CRFs calculated using the WACC model and a 21 percent federal corporate tax rate. Compare Settlement, Art. 2.1 with Exhibit No. S-0001 at 26:17-18, Table 6 (values for D3).

⁸⁵ Cf. *Devon Power*, 115 FERC ¶ 61,340, at P 72 (approving settlement under *Trailblazer* Approach No. 2 because, among other things, the settlement “results in rates for capacity that are lower than the projected payments under ISO-NE’s proposed demand curve . . . and that are comparable to the rates under alternative demand curves proposed at the hearing, bringing those rates within a range that we find is just and reasonable”).

⁸⁶ August 2021 Order, 176 FERC ¶ 61,080, at P 2.

corporate income tax rate regardless of whether the IMM's model or the ATWACC model is used. These models use a 50/50 capital structure, a 7 percent cost of debt, and a 12 percent return on equity and a 9 percent state tax rate.⁸⁷ As shown in the Kimbrough Affidavit, there is substantial evidence on which the Commission could conclude that these values are just and reasonable.⁸⁸ The Settlement CRFs result in reductions to the revenue requirements for the applicable Black Start Units through 2040 that fall between the revenue requirements under the existing, stated CRFs and Trial Staff's "E1" proposal in its direct testimony.⁸⁹

Additionally, the Settlement CRFs result in a rate of return that is comparable to the 12 percent return that the Commission found to be just and reasonable for the purpose of calculating the CRFs for Black Start resources selected after June 6, 2021.⁹⁰ As shown in the Kimbrough Affidavit, the Settlement CRFs result in a rate of return that is comparable to, or lower than, 12 percent for each Black Start commitment term.⁹¹ The fact that the Settlement CRFs result in returns that are consistent with the rate of return approved by the Commission for units selected to provide Black Start Service after June 6, 2021, further supports the conclusion that the Settlement CRFs are just and reasonable.

⁸⁷ Compare Boyle Aff., Exhibit No. 1 at 103 (PJM-0007) and Boyle Aff., Exhibit No. 1 at 25-26 with Exhibit No. IMM-0001 at 15:14-19.

⁸⁸ See Kimbrough Aff. ¶¶ 9-12.

⁸⁹ See Boyle Aff., Exhibit No. 1 at 25-26.

⁹⁰ See Tariff, Schedule 6A, section 18 (formula rate for resources selected to provide Black Start Service after June 6, 2021); August 2021 Order, 176 FERC ¶ 61,080 (approving same).

⁹¹ See Kimbrough Aff. ¶¶ 8-10.

To be clear, this does not mean that the Settlement CRFs are the only possible just and reasonable rates. PJM provided testimony that there is a range of just and reasonable rates,⁹² while the Indicated Suppliers provided evidence in support of their argument that the existing CRFs are consistent with, or even lower than, the rates that result from recalculating the CRFs using updated information regarding the costs of generation resources within the PJM market.⁹³ Trial Staff also calculated a range of CRF values, including some that are comparable to or, in some cases, lower than the Settlement.⁹⁴ But neither the Presiding Judge nor the Commission is required to evaluate whether other rates that have been recommended by the parties are just and reasonable. Instead, the Settlement can be certified—and approved—as long as there is substantial evidence supporting the conclusion that the Settlement is just and reasonable.⁹⁵

(ii) The Settlement CRFs will provide rate benefits for customers.

The fact that the Settlement CRFs are consistent with the CRFs resulting from the use of a 21 percent tax rate is not the only fact supporting the conclusion that the Settlement is just and reasonable. The rate reduction that will result from acceptance of the Settlement will provide substantial savings to customers. The Settlement CRFs

⁹² See Graf Aff., Exhibit No. 1 at 9-10.

⁹³ See Exhibit No. IS-0001 at 32:6-34:15.

⁹⁴ See generally Exhibit No. S-0001.

⁹⁵ See, e.g., *PJM Interconnection, L.L.C.*, 181 FERC ¶ 61,181, at P 33 (2022) (“The Commission need not find that the Settlement rate is exactly the same as the rate the Commission would establish on the merits after litigation. Settlements by nature are compromises, and the Commission typically does not require settling parties to justify individual elements of a settlement package.” (footnotes omitted)); 2013 PJM Order, 142 FERC ¶ 61,079, at P 60 (“[E]ven if some individual aspects of a settlement may be problematic, the Commission still may approve a contested settlement as a package if the overall result of the settlement is just and reasonable.”); *Devon Power*, 115 FERC ¶ 61,340, at P 60 (“[E]ven if some individual aspects of a settlement may not be just and reasonable standing alone, the Commission may approve a contested settlement as a package if the overall result of the settlement is just and reasonable.”).

represent a reduction from the existing CRFs of between 5.5 percent and 14.6 percent, effective January 1, 2024. Implementation of the Settlement CRFs effective January 1, 2024 would result in savings of \$15.3 million over the remaining life of the Black Start units currently being compensated based on the existing CRFs, which is only \$2.8 million higher than the notional revenue requirement that would result from the use of the CRFs the IMM proposed in opposition to the Prior Settlement.⁹⁶

The Settlement provides benefits in the form of rate certainty effective January 1, 2024. Notably, \$8.9 million of the cost savings resulting from the Settlement would occur in 2024 and 2025.⁹⁷ The Settlement thus provides access to lower rates for a longer period of time and sooner than would be available under a litigated outcome in favor of the IMM or Trial Staff.⁹⁸ The Settlement further provides an opportunity to resolve this controversy without the time and expense of additional litigation that will be necessary in the absence of the Settlement. This includes withdrawal of the petitions for review filed by Vistra in the D.C. Circuit.⁹⁹

There is also broad support for the Settlement across customer and generation interests, and other interested participants either support or do not oppose the Settlement, reflecting the value parties see in avoiding protracted litigation. The Settling Parties include customer interests that are similarly situated to the IMM in that they favor

⁹⁶ See Boyle Aff. ¶ 11.

⁹⁷ See *id.* ¶ 12.

⁹⁸ See *PJM Interconnection, L.L.C.*, Order Adopting Revised Procedural Schedule, Docket No. EL21-91-003, at 3 (Apr. 25, 2024) (“April 25 Order”) (noting that the Initial Decision is due March 18, 2025). See also Section II.B.2(iii) and note 113 *infra* (discussing timeline for continued litigation and rate benefits).

⁹⁹ See Settlement, Art. 3.2.

achieving a rate reduction (which the Settlement undisputedly accomplishes).¹⁰⁰ The overwhelming support for the Settlement, including by parties similarly situated to the only contesting party, is powerful evidence that the Settlement provides a just and reasonable resolution, and the Commission may place significant weight on that near-unanimity of support and non-opposition.¹⁰¹ In the context of a large, multi-party settlement with nearly unanimous support or non-opposition from all affected groups, and where the proposed settlement is nondiscriminatory, the Commission and reviewing courts have been appropriately wary of allowing parties to block Commission-favored negotiated resolutions.¹⁰² And the Commission has previously approved contested settlements where ongoing litigation would be costly and would create uncertainties throughout a regional transmission organization or independent system operator, as

¹⁰⁰ Cf. Norton Aff. ¶¶ 7-10.

¹⁰¹ See *Cities of Lexington v. FPC*, 295 F.2d 109, 121 (4th Cir. 1961) (“There is nothing in the Administrative Procedure Act which expressly requires unanimous consent of all the participating parties to an agreement of settlement; and to read such a contention into the statute in view of the countless state agencies, municipalities, and consumers who may be interested in an administrative proceeding would effectually destroy the settlement provision. In this instance the kind of interest which [the contesting party] entered the proceeding to represent was protected by the participation and consent of other parties in like situation. Their consent to the settlement was sufficient basis for the Commission’s approval.”). See also, e.g., *Devon Power*, 115 FERC ¶ 61,340, at P 73 (noting that, while the “level of support for the Settlement Agreement is not dispositive, the Commission can give weight to the broad-based support the Settlement Agreement received” and commenting that the settlement having the support of 107 of 115 parties in the proceeding was “quite extraordinary and . . . noteworthy” (alteration in original)); *El Paso*, 132 FERC ¶ 61,139, at P 101 (“The 2006 Settlement provides a reasonable resolution to these issues and received wide-spread support, even though no party obtained everything it wanted. By arguing that it would be better off litigating all of these issues anew in the hope of a better result, Phelps Dodge disregards all of the beneficial trade-offs and peace-saving benefits of the 2006 Settlement.”).

¹⁰² See, e.g., *Mobil Oil*, 417 U.S. at 313-14 (“New York contends that the Commission is without power to adopt as a rate order a settlement proposal that lacks unanimous agreement of the parties to the proceeding. That contention has no merit. The Commission clearly had the power to admit the agreement into the record—indeed, it was obliged to consider it.” (footnote omitted)); *Placid Oil Co. v. FPC*, 483 F.2d 880, 893 (5th Cir. 1973) (“No one seriously doubts the power—indeed, the duty—of FPC to consider the terms of a proposed settlement which fails to receive unanimous support as a decision on the merits.”).

would be the case here with respect to continued litigation regarding the procurement of essential Black Start service.¹⁰³

(iii) *Continued litigation will not likely result in material additional savings for customers.*

By contrast to benefits that might result from additional litigation, the Settlement provides guaranteed, material rate reductions and savings to customers.¹⁰⁴ Even if it is theoretically possible that the Commission could approve CRFs that are lower than the Settlement CRFs after continued litigation, the potential for such a result must be balanced against the associated timing, risks, and costs. Any claim that a better outcome for the benefit of customers could be achieved through continued litigation is speculative. Consistent with the Commission's policy in favor of settlements in complex, multi-party litigation, such a claim does not serve as a reasoned basis for declining to certify or approve the Settlement.

The IMM criticized the Prior Settlement on the basis that it would not completely eliminate the "overpayment" that has resulted from the reduction in the corporate federal income tax rate.¹⁰⁵ The IMM's arguments were premised on its view that the current

¹⁰³ Bryson Aff. ¶ 7. *See also, e.g., Duke Energy Trading & Mktg., L.L.C.*, 126 FERC ¶ 61,234, at PP 37-38 (2009) ("[T]he Settlement Agreement will promote certainty with respect to these particularly contentious proceedings [regarding the California Independent System Operator Corporation markets]. . . . Many of the Settling Parties have divergent interests from one another; yet, they came together to agree on a number of compromises that will allow the Settling Parties to cease litigation and gain certainty going forward. These Settling Parties recognized that there was a value to avoiding potentially costly and resource-intensive litigation before this Commission and before the courts.").

¹⁰⁴ *See Norton Aff. ¶ 10. See also, e.g., SPP*, 161 FERC ¶ 63,013, at P 272 ("[T]he Commission should approve the Settlement because the substantial, concrete benefits under the Settlement vastly outweigh any speculative benefit that may result from litigation."); *El Paso*, 132 FERC ¶ 61,139, at P 101 ("[T]he benefit Phelps Dodge alleges will occur from litigating this case is too speculative to undermine the conclusion that it would be no worse off under the 2006 Settlement than if it were free to litigate further.").

¹⁰⁵ IMM Comments on Prior Settlement, Exhibit No. IMM-0001, Affidavit of Joseph E. Bowring on behalf of the Independent Market Monitor for PJM, at 15:22-16:2 ("Bowring Affidavit on Prior Settlement"). *See*

CRFs should have been, or should be, adjusted effective January 1, 2018.¹⁰⁶ The Commission has, however, “decline[d] to include within the scope of this proceeding, as PJM Market Monitor requests, the issue of whether PJM should make retroactive changes to the rates previously paid to generators, as any such changes violate the filed rate doctrine and the related rule against retroactive ratemaking.”¹⁰⁷ The IMM has acknowledged “that retroactive application of revised CRFs to black start resources that have completed their capital cost recovery is not a viable option in this proceeding.”¹⁰⁸ As a result, there appears to be a material possibility that the Commission will conclude that the rule against retroactive ratemaking prohibits any adjustment to the existing CRFs for the period from January 1, 2018 to August 17, 2021, which is the refund effective date in this case,¹⁰⁹ and therefore refunds for this period are unavailable as a matter of law. The Settlement wholly avoids the need to litigate this issue while providing material, immediate rate relief to customers.

Additionally, the refund period in this case expired on November 17, 2022,¹¹⁰ and the CRF rates can only be reduced going forward as of the date the Commission sets or

also Exhibit No. IMM-0001 at 3:10-11 (arguing that “the TCJA federal tax provisions should have been included in all CRF rates effective on January 1, 2018”).

¹⁰⁶ See Bowring Affidavit on Prior Settlement at 16:1-2, Table 1.

¹⁰⁷ August 2021 Order, 176 FERC ¶ 61,080, at P 50.

¹⁰⁸ See Exhibit No. IMM-0001 at 16 (citing August 2021 Order, 176 FERC ¶ 61,080, at P 50).

¹⁰⁹ The Indicated Supplies made this argument in response to the IMM Comments on the Prior Settlement. *PJM Interconnection, L.L.C.*, Reply Comments of Indicated Suppliers, Docket Nos. ER21-1635-005 & EL21-91-003, at 8, 14-18 (Mar. 1, 2024); *PJM Interconnection, L.L.C.*, Reply Comments of PJM Interconnection, L.L.C., Docket No. EL21-91-003 (Mar. 1, 2024).

¹¹⁰ The refund period for this case began on August 17, 2021, and expired on November 17, 2022. See 16 U.S.C. § 824e(b); *PJM Interconnection, L.L.C.*, Notice of Institution of Section 206 Proceeding and Refund Effective Date, 86 Fed. Reg. 45,980 (Aug. 17, 2021) (“The refund effective date in Docket No. EL21-91-000, established pursuant to section 206(b) of the FPA, will be the date of publication of this notice in the Federal Register.”).

accepts new CRF rates.¹¹¹ This means that, absent resolution through the Settlement, or the Commission's acceptance of the IMM's arguments over the objections of Indicated Suppliers and PJM, it appears that rate relief would not be available from November 17, 2022, until the Commission issues an order accepting revised rates at the end of the litigated proceedings. The current procedural schedule in this case calls for an initial decision by March 18, 2025.¹¹² Following an initial decision, it commonly takes over a year before the Commission can render a merits decision on the initial decision.¹¹³ The Settling Parties therefore conservatively estimate that the Commission would not issue a merits decision on an initial decision in this case before June 1, 2026.¹¹⁴

¹¹¹ See 16 U.S.C. § 824e(a) (upon finding a rate to be unjust, unreasonable, unduly discriminatory or preferential, "the Commission shall determine the just and reasonable rate, charge, classification, rule, regulation, practice, or contract to be thereafter observed and in force, and shall fix the same by order"); *Kern River Gas Transmission Co.*, Opinion No. 486-D, 133 FERC ¶ 61,162, at PP 21, 23-24 (2010) (explaining that the Commission's power to fix a new rate becomes effective as of the date the Commission orders the utility to use a specific rate or the rate upon which the Commission accepts a compliance filing), *order on initial decision*, Opinion No. 486-E, 136 FERC ¶ 61,045 (2011), *order on reh'g*, Opinion No. 486-F, 142 FERC ¶ 61,132, *order on reh'g*, Opinion No. 486-G, 145 FERC ¶ 61,042 (2013); *Midwest Indep. Transmission Sys. Operator, Inc.*, 131 FERC ¶ 61,174, at P 141 (2010) (explaining that if the Commission does not set a rate, the "earliest the rate could become effective was upon the Commission's acceptance of the compliance filing").

¹¹² See April 25 Order at 3.

¹¹³ See *Midship Pipeline Co., LLC*, 178 FERC ¶ 61,202, dissent op. (Commissioner Danly) at P 3 (2022) ("[E]ven if there are no litigation delays, parties must still wait for the Commission to issue an order, which in the last 3 years has—at the earliest—occurred over 14 months after the issuance of an initial decision" (citing *Pac. Gas & Elec. Co.*, 178 FERC ¶ 61,068 (2022) (issued over 18 months after initial decision); *DATC Path 15, LLC*, 177 FERC ¶ 61,115 (2021) (issued over 24 months after initial decision); *Entergy Ark., Inc.*, 175 FERC ¶ 61,136 (2021) (issued over 6 years after initial decision); *Cal. v. British Columbia Power Exch. Corp.*, 175 FERC ¶ 61,124 (2021) (issued over 3 years after initial decision); *Panda Stonewall LLC*, 174 FERC ¶ 61,266 (2021) (issued nearly 2 years after initial decision); *Peregrine Oil & Gas II, LLC v. Tex. E. Transmission, LP*, 173 FERC ¶ 61,246 (2020) (issued over 19 months after initial decision); *White Cliffs Pipeline, L.L.C.*, 173 FERC ¶ 61,155 (2020) (issued over 14 months after initial decision); *Pac. Gas & Elec. Co.*, 173 FERC ¶ 61,045 (2020) (issued over 2 years after initial decision); *Chevron Prods. Co. v. SFPP, L.P.*, 172 FERC ¶ 61,207 (2020) (issued over 3 years after initial decision); *Entergy Gulf States La., L.L.C.*, 170 FERC ¶ 61,019 (2020) (issued 15 months after initial decision); *City & Cnty. of San Francisco v. Pac. Gas & Elec. Co.*, 169 FERC ¶ 61,128 (2019) (issued over 5 years after initial decision); *Aircraft Serv. Int'l Grp., Inc. v. Cent. Fla. Pipeline LLC*, 169 FERC ¶ 61,119 (2019) (issued over 21 months after initial decision); *TranSource, LLC v. PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,119 (2019) (issued over 19 months after initial decision)).

¹¹⁴ Boyle Aff. ¶ 9.

By contrast to the timeline for relief expected in a fully litigated proceeding, the Settlement provides significant benefits by reducing rates as of January 1, 2024—approximately two and a half years earlier than the likely date when any rate reduction resulting from litigation would take effect. Indeed, the IMM acknowledges the benefits of implementing a rate reduction in the near term. According to the IMM’s direct testimony, reducing the CRFs effective January 1, 2026, rather than January 1, 2025, increases the purported “overpayment” from \$23.6 million to \$39.9 million, a difference of \$13.3 million for that single year.¹¹⁵ Hence, even assuming that the IMM receives its preferred CRF calculation through a fully litigated outcome, a considerable portion of its requested relief (significantly more than \$13.3 million) may not be available because, as discussed above, the Commission may conclude that any new CRF rates can only take effect as of the date the Commission either sets or accepts new CRF rates,¹¹⁶ which is anticipated to be no sooner than June 1, 2026. The benefits of an earlier rate reduction are amplified by the fact that twenty-four black start resources will complete their capital recovery terms in 2024 and 2025,¹¹⁷ before the date when any rate reduction would likely be implemented as a result of litigation.

The IMM has offered different, alternative CRFs.¹¹⁸ Most recently, the IMM has suggested that an updated CRF should be calculated for each of the Black Start Units selected by PJM prior to June 6, 2021, to reflect the actual capital recovery to date and

¹¹⁵ See Exhibit No. IMM-0001 at 17:6, Table 1.

¹¹⁶ See *supra* note 111.

¹¹⁷ See Exhibit No. IMM-0001 at 16:5-8.

¹¹⁸ Compare *PJM Interconnection, L.L.C.*, Comments of the Independent Market Monitor for PJM, Docket No. ER21-1635-000, at 15 (Apr. 28, 2021) (recommending CRFs based on 100 percent bonus depreciation ranging from 0.101 to 0.246), with Bowring Affidavit on Prior Settlement (recommending CRFs based on 100 percent bonus depreciation ranging from 0.1031 to 0.2475).

the “over-recovery” that has occurred as a result of the reduction in the federal corporate tax rate.¹¹⁹ Achieving this result would require dozens of individual rate determinations that would contravene the interests of efficiency that the Settlement advances and increase litigation costs for the parties.

Ultimately, the result of further litigation is unlikely to place customers in a materially better position than they would be in if this case were settled immediately on the terms described in the Settlement. For instance, even if it is assumed that litigation would result in CRF values that are comparable to those that were identified in the IMM’s comments opposing the Prior Settlement, the decisional record supports a finding that the prospective reduction in revenue would only be approximately \$2.8 million greater than the reduction under the Settlement.¹²⁰

Finally, although it is possible that the Commission could order refunds for the refund period from August 17, 2021 to November 17, 2022 if this case proceeds to litigation and the IMM were to prevail, the value of any refunds would be offset by the \$8.9 million in revenue reductions provided under the Settlement in 2024 and 2025,¹²¹ and the millions of dollars in expenses that the parties potentially could incur if this case were to be litigated to its final conclusion before the Commission and, ultimately, the courts. Accordingly, as explained in the Affidavit of Christopher Norton on behalf of AMP, a load serving entity responsible for paying the costs of Black Start Service (Attachment E), the Settlement CRFs result in cost reductions that are acceptable to AMP

¹¹⁹ See Exhibit No. IMM-0001 at 16:21 (“Under the Market Monitor’s proposal, an updated CRF is calculated for each unit.”).

¹²⁰ See Boyle Aff. ¶¶ 11-12.

¹²¹ See Boyle Aff. ¶ 12.

given the litigation risk, uncertainty, and timing issues associated with fully litigating the IMM proposal.¹²²

In short, resolving this case via the Settlement, effective January 1, 2024, will provide significant benefits to customers in the form of immediate rate relief. Engaging in further litigation may only serve to increase costs for the parties and appears unlikely to achieve additional savings for customers. Given the time value of money, as well as the litigation risk and cost of litigation, the Settlement constitutes a compromise that falls within the broad ambit of various rates which may be just and reasonable.

(iv) *The Settlement advances system reliability benefits for the entire PJM Region, including any contesting parties.*

The Commission also considers both risks and the benefits of repose inherent in a settlement and the related litigation when deciding whether to approve contested settlements.¹²³ Here, the Settlement provides additional benefits that may not be reducible to a specific quantifiable cost-benefit analysis, but are nevertheless concrete and significant and enjoyed by the entire PJM Region, including any contesting parties.¹²⁴ There is no dispute that Black Start is an essential reliability service.¹²⁵ The Settlement would allow PJM to focus on its mission-critical job of advancing system reliability, including the ongoing Black Start Procurement process and support of the energy

¹²² See Norton Aff. ¶ 10.

¹²³ See, e.g., *El Paso*, 132 FERC ¶ 61,139, at P 101 (approving a settlement under the second *Trailblazer* approach in part because of its “beneficial trade-offs and peace-saving benefits”).

¹²⁴ See, e.g., *Devon Power*, 115 FERC ¶ 61,340, at P 71 (emphasizing that the settlement provided incentives to attract new infrastructure as justification for its approval); *PJM Interconnection, L.L.C.*, 170 FERC ¶ 61,258, at P 44 (2020) (“The Settlement supports grid reliability by facilitating the continued operation of short-duration resources on the PJM system, which reduces the potential for sharp market disruptions.” (footnote omitted)).

¹²⁵ Bryson Aff. ¶ 7; *id.*, Exhibit No. 1 at 7.

transition, generally.¹²⁶ PJM's ability to focus on such matters is partially frustrated if resources must remain devoted to additional data requests, depositions, testimony, and hearing preparation by the PJM staff who could, instead, concentrate on these other important, future-focused initiatives.¹²⁷

(b) The IMM will not be in a worse position than if the case were litigated.

To the Settling Parties' knowledge, the IMM is the only participant that opposes the Settlement. The IMM's interests are not adversely affected by the Settlement. The IMM would therefore be in no worse position under the terms of the Settlement than if the case were litigated.

The IMM does not have any direct financial interest in the CRF values that would either be established by the Settlement or at the culmination of the litigated proceedings. The IMM neither pays nor collects the rates associated with the CRFs and therefore will be no worse off upon approval of the Settlement and its financial terms. Moreover, Article 5.5 of the Settlement expressly states that the Settlement "shall not be cited or relied upon as precedent for any purpose or as establishing any issue or principle." Accordingly, if the Settlement is approved, the IMM still will be free in any future proceeding to advocate for application of the same rate design principles that it would have pursued in these proceedings. The Commission therefore has a reasoned basis to conclude that the IMM will be in no worse position under the Settlement than if the case were litigated, and that the IMM's interests will not be adversely affected by the Settlement.

¹²⁶ Bryson Aff. ¶ 8; *id.*, Exhibit No. 1 at 7-8.

¹²⁷ Bryson Aff. ¶ 8.

Additionally, PJM has submitted evidence in support of its position that the Settlement will promote the efficient and competitive procurement of Black Start Service going forward. As the Bryson Affidavit explains, the certainty and rate stability that will be provided by the Settlement is consistent with the objective of promoting efficient and competitive markets and, in PJM's view, will avoid creating a disincentive to participation in future Black Start request for proposals ("RFPs") that could limit the ability of PJM to procure the resources necessary to maintain system reliability.¹²⁸ The Settlement also will avoid the costs associated with forcing PJM to further litigate this case, which could potentially reduce the resources available for other critical initiatives necessary to ensure the reliability and efficiency of the PJM system.¹²⁹

The IMM's prior criticisms of the Settlement CRFs do not provide a basis for finding those values are unjust or unreasonable or demonstrate that the IMM would achieve a better result through litigation. There is substantial evidence supporting the conclusion that the Settlement CRFs represent a reasonable compromise that is likely to leave all parties in a comparable, or better, position than they would be if this case proceeded through litigation, and that the Settlement CRFs "are no worse than the range

¹²⁸ Bryson Aff., Exhibit No. 1 at 11-12 ("I expressed concern that changing the Stated CRFs that apply to Existing Black Start Investment might undermine certainty in Black Start Service compensation and thereby cause some of the owners of Existing Black Start Investment to seek to terminate their Black Start Unit commitments prematurely. I was also concerned that the change might dissuade Black Start Unit owners considering new Black Start Service commitments from making those commitments. Such a loss of confidence in Black Start Unit compensation could reduce participation in Black Start Service RFP processes, which might result in insufficient amounts of Black Start capability for PJM to procure and might leave only higher cost Black Start Units available."); Bryson Aff., Exhibit No. 1 at 12 ("I am concerned that the litigation of this case for the past three years and the possibility of the litigation continuing for another one to two years may engender uncertainty as to Black Start compensation and negatively affect the amount of Black Start Service PJM can procure or the costs of that procurement.").

¹²⁹ Bryson Aff. ¶ 8; *id.*, Exhibit No. 1 at 7-8.

of just and reasonable rates” that would be achieved through litigation.¹³⁰ The IMM’s prior criticisms of the Settlement CRFs do not provide a basis for concluding otherwise.

In order for the IMM to achieve a more favorable outcome through litigation, the IMM would need to demonstrate (1) that the existing CRFs are unjust and unreasonable and (2) that its proposed alternative rates are just and reasonable.¹³¹ Even if the IMM were able to demonstrate that the existing CRFs are unjust and unreasonable, it is far from assured that the IMM would be able to justify CRFs that are materially lower than the Settlement CRFs.

The IMM has identified three changes that it believes should be made to the existing CRFs: (1) the CRFs should be reduced to reflect the reduction in the federal corporate income tax rate to 21 percent; (2) the CRFs should be recalculated based on 100 percent bonus depreciation; and (3) the CRFs should be reduced to compensate for the alleged over-recovery that occurred in prior periods as a result of the tax changes adopted as part of the TCJA.¹³² As described above, the Settlement CRFs are comparable to, or lower than, the CRFs that result from recalculating these values based on a 21 percent income tax rate. Thus, any further reduction below the Settlement CRFs would appear to require the IMM to demonstrate that it is just and reasonable to recalculate the CRFs based on the use of 100 percent bonus depreciation and to reduce the CRFs to compensate for over-recovery in earlier periods.

¹³⁰ March 13 Order, 186 FERC ¶ 63,019, at P 116.

¹³¹ See, e.g., *New England Power Generators Ass’n, Inc. v. FERC*, 879 F.3d 1192, 1200 (D.C. Cir. 2018).

¹³² See generally Exhibit No. IMM-0001.

There is substantial evidence that the Commission could rely upon to conclude that the CRFs do not need to be adjusted based on 100 percent bonus depreciation. As an initial matter, it is important to note that the IMM has *not* disputed that the Settlement CRFs are just and reasonable for Black Start resources that were placed in service prior to September 27, 2017. In testimony opposing the Prior Settlement, Dr. Joseph Bowring observed that “[t]he settlement CRF rates with zero bonus depreciation are correct for resources placed in service before September 27, 2017.”¹³³ Thus, there does not appear to be any dispute that the Settlement CRFs are just and reasonable for Black Start resources that were placed into service prior to September 27, 2017.

For resources that were placed into service after September 27, 2017, the testimony of Mr. He submitted on behalf of Trial Staff recommends against the use of bonus depreciation because “it is unclear to [Mr. He] if any units currently receiving Black Start compensation using CRF Set A values ever incurred costs qualifying for any bonus depreciation associated with capital costs incurred to provide Black Start Service.”¹³⁴ Certain of the Indicated Suppliers have also submitted evidence representing that they did not elect 100 percent bonus depreciation for their units that entered service after September 17, 2017.¹³⁵ In addition, certain of the Indicated Suppliers provided evidence representing that their Black Start units that entered service after September 17, 2017 were selected through RFPs that were conducted after the effective

¹³³ Bowring Affidavit on Prior Settlement at 12:27-28. *See also* Exhibit No. IMM-0001 at 14:2-7 (stating that “29 black start generators . . . began providing black start service prior to September 27, 2017, and would not have been eligible for bonus depreciation under the TCJA. . . . The excess payments to these 29 generators were due to the change in the federal income tax rate alone and were not affected by the changes to depreciation rules.”).

¹³⁴ Exhibit No. S-0001 at 29:19-22.

¹³⁵ *See* Exhibit No. JP-0001 at 5:21-6:6; Exhibit No. LS-0001 at 7:7-13.

date of the TCJA.¹³⁶ Accordingly, even if certain units were theoretically eligible to elect 100 percent bonus depreciation, the Commission could conclude that there is no reason to reduce the CRFs to reflect 100 percent bonus depreciation because such units made their offers to provide Black Start Service based on CRFs calculated using a different depreciation methodology.

Similarly, it is far from clear that the IMM will prevail on its claim that rates should be reduced to account for overcollection in prior periods. Ultimately, the question of whether CRFs can be reduced prospectively to account for purported overcollection during prior periods is a question of law. Indeed, the Commission already excluded from the hearing “the issue of whether PJM should make retroactive changes to the rates previously paid to generators, as any such changes violate the filed rate doctrine and the related rule against retroactive ratemaking.”¹³⁷ The IMM’s testimony acknowledges this legal and factual reality.¹³⁸

The Commission therefore can and should determine that the IMM will not be in a worse position as a result of the Settlement and approve the Settlement under *Trailblazer* Approach No. 2.

C. Requirements to Certify the Settlement

As indicated previously, the Settling Parties understand that the IMM intends to oppose the Settlement. Pursuant to Rule 602(h)(1)(i), the Commission alone is

¹³⁶ See Exhibit No. HAZ-0001 at 3:5-17; Exhibit No. JP-0001 at 5:5-7; Exhibit No. LS-0001 at 3:11-19.

¹³⁷ August 2021 Order, 176 FERC ¶ 61,080, at P 50.

¹³⁸ See Exhibit No. IMM-0001 at 16:3-5 (“The Commission has indicated that retroactive application of revised CRFs to black start resources that have completed their capital cost recovery is not a viable option in this proceeding.” (citing August 2021 Order, 176 FERC ¶ 61,080, at P 50)).

empowered to make merits decisions on a contested settlement.¹³⁹ However, because this case has been set for hearing but the record has not yet been certified, the presiding officer (here the Presiding Judge) will consider the Settlement in the first instance to determine whether it is contested.¹⁴⁰ To the extent the Presiding Judge determines that the Settlement is contested, the Presiding Judge may nonetheless certify all or part of the Settlement to the Commission if (1) the Presiding Judge determines there is no genuine issue of material fact,¹⁴¹ or (2) the parties concur on a motion for omission of an initial decision or the Presiding Judge determines that omission of an initial decision is appropriate under Rule 710(d), and the record contains substantial evidence upon which the Commission can make a merits decision on the contested issues.¹⁴² The Settling Parties submit that those requirements are satisfied here.

1. There is no genuine issue of material fact relating to the Settlement.

The Presiding Judge should find there are no genuine issues of material fact that remain. In evaluating whether a genuine issue of material fact exists with respect to a settlement, the scope of the inquiry is confined to the offer of settlement. Rule 602(h)(1)(i) specifically provides that “[i]f the Commission determines that any offer of settlement is contested in whole or in part, by any party, the Commission may decide the *merits of the contested settlement issues*.”¹⁴³ In other words, Rule 602 does not require a presiding officer to determine there are no disputed issues of material fact that

¹³⁹ See 18 C.F.R. § 385.602(h)(1).

¹⁴⁰ See 18 C.F.R. §§ 385.602(b)(2)(i), (g)(1), (h)(2).

¹⁴¹ See 18 C.F.R. § 385.602(h)(2)(ii).

¹⁴² See 18 C.F.R. § 385.602(h)(2)(iii).

¹⁴³ 18 C.F.R. § 385.602(h)(1)(i) (emphasis added).

would need to be resolved to support a fully litigated resolution; instead, the presiding officer need only find there are no questions of material fact with respect to the proposed settlement. Thus, under Rule 602(f)(4), any comment filed opposing a settlement “by alleging a dispute as to a genuine issue of material fact must include an affidavit detailing any genuine issue of material fact by specific reference to documents, testimony, or other items *included in the offer of settlement*, or items *not included in the settlement*, that are relevant to support the claim.”¹⁴⁴ Similarly, under Rule 602(h)(2)(ii), the presiding officer may certify an offer of settlement if there is no genuine issue of material fact, and in so doing, the presiding officer must provide a certification containing “the determination that there is no genuine issue of material fact and *any hearing record or pleadings which relate to the offer or part of the offer being certified*.”¹⁴⁵ As a result, “a genuine issue of material fact sufficient to preclude certification of a settlement agreement must be a dispute of the basic facts *underlying the settlement*.”¹⁴⁶

¹⁴⁴ 18 C.F.R. § 385.602(f)(4) (emphases added).

¹⁴⁵ 18 C.F.R. § 385.602(h)(2)(ii) (emphasis added).

¹⁴⁶ *Cal. Power Exch. Corp.*, 85 FERC ¶ 63,007, at 65,120 (1998) (emphasis added) (citing *Trunkline Gas Co.*, 22 FERC ¶ 63,114, at 65,398 (1983)). See also *Holloman Lessee LLC*, 182 FERC ¶ 63,018, at P 46 (2023) (finding no genuine issue of material fact where “neither the Market Monitor’s comments nor the Bowring Affidavit identify any facts that are both disputed and material to the settlement”); *Fla. Gas Transmission Co., LLC*, 133 FERC ¶ 63,011, at P 185 (2010) (“The Supreme Court has interpreted a virtually identical phrase, ‘genuine issue as to any material fact’ as encompassing ‘[o]nly disputes over facts that might affect the outcome of the suit under governing law.’ In this proceeding, a fact ‘that might affect the outcome of the suit’ is necessarily a fact that may warrant Commission rejection or modification of the Settlement.” (footnote omitted)); *San Diego Gas & Elec. Co. v. Sellers of Energy & Ancillary Servs.*, 115 FERC ¶ 61,230, at P 37 (2006) (“[T]he Commission agrees that Mr. McCullough’s affidavit and the Declaration of Dr. Fox-Penner are irrelevant to the instant Settlement between IDACORP, the California Parties and OMOI and therefore do not support the existence of genuine issues of material fact.”).

A contesting party cannot be permitted to derail a settlement simply by raising questions regarding the underlying facts of the case, rather than the settlement at issue.¹⁴⁷ The Commission has made clear that “even if some aspects of a settlement are problematic, the Commission nevertheless may approve a contested settlement as a package upon determining that the overall result of the settlement is just and reasonable”¹⁴⁸ This focus on “the overall result of the settlement” would not be possible if any and all factual disputes relating to the underlying case had to be resolved. Moreover, the Commission has also explained that, “if a party’s interests are not immediately and irreparably affected by approval of a settlement [agreement] in a consolidated docket, that party’s opposition to a settlement [agreement] does not create a genuine, material issue.”¹⁴⁹ As explained above, the IMM’s interests will not be adversely affected by approval of the Settlement. Moreover, Commission precedent is instructive because it focuses on the effect of the settlement at issue, rather than underlying facts regarding the matter set for hearing.

As explained above, the Settlement resolves the issue set for hearing in this case by proposing Settlement CRFs that are consistent with or lower than the CRFs that would result if the existing stated CRFs in the Tariff were recalculated with the updated federal tax rate from the TCJA. Accordingly, while the March 2023 Order stated that “[t]he

¹⁴⁷ See *Pa. Gas & Water Co. v. FPC*, 463 F.2d 1242, 1245 (D.C. Cir. 1972) (finding that the Commission has authority to find “the rates successfully negotiated by Manufacturers with all of its customers except Penn Gas, and approved by the Commission staff, did not warrant further hearing. If it were not within the power of the Commission to do so, any customer of a natural gas company could tie up its supplier and the Commission for an indefinite period in the trial of a limitless variety of issues, where there is no genuine issue of material fact, despite the ease with which their inherent worth or worthlessness might otherwise be quickly determined.”).

¹⁴⁸ *Az. Pub. Serv. Co.*, 125 FERC ¶ 61,177, at P 20 (2008).

¹⁴⁹ *El Paso Nat. Gas Co.*, 25 FERC ¶ 61,292, at 61,673 (1983). See also *Modesto Irrigation Dist.*, 125 FERC ¶ 61,173, at P 16 (2008) (same).

import of the tax rate in the determination of the CRF value is a material fact that cannot be determined based on the existing record,”¹⁵⁰ the Settlement effectively renders this issue moot by adjusting the CRFs to account for the reduced tax rate under the TCJA. Thus, the issue that remains before the Commission is whether the Settlement CRFs are just and reasonable, which is a question of law and policy, rather than fact.¹⁵¹

The Settlement is just and reasonable and should therefore be certified to the Commission. Indeed, the Commission previously has approved contested settlements upon finding that the IMM had “not raised any genuine issues of material fact regarding the merits of the Settlements”¹⁵² and was instead only “rais[ing] a policy issue, rather than a disputed issue of material fact.”¹⁵³ Similarly, certification was found to be appropriate in a case where the settling parties proposed one rate, and the IMM proposed a lower rate, with the Presiding Judge explaining:

No matter which way one looks at it, the factual issue—that is, what is the Albemarle reactive service revenue requirement—is gone. On one side, there is multi-participant agreement of a proxy revenue requirement in the Settlement Agreement; on the other, there is the Market Monitor’s promotion of a proxy via proposed offset. The

¹⁵⁰ March 2023 Order, 182 FERC ¶ 61,194, at P 32.

¹⁵¹ See *New Orleans Pub. Serv., Inc. v. FERC*, 659 F.2d 509, 513-14 (5th Cir. 1981) (“The fact that the testimony in question presented differing figures for cost of service, rate base, advance payments and rate of return from the settlement figures for each category does not mean that a hearing was required to address those differences. . . . [T]he differences in figures reflect disagreement in matters of policy rather than conflict in basic facts.”).

¹⁵² *Hunlock Energy LLC*, 170 FERC ¶ 61,090, at P 27 (2020).

¹⁵³ *Id.* at P 29. See also, e.g., *Tex. E. Transmission Corp.*, 59 FERC ¶ 61,070, at 61,285 (1992) (explaining that “concerns regarding surcharges (dealing with issues of law or policy)” were not “genuine issues of material fact”); *Nat. Gas Pipeline Co. of Am.*, 33 FERC ¶ 61,188, at 61,388 (1985) (explaining concerns regarding the proposed rate “raise issues of policy rather than factual questions susceptible to resolution by an evidentiary hearing”).

only question that remains is which proxy is just and reasonable to be applied to Albemarle.¹⁵⁴

The same is true here, as the Settlement raises only legal and policy issues regarding the justness and reasonableness of the Settlement CRFs. Accordingly, the Presiding Judge should find that there are no genuine issues of material fact and certify the Settlement to the Commission.

2. *Alternatively, the Presiding Judge may certify the Settlement by finding that waiver of the initial decision is appropriate and that there is substantial evidence for the Commission to reach a reasoned decision.*

Even to the extent that the Presiding Judge finds that there are genuine issues of material fact with respect to the Settlement, the Settlement may be certified to the Commission pursuant to Rule 602(h)(2)(iii). The Settling Parties are concurrently filing a motion (that is supported by Trial Staff and opposed by no party other than the IMM) with the Presiding Judge requesting, among other things, that the Presiding Judge determine that omission of the initial decision is appropriate under Rule 710(d).¹⁵⁵ In addition, as explained previously, the Settlement satisfies the requirements for

¹⁵⁴ *Albemarle Beach Solar LLC*, 182 FERC ¶ 63,014, at P 99 (2023). *See also, e.g., Panda Hummel Station LLC*, 181 FERC ¶ 63,014, at P 87 (2022) (finding that “the only remaining dispute is which proxy revenue requirement is reasonable as a matter of law, that of the black box 2022 Settlement or that of the capacity market offset” and that “[t]he weight of this record confirms there remains no genuine issue of material fact that requires an evidentiary hearing or further investigation by the Commission”); *El Paso Nat. Gas Co.*, 120 FERC ¶ 61,208, at P 46 (2007) (“[T]he Commission finds that none of the objections raised by Phelps Dodge present genuine issues of material fact, but instead involve legal or policy issues that can be resolved by the Commission on the merits.”); *Koch Gateway Pipeline Co.*, 83 FERC ¶ 63,007, at 65,065 (1998) (finding argument raised by contesting party to be “a policy or law issue which can be resolved by the Commission, and not a contested genuine issue of material fact”); *Colo. Interstate Gas Co.*, 45 FERC ¶ 61,260, at 61,815 (1988) (finding that objections to settlement rates “are not genuine issues of material fact but are legal and policy issues that will be addressed here”). *Cf. Mojave Pipeline Co.*, 47 FERC ¶ 61,200, at 61,701 (1989) (“The ‘genuine issues of material fact’ submitted by protestors are in reality issues of law and Commission policy which do not require setting the Mojave application for hearing.” (footnote omitted)), *order on reh’g and clarification*, 50 FERC ¶ 61,069 (1990).

¹⁵⁵ *See* 18 C.F.R. § 385.602(h)(2)(iii)(A).

certification under Rule 602(h)(2)(iii) because the attached affidavits (as well as the Settlement Record as a whole) provide substantial evidence on which the Commission may reach a reasoned decision on the merits of any contested issues.¹⁵⁶ Accordingly, the Presiding Judge should grant the Rule 710(d) motion if necessary to do so in order to certify the Settlement to the Commission.

III. DESCRIPTION OF THE SETTLEMENT

Article 1 of the Settlement provides the background regarding the proceeding, the procedural history, and the parties.

Article 2 provides that PJM will replace the CRF values in Schedule 6A of its Tariff for units selected prior to June 6, 2021, with the Settlement Rates effective January 1, 2024, as reflected on included pro forma Tariff sheets. Article 2.1 further provides that if the Presiding Judge certifies the Settlement to the Commission, PJM will move to place the Settlement Rates into effect on an interim basis by the next monthly invoice that is issued at least sixty days after the Presiding Judge's decision to certify. Article 2.1 also provides that PJM will reinstate the pre-Settlement Rates if the Commission rejects the Settlement or the Settlement is otherwise of no force and effect. Article 2.2 states that the Settlement Rates shall be effective as of January 1, 2024. Article 2.3 provides that no refunds will be required for Black Start Service rendered prior to January 1, 2024 by units selected for Black Start Service prior to June 6, 2021. Article 2.3 also provides the timing and process by which PJM will engage in re-settlement once the Settlement is effective, providing that PJM will re-settle any amounts collected in excess of the Settlement Rates from January 1, 2024 or later, including

¹⁵⁶ See 18 C.F.R. § 385.602(h)(2)(iii)(B).

interest pursuant to 18 C.F.R. § 35.19a. Finally, Article 2.4 provides for re-settlement in the event the Commission rejects the Settlement or the Settlement is otherwise of no force and effect. In that scenario, the Settling Parties will not oppose PJM reinstating the pre-Settlement Rates for units selected prior to June 6, 2021, in Schedule 6A of the Tariff effective January 1, 2024, with re-settlement to occur upon the final outcome of the administrative proceedings. Article 2.4 further provides that PJM will effectuate such re-settlement by collecting and distributing amounts that would have been collected under the pre-Settlement Rates in effect prior to filing the Settlement Rates on an interim basis, plus interest calculated in accordance with 18 C.F.R. § 35.19a.

Article 3 provides that the terms of the Settlement are not severable and sets the effective date of the Settlement as the date the Commission issues an order approving the Settlement without modification or condition and that order is deemed final and non-appealable in different scenarios (“Settlement Effective Date”). Article 3.2 provides that within 10 days of the Settlement Effective Date, Vistra will file to withdraw their petitions for review of the Commission’s orders in Docket Nos. EL21-91, et al. from the D.C. Circuit.

Article 4 establishes that the Settlement’s terms and conditions are contingent upon the Commission’s approval or acceptance of the Settlement without modification or condition. If the Commission conditions its approval or acceptance of the Settlement or requires material modification, any Settling Party may notify the other Settling Parties within 5 business days that it opposes the Settlement as so conditioned or modified, and the Settling Parties shall meet or confer within 10 business days after such notification. If a revised offer of settlement cannot be reached and the concerns of the Settling Party(ies)

cannot otherwise be adequately addressed within 5 business days of such meeting or conference (unless mutually extended by the Settling Parties), the Settlement shall be of no force and effect. Article 4.2 states that each Settling Party will cooperate with the filing of the Settlement and efforts to obtain Commission approval. Article 4.3 states that the Settling Parties will make reasonable efforts to support and defend the Settlement, but that the Settlement will not limit any Settling Party's right to respond to a pleading or filing submitted by a participant other than a Settling Party.

Article 5.1 provides that the Settlement constitutes the entire agreement with regard to the matters addressed in the captioned proceedings and implies no right, duties, or other restrictions not expressly set forth in the Settlement.

Article 5.2 provides that the Settling Parties will not make any filing to modify the Settlement Rates for a period of two years following the Settlement's effective date. After that two-year period, nothing in the Settlement will be construed as affecting PJM's right to unilaterally make an application to the Commission to modify the Settlement Rates pursuant to FPA sections 205, or for any Settling Party to oppose such a filing made or unilaterally take action under FPA section 206.

Under Article 5.3, all settlement communications and discussions, except those publicly filed in the docket, are (1) privileged and not to be publicly disclosed, (2) without prejudice to the position of any party or participant making those communications or participating in any such discussions, and (3) not to be used in these proceedings or otherwise except to the extent necessary to enforce the terms of the Settlement. In the event the Commission rejects the Settlement, Rule 602(e) of the

Commission's Rules of Practice and Procedure will apply to bar the admissibility of the Settlement.¹⁵⁷

Article 5.4 provides that the Settling Parties will not be deemed to have approved, accepted, agreed, or consented to any principle or position advanced or taken in this proceeding by any other participant or to have prejudiced positions taken or that may be taken by such Settling Party in this or any other proceeding. Article 5.5 provides that neither the Settling Parties nor the Commission shall be deemed to have approved, accepted, agreed, or otherwise consented to any ratemaking principle or methodology or any Tariff interpretation or modification unless expressly provided in the Settlement. The Commission's approval of the Settlement will not constitute precedent, will not prejudice any otherwise available rights or arguments of any party in a future proceeding (other than to enforce the terms of the Settlement), and will not be used as evidence that a particular method is a "long standing practice" or "settled practice."

Article 5.6 sets the "public interest" application of the just and reasonable standard of review, commonly referred to as the "*Mobile Sierra*" standard of review,¹⁵⁸ as the standard of review for any changes to the Settlement proposed by any party to these proceedings and the ordinary just and reasonable standard for any changes to the Settlement proposed by any other person or entity. This section also clarifies that this standard is not intended to apply to future filings made in accordance with Article 5.2.

¹⁵⁷ 18 C.F.R. § 385.602(e)(1).

¹⁵⁸ See *NRG Power Mktg., LLC v. Me. Pub. Utils. Comm'n*, 558 U.S. 165 (2010); *Morgan Stanley Cap. Grp. Inc. v. Pub. Util. Dist. No. 1*, 554 U.S. 527 (2008); *United Gas Pipe Line Co. v. Mobile Gas Serv. Corp.*, 350 U.S. 332 (1956); *FPC v. Sierra Pac. Power Co.*, 350 U.S. 348 (1956).

Article 5.7 establishes that no provision of the Settlement may be waived if waiver would cause financial injury to any other Settling Party, unless the injured Settling Party consents in writing. No provision of the Settlement can be waived except through a signed writing by an authorized representative of the waiving party. Article 5.8 makes the Settlement binding on and for the benefit of the Settling Parties and their successors and assigns. Article 5.9 provides that the Commission's approval of the Settlement shall constitute the requisite grant of waivers of any regulation as may be necessary to permit the implementation of the Settlement.

Article 5.10 establishes that the Settlement is the product of each Settling Party, and no ambiguity will be construed in favor of or against any Settling Party on the basis of that party being the drafter.

Article 5.11 sets forth the Settlement's rules of interpretation and construction. Under Article 5.11, the title and headings of the sections of the Settlement are for reference purposes only and are not to be construed or considered in interpreting the Settlement.

IV. POLICY AND OTHER ISSUES ARISING UNDER THE SETTLEMENT

Consistent with Commission policy, the Settling Parties address policy and other issues arising under the Settlement.

A. Does the Settlement Affect Other Pending Cases?

The Settlement does not affect other pending cases.

B. Does the Settlement Involve Issues of First Impression?

The Settlement does not involve any issues of first impression.

C. Does the Settlement Depart from Commission Precedent?

The Settlement does not depart from Commission precedent.

D. Does the Settlement Seek to Impose a Standard of Review Other than the Ordinary Just and Reasonable Standard with Respect to Any Changes to the Settlement that Might be Sought by Either a Third Party or the Commission Acting *Sua Sponte*?

Article 5.6 of the Settlement sets the “public interest” application of the just and reasonable standard of review, commonly referred to as the “*Mobile Sierra*” standard of review, as the standard of review for any changes to the Settlement proposed by any party to these proceedings and the ordinary just and reasonable standard for any changes to the Settlement proposed by third parties or the Commission acting *sua sponte*.

V. CONCLUSION

For the reasons set forth above, the Settling Parties respectfully request that the Presiding Judge certify the Settlement to the Commission and that the Commission issue an order approving the Settlement without change or condition.

File [Attachment A - Boyle Aff & Exhibits.pdf] cannot be converted to PDF. (To download this file in its original format, please use the filename hyperlink from your search results. If you continue to experience difficulties, or to obtain a PDF generated version of files, please contact the helpdesk at ferconlinesupport@ferc.gov, or, call 866-208-3676 from 9AM to 5PM EST, weekdays. Please allow at least 48 hours for your helpdesk request to be processed.)

Attachment B

Affidavit of Michael E. Bryson
on Behalf of
PJM Interconnection, L.L.C.

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.) **Docket Nos. EL21-91-003**
) **ER21-1635-00_**

**AFFIDAVIT IN SUPPORT OF SETTLEMENT
OF MICHAEL E. BRYSON
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.) **Docket Nos. EL21-91-003**
) **ER21-1635-00**

**AFFIDAVIT IN SUPPORT OF SETTLEMENT
OF MICHAEL E. BRYSON
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

1. My name is Michael Bryson and my business address is 2750 Monroe Blvd., Audubon, PA 19403. I currently serve as the Senior Vice President of Operations for PJM Interconnection, L.L.C. (“PJM”).
2. As part of my work for PJM, I am responsible for PJM’s Operations Division, overseeing the 24-hour per day, 7-days per week transmission operations for real-time systems. These operations include scheduling, transmission dispatch, generation dispatch, reliability coordination, training, and all engineering analysis required to run the system and support the critical energy management systems.
3. I earned a Bachelor of Science in general engineering from the United States Military Academy in West Point, NY, focusing on computer science and electrical engineering, and have a Master of Business Administration from Saint Joseph’s University in Philadelphia, PA. I earned a graduate certificate in power engineering from the Worcester Polytechnic Institute in Worcester, MA.
4. Prior to my current position, at PJM I have held the positions of executive director of System Operations, general manager of Dispatch Operations, and manager of the Transmission Department for the System Operations Division. I am a member of the Independent System Operator and Regional Transmission Organization

Operating Committee. I serve on the board of PJM Technologies, Inc. and previously served on the board of directors of the ReliabilityFirst Corporation as well as Consortium for Electric Reliability Technology Solutions.

5. I provided the Federal Energy Regulatory Commission (“Commission”) with prepared answering testimony on behalf of PJM for the hearing in this proceeding on July 17, 2024, as Exhibit No. PJM-0010 in Docket No. EL21-91-003 (“July 17 Testimony”). I hereby adopt my July 17 Testimony, which I include as Exhibit No. 1 to this affidavit, in support of the Settlement and aver that the statements, analyses, and conclusions I presented there apply equally to support the Settlement.
6. The purpose of this affidavit is to support the Settlement Agreement (“Settlement”) being filed concurrently in this proceeding by PJM; American Municipal Power, Inc.; Dynegy Marketing and Trade, LLC; Hazleton Generation, LLC; J-POWER USA Development Co., Ltd.; LS Power Development, LLC; PJM Industrial Customer Coalition; and Vistra Corp. (collectively, the “Settling Parties”). The Settlement represents a just and reasonable resolution of the issues the Commission set for hearing and settlement judge procedures in its order issued on March 24, 2023, in this proceeding.¹ The Commission therefore should accept the Settlement.
7. My July 17 Testimony explained the critical role Black Start Units play in PJM’s reliable operation of its system and highlighted the need to respect prior long-term

¹ *PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,194, *order on reh’g*, 184 FERC ¶ 61,077 (2023).

commitments by Black Start Units as part of the balance between securing resources to provide this critical service while also containing the cost of the service to ratepayers. I also expressed my concern that the litigation in this proceeding for over three years to date, and the possibility of the litigation continuing for another one to two years, may produce uncertainty as to Black Start compensation and negatively affect the amount of Black Start Service PJM can procure or the costs of that procurement.

8. The Settlement, if approved by the Commission, would resolve all issues in this proceeding and avoid further prolonged litigation over rates for Black Start Service. Litigation in this proceeding already has required the time and attention of PJM management and other personnel from across the company, diverting company resources away from future-focused initiatives. These initiatives will support a reliable energy transition (including the ongoing Black Start Service procurement process and other important stakeholder processes and regulatory proceedings involving, for example, the Deactivation Enhancements Senior Task Force and Reliability Must Run administrative proceedings). There is also an appeal of the Commission's orders in this proceeding pending at the District of Columbia Court of Appeals. Litigating this matter already has taken three years and could take years more given the potential for additional appeals, remands, and even more appeals. The Settlement would bring an end to the Commission and appellate proceedings in this matter, and would reduce impediments to PJM resource's forward-looking initiatives.
9. This concludes my affidavit.

Attachment B

Exhibit No. 1

Exhibit No. PJM-0010

**PREPARED ANSWERING TESTIMONY OF MICHAEL E. BRYSON
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

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**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.,) Docket No. EL21-91-003

**SUMMARY OF PREPARED ANSWERING TESTIMONY
OF MICHAEL E. BRYSON
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

Mr. Michael E. Bryson's testimony explains the critical importance of Black Start Service to restore the Bulk Electric System in the event of a major system disturbance. Mr. Bryson explains what is necessary to make a unit capable of providing Black Start Service and the typical investment involved. Mr. Bryson then explains that PJM procures Black Start Service on a voluntary basis and that, as a result, it is important to honor the expectations of the units that provide the service so as to not chill Black Start Service participation going forward.

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.,

)

Docket No. EL21-91-003

**PREPARED ANSWERING TESTIMONY OF MICHAEL E. BRYSON
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

1 **I. QUALIFICATIONS AND PURPOSE OF TESTIMONY**

2 **Q. Please state your name and business address.**

3 A. My name is Michael Bryson and my business address is 2750 Monroe Blvd.,
4 Audubon, PA 19403.

5 **Q. By whom are you employed and in what capacity?**

6 A. I currently serve as the Senior Vice President of Operations for PJM
7 Interconnection, L.L.C. (“PJM”). As part of my work for PJM, I am responsible
8 for PJM’s Operations Division, overseeing the 24-hour per day, 7-days per week
9 transmission operations for real-time systems. These operations include
10 scheduling, transmission dispatch, generation dispatch, reliability coordination,
11 training, and all engineering analysis required to run the system and support the
12 critical energy management systems.

13 **Q. Please describe your educational background.**

14 A. I earned a Bachelor of Science in general engineering from the United States
15 Military Academy in West Point, NY, focusing on computer science and electrical
16 engineering, and have a Master of Business Administration from Saint Joseph’s
17 University in Philadelphia, PA. I earned a graduate certificate in power engineering
18 from the Worcester Polytechnic Institute in Worcester, MA.

1 **Q. Please describe your professional experience.**

2 A. Prior to my current position, at PJM I have held the positions of executive director
3 of System Operations, general manager of Dispatch Operations, and manager of the
4 Transmission Department for the System Operations Division. I am a member of
5 the Independent System Operator and Regional Transmission Organization
6 Operating Committee. I serve on the board of PJM Technologies, Inc. and
7 previously served on the board of directors of the ReliabilityFirst Corporation as
8 well as Consortium for Electric Reliability Technology Solutions.

9 **Q. Have you previously provided testimony to the Federal Energy Regulatory**
10 **Commission (“Commission”)?**

11 A. No, I have not provided hearing testimony previously.

12 **Q. What is the purpose of your testimony?**

13 A. The purpose of my testimony is to respond to the pre-filed direct testimony filed in
14 this proceeding by Dr. Joseph Bowring on behalf of Monitoring Analytics, LLC, in
15 its capacity as the Independent Market Monitor for PJM (“IMM”) and by
16 Commission Trial Staff witnesses, and to support the pre-June 2021 stated Capital
17 Recovery Factors (“Stated CRFs”) as just and reasonable for Black Start Units
18 selected to provide Black Start Service prior to June 6, 2021 (“Existing Black Start
19 Investment”). I explain the critical importance of Black Start Service to PJM’s
20 reliable operation of the PJM transmission system and the need to respect prior
21 long-term commitments by Black Start Units as part of the balance between
22 securing resources to provide this critical service while also containing the cost of
23 the service to ratepayers. I also express my concern about the potential effect the
24 litigation in this proceeding continuing for another one to two years could have on

1 generator resource participation in Black Start request for proposals (“RFP”)
2 processes.

3 **II. THE CRITICAL IMPORTANCE OF BLACK START SERVICE**

4 **Q. Why is Black Start Service essential to PJM’s reliable operation of the**
5 **transmission system in the PJM Region?**

6 A. Transmission system blackouts or power system disturbances are most likely to
7 occur as the result of loss of generating equipment or transmission facilities, or as
8 the result of unexpected load changes. These disturbances could be of, or could
9 develop into, a magnitude sufficient to affect the reliable operation of the PJM
10 transmission system.

11 PJM is responsible for taking actions that are necessary to maintain the operational
12 integrity of the PJM transmission system. This responsibility includes coordinating
13 and monitoring restoration of all or parts of the Bulk Electric System (“BES”) in
14 the PJM footprint, as necessary. As part of this responsibility, PJM must develop
15 and implement a reliable “black start” capability plan. This plan includes
16 consideration of fuel sources for Black Start power for generating units, available
17 cranking ability, available transmission paths, communication adequacy, operating
18 instructions and procedures for synchronizing areas of the system that have become
19 separated, and procedures for simulating, testing and verifying the Black Start
20 plan’s resources and procedures.

21 PJM’s policy is to maintain, at all times, the integrity of the PJM transmission
22 system and the Eastern Interconnection, and to prevent any unplanned separation
23 of the PJM Transmission Owners’ systems. PJM’s system restoration plan
24 identifies all of the locations where Black Start Units are needed. PJM

1 Manual 14D¹ sets forth the criteria and process for selecting or identifying the
2 Black Start Units necessary to commit to providing Black Start Service at the
3 identified locations.

4 **Q. What are Black Start Units and what is needed for them to provide Black Start**
5 **Service?**

6 A. A Black Start Unit is a generating unit that has equipment enabling it to start
7 without an outside electrical supply, or a generating unit with a high operating
8 factor and the demonstrated ability to automatically remain operating, at reduced
9 levels, when disconnected from the grid. Development of a new Black Start Unit,
10 including converting an existing generating unit into a Black Start Unit, typically
11 requires capital expenditures in the range of \$10 million to \$30 million. A typical
12 upgrade would involve installing diesel generators, controls that allow the units to
13 start without a source of power from the transmission system, and controls that
14 allow the unit operators to close a unit's output breaker to a dead (de-energized)
15 bus. Necessary additional controls also would allow the units to control voltage
16 and frequency during a restoration event. Existing Black Start Units may also need
17 additional capital investment to comply with North American Electric Reliability
18 Corporation ("NERC") standards and for refurbishment, replacement, or upgrade
19 of outdated black start equipment and controls.

¹ Operations Planning Division, *PJM Manual 14D: Generator Operational Requirements*, PJM Interconnection, L.L.C., section 10 (Dec. 20, 2023), <https://www.pjm.com/-/media/documents/manuals/m14d.ashx>.

1 **Q. What NERC standard or standards applies/apply to Black Start Units?**

2 A. The NERC Reliability Standard for System Restoration from Black Start Resources
3 (EOP-005-3) was established to ensure plans, facilities, and personnel are prepared
4 to enable system restoration from Black Start Resources to ensure reliability is
5 maintained during restoration and priority is placed on restoring the transmission
6 system.² This standard, which applies to transmission operators such as PJM,
7 transmission owners, and generator operators, generally has a Severe Violation
8 Severity Level across all requirements. The high Severity Level is a testament to
9 the critical nature of system restoration and Black Start Service to the reliability of
10 the BES.

11 **III. THE NEED TO HONOR EXPECTATIONS AND COMMITMENTS**

12 **Q. How does PJM procure Black Start Service from Black Start Units?**

13 A. The essential role Black Start Units play in BES reliability demands that they be
14 identified in advance and committed to provide service on very short notice.
15 Because Black Start Service is voluntary, in return for their long-term commitment,
16 PJM desires to provide Black Start Unit owners with certainty and long-term

² See *NERC Reliability Standards: EOP-005-3 – System Restoration from Blackstart Resources*, North American Electric Reliability Corporation, <https://www.nerc.com/pa/Stand/Reliability%20Standards/EOP-005-3.pdf> (last visited July 16, 2024). Another NERC Reliability Standard, NERC EOP-006-3, for System Restoration Coordination, applies to PJM as a Reliability Coordinator and was established to ensure plans are established and personnel are prepared to enable effective coordination of the system restoration process. See *NERC Reliability Standards: EOP-006-3 – System Restoration Coordination*, North American Electric Reliability Corporation, <https://www.nerc.com/pa/Stand/Reliability%20Standards/EOP-006-3.pdf> (last visited July 16, 2024). This standard also generally has a Severe Violation Severity Level across all requirements. *NERC Reliability Standards: EOP-006-3 – System Restoration Coordination*, North American Electric Reliability Corporation, 6-9, <https://www.nerc.com/pa/Stand/Reliability%20Standards/EOP-006-3.pdf> (last visited July 16, 2024).

1 stability and predictability. PJM's long-standing procurement practices underscore
2 the importance PJM attaches to securing commitments to provide this service:

- 3 • PJM procures Black Start Resources through an RFP every five years, and
4 supplements that procurement with Incremental RFPs as necessary (e.g., to
5 address plant retirements and changing transmission system needs);
- 6 • PJM seeks to procure 110% of its critical load requirement (i.e., cranking power
7 to all units with a hot start time four hours or less, off-site nuclear safe shutdown
8 power, and critical Natural Gas Infrastructure) for each transmission zone, to
9 satisfy its Black Start Plan requirements;
- 10 • PJM includes some redundancy in its Black Start procurement given the
11 inherent uncertainty in the system conditions operators could face in a system
12 separation and shut-down event (e.g., unavailability of Black Start Units or
13 obstacles posed by transmission system damage);
- 14 • PJM has long sought and secured commitments from Black Start Units, to
15 provide greater certainty and stability in the fleet of resources PJM relies upon
16 to meet this critical need.

17 **Q. What other factors does PJM consider in procuring Black Start Service?**

18 A. PJM balances meeting the reliability need for Black Start Service against the goal
19 of reasonably containing the cost of obtaining Black Start Service. As part of this
20 balance, PJM seeks to meet its system restoration goals both through securing long-
21 term commitments offered in good faith at a reasonable cost, and through avoiding
22 disincentives to existing units maintaining their commitments and to new units
23 offering new commitments that are reliant on additional investments.

1 **Q. What kind of disincentives to Black Start Units maintaining their Black Start**
2 **Service commitments and entering into new commitments are you**
3 **referencing?**

4 A. When PJM made its filing in 2021 in Docket No. ER21-1635-000 to change the
5 Stated CRFs that apply to the incremental capital investment needed to make
6 generating facilities capable of providing Black Start Service, PJM distinguished
7 between past Black Start Unit long-term commitments reliant on the Stated CRFs,
8 and future long-term commitments of Black Start Units, to which PJM would apply
9 a formulaic capital recovery factor. PJM proposed to change the going forward
10 capital recovery factors to formula-based values that would change every year but
11 did not propose to change the Stated CRFs that apply to the Existing Black Start
12 Investment committed prior to June 6, 2021. PJM proposed not to change the
13 Stated CRFs that apply to Existing Black Start Investment to avoid disincentives
14 for Black Start Unit owners' participation in PJM's Black Start RFP processes.

15 **Q. Why would changing the Stated CRFs that apply to Existing Black Start**
16 **Investment be a disincentive to generators participating in PJM's Black Start**
17 **RFP process?**

18 A. Changing the capital recovery factor that applies to Existing Black Start Investment
19 from a stated, locked-in, pre-2021 rate to a rate that can fluctuate each year
20 undermines the certainty of recovery for Existing Black Start Investments. I cannot
21 speak to what any Black Start Unit owner expects, but the 2021 filing in Docket
22 No. ER21-1635-000 clearly made a substantial change in the basic structure of the
23 Black Start capital recovery and raised the possibility that such a change could
24 happen again. At the time, I expressed concern that changing the Stated CRFs that
25 apply to Existing Black Start Investment might undermine certainty in Black Start

1 Service compensation and thereby cause some of the owners of Existing Black Start
2 Investment to seek to terminate their Black Start Unit commitments prematurely. I
3 was also concerned that the change might dissuade Black Start Unit owners
4 considering new Black Start Service commitments from making those
5 commitments. Such a loss of confidence in Black Start Unit compensation could
6 reduce participation in Black Start Service RFP processes, which might result in
7 insufficient amounts of Black Start capability for PJM to procure and might leave
8 only higher cost Black Start Units available.

9 **Q. That was three years ago. Do you still have concerns about chilling**
10 **participation in Black Start RFP processes?**

11 A. Yes. I am concerned that the litigation of this case for the past three years and the
12 possibility of the litigation continuing for another one to two years may engender
13 uncertainty as to Black Start compensation and negatively affect the amount of
14 Black Start Service PJM can procure or the costs of that procurement.

15 **Q. Does this conclude your testimony?**

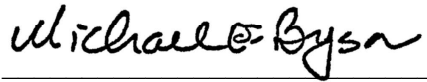
16 A. Yes, it does.

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.	)))	Docket No. EL21-91-003
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VERIFICATION

I, Michael E. Bryson, pursuant to 28 U.S.C. § 1746, state, under penalty of perjury, that I am the Michael E. Bryson referred to in the foregoing document entitled “Prepared Answering Testimony of Michael E. Bryson on behalf of PJM Interconnection, L.L.C.,” that I have read the same and am familiar with the contents thereof, and that the facts set forth therein are true and correct to the best of my knowledge, information, and belief.

By: 
Michael E. Bryson

Dated: July 17, 2024

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.

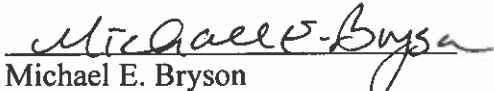
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**Docket Nos. EL21-91-003
ER21-1635-00_**

VERIFICATION

I, Michael E. Bryson, pursuant to 28 U.S.C. § 1746, state, under penalty of perjury, that I am the Michael E. Bryson referred to in the foregoing document entitled "Affidavit in Support of Settlement of Michael E. Bryson on behalf of PJM Interconnection, L.L.C.," that I have read the same and am familiar with the contents thereof, and that the facts set forth therein are true and correct to the best of my knowledge, information, and belief.

By:


Michael E. Bryson

Dated: August 2, 2024

Attachment C

Affidavit of Dr. Walter Graf
on Behalf of
PJM Interconnection, L.L.C.

Docket Nos. EL21-91-003 & ER21-1635-00
Attachment C

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.

) **Docket Nos. EL21-91-003**
 ER21-1635-00

**AFFIDAVIT IN SUPPORT OF SETTLEMENT
OF WALTER GRAF
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.	)	Docket Nos. EL21-91-003
	)	ER21-1635-00_

**AFFIDAVIT IN SUPPORT OF SETTLEMENT
OF WALTER GRAF
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

1. My name is Dr. Walter Graf and my business address is 2750 Monroe Blvd., Audubon, PA 19403. I am the Chief Economist for PJM Interconnection, L.L.C. (“PJM”).
2. I am submitting this affidavit on behalf of PJM in support of the Settlement Agreement (“Settlement”) being filed concurrently in this proceeding by PJM and others.
3. I submitted to the Federal Energy Regulatory Commission prepared answering testimony on behalf of PJM for the hearing in this proceeding on July 17, 2024, as Exhibit No. PJM-0011 in Docket No. EL21-91-003 (“July 17 Testimony”). I hereby adopt my July 17 Testimony, which I include as Exhibit No. 1 to this affidavit, in support of the Settlement and aver that the statements, analyses, and conclusions I presented there apply equally to support the Settlement.
3. This concludes my affidavit.

Attachment C
Exhibit No. 1

Exhibit No. PJM-0011

**PREPARED ANSWERING TESTIMONY OF DR. WALTER GRAF
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

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Dr. Walter Graf's testimony responds to the pre-filed direct testimony filed in this proceeding by Dr. Joseph Bowring on behalf of Monitoring Analytics, LLC, in its capacity as the Independent Market Monitor for PJM ("IMM") and by Commission Trial Staff witnesses, and to support the pre-June 2021 stated Capital Recovery Factors ("Stated CRFs") as just and reasonable for Black Start Units selected to provide Black Start Service prior to June 6, 2021 ("Existing Black Start Investment"). Dr. Graf explains that the IMM errs in insisting that the Stated CRFs are a formula rate and there can be only one just and reasonable set of capital recovery factors to be applied to the Existing Black Start Investment. Dr. Graf explains that contrary to the IMM's claims, there is a range of just and reasonable capital recovery factors that can be calculated and the bounds of that range are not fixed. Dr. Graf places the Stated CRFs in context within a range of other potentially reasonable capital recovery factors, including capital recovery factors used in other settings in PJM and capital recovery factors proposed in this proceeding by Trial Staff. Dr. Graf also compares the revenues resulting from the Stated CRFs to the revenues produced by the application of other capital recovery factors and discusses the asymmetric risks associated with overestimating the Black Start capital recovery factors as opposed to underestimating them. Finally, Dr. Graf discusses the artificially low inputs to Black Start Units' cost of capital Trial Staff proposes for use in calculating one set of capital recovery factors, based on reference to a transmission owner proxy group rather than a merchant generator proxy group.

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.,)

Docket No. EL21-91-003

**PREPARED ANSWERING TESTIMONY OF DR. WALTER GRAF
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

I. QUALIFICATIONS AND PURPOSE OF TESTIMONY

1 **Q. Please state your name, title, and business address.**

2 A. My name is Dr. Walter Graf. I am the Chief Economist for PJM Interconnection,
3 L.L.C. ("PJM"). My business address is 2750 Monroe Blvd, Audubon, PA 19403.

4 **Q. Please describe your current function and responsibilities.**

5 A. In my current position my core function is to advise the executive team and staff of
6 the market services division on all economic policy and economic analysis
7 activities related to market operations, design, and long-term evolution, across all
8 PJM markets including the energy, ancillary services, capacity, and financial
9 transmission rights markets. My responsibilities include: providing analysis of
10 operational, economic, and accounting data on the overall performance of the
11 competitive wholesale electricity markets; supporting the development of a
12 strategic direction of PJM's activities in market development and evolution;
13 performing qualitative and quantitative economic analysis of proposed changes to
14 the PJM market rules; and supporting the stakeholder process in related areas.

15 **Q. Please describe your educational background.**

16 A. I received Bachelors of Science degrees in Economics and in Civil and
17 Environmental Engineering from the University of Michigan in Ann Arbor, MI. I
18 received a Masters of Science degree and a Doctor of Philosophy degree in
19 Agricultural and Resource Economics from the University of California in
20 Berkeley, CA.

21 **Q. Please describe your professional experience.**

1 A. Prior to my current position I was Senior Director, Economics for PJM, before
2 which I was Associate and Senior Associate at The Brattle Group, an economic
3 consulting firm. I worked on market design engagements in both energy and
4 capacity markets, and also consulted for generation resource developers to develop
5 market and price outlooks and inform capital budgeting and investment project
6 valuation.

7 **Q. Have you previously provided testimony to the Federal Energy Regulatory**
8 **Commission (“Commission”)?**

9 A. No, I have not previously provided hearing testimony to the Commission.

10 **Q. What is the purpose of your testimony?**

11 A. The purpose of my testimony is to respond to the pre-filed direct testimony filed in
12 this proceeding by Dr. Joseph Bowring on behalf of Monitoring Analytics, LLC, in
13 its capacity as the Independent Market Monitor for PJM (“IMM”) and by
14 Commission Trial Staff witnesses, and to support the pre-June 2021 stated Capital
15 Recovery Factors (“Stated CRFs”) as just and reasonable for Black Start Units
16 selected to provide Black Start Service prior to June 6, 2021 (“Existing Black Start
17 Investment”). I will explain that the IMM errs in insisting that the Stated CRFs are
18 a formula rate and there can be only one just and reasonable set of capital recovery
19 factors to be applied to the Existing Black Start Investment. Contrary to the IMM’s
20 claims, there is a range of just and reasonable capital recovery factors that can be
21 calculated and the bounds of that range are not fixed. I place the Stated CRFs in
22 context within a range of other potentially reasonable capital recovery factors,
23 including capital recovery factors used in other settings in PJM and capital recovery
24 factors proposed in this proceeding by Trial Staff. I also compare the revenues

1 resulting from the Stated CRFs to the revenues produced by the application of other
2 capital recovery factors and discuss the asymmetric risks associated with
3 overestimating the Black Start capital recovery factors as opposed to
4 underestimating them. The final section of my testimony discusses the artificially
5 low inputs to Black Start Units' cost of capital Trial Staff proposes for use in
6 calculating one set of capital recovery factors, based on reference to a transmission
7 owner proxy group rather than a merchant generator proxy group.

II. THE STATED CRFS ARE WITHIN A RANGE OF JUST AND REASONABLE CAPITAL RECOVERY FACTORS

8 **Q. What is the starting point of your answering testimony?**

9 A. The central question in this case is whether the Stated CRFs that apply to Existing
10 Black Start Investment are just and reasonable going forward, given the reduction
11 in the federal corporate income tax rate from the Tax Cuts and Jobs Act of 2017.¹

12 **Q. What is your view on this question?**

13 A. In my view, the existing capital recovery factor values remain just and reasonable
14 for Black Start Units selected prior to July 2021. These were stated rates that Black
15 Start providers relied on when making multi-year commitments and capital
16 investments. There was no mechanism to automatically update these stated rates,
17 and PJM was not required to change them when the tax law changed. Maintaining
18 the existing rates provides regulatory certainty and honors the expectations of Black
19 Start providers.

¹ Tax Cuts and Jobs Act, Pub. L. No. 115-97, 131 Stat. 2054 (2017).

1 **Q. What other considerations support your view that the Stated CRFs are just**
2 **and reasonable?**

3 A. There is a logical and economic argument that the Stated CRF values fall in a “zone
4 of reasonableness,” thus directly addressing one of the questions raised in this
5 proceeding by the Presiding Judge: “Is there a zone of reasonableness applicable to
6 the Capital Cost Recovery Rate, CRF values, or the relevant inputs to either?”²

7 **Q. Please explain your logical and economic argument.**

8 A. The logical and economic argument that the Stated CRFs are just and reasonable
9 proceeds as follows:

- 10 • First, I rebut the IMM’s argument that the Stated CRFs are formula rates
11 and that there is only a single “correct” set of capital recovery factor values,
12 which are the values resulting from applying his formula with updated
13 federal income tax rate inputs.
- 14 • Even if the set of capital recovery factor values the IMM presents as the
15 “correct” values are just and reasonable, they are not the only set of just and
16 reasonable capital recovery factor values that can exist. The IMM leaves
17 no room for a “zone of reasonableness,” which accords neither with
18 economics, nor the Commission’s approach to rate review, nor the facts of
19 this case.

20 A. **The Stated CRFs are not formula rates so there can be more than one correct**
21 **calculation of a just and reasonable capital recovery factor.**

22 **Q. What does the IMM argue about the Stated CRFs?**

² *PJM Interconnection, L.L.C.*, Letter Order, Docket No. EL21-91-003, at 4 (Nov. 2, 2023).

1 A. The IMM asserts that “the CRF is a formula rate”³ that can only be applied in a
2 single, previously prescribed manner based on defined inputs.

3 **Q. Do you agree?**

4 A. No, I do not. As an initial matter, I am not aware that the Commission had ever
5 previously approved any formula, whether proposed by PJM or otherwise, to
6 calculate the Black Start capital recovery factors prior to accepting PJM’s proposed
7 revisions to the formula used to calculate Black Start Capital Cost Recovery
8 revenue requirements in PJM Tariff, Schedule 6A, section 18, on August 10, 2021,
9 in Docket No. ER21-1635-001. Further, the Commission’s statement that “[t]he
10 import of the tax rate in the determination of the CRF value is a material fact that
11 cannot be determined based on the existing record”⁴ precludes the IMM’s claim
12 that the Commission views the Stated CRFs as a formula rate for the calculation of
13 capital recovery factor values. If the Commission believed the Stated CRFs were
14 a formula rate, changing the values to account for the reduction in the tax rate would
15 be a matter of simple computation, not a material issue of fact.

16 **Q. What is the significance of the IMM’s claim that the Stated CRFs are formula**
17 **rates?**

18 A. The IMM’s claim that the Stated CRFs are formula rates forms the basis for his
19 argument that, “[t]here is no zone of reasonableness in this case of a formula rate

³ *PJM Interconnection, L.L.C.*, Direct Testimony of Joseph E. Bowring on Behalf of the Independent Market Monitor for PJM, Docket No. EL21-91-003, Exhibit IMM-0001, at 17:9, 22:4-5 (June 5, 2024) (“Bowring Testimony”).

⁴ *PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,194, at P 32, *order on reh’g*, 184 FERC ¶ 61,077 (2023).

1 with an objectively incorrect input.”⁵ If you remove the predicate for this assertion,
2 and acknowledge that the Stated CRFs are not formula rates, you are left with the
3 fact that there can be a range of reasonable capital recovery factor values. As the
4 IMM openly admits, “[t]he elements of the cost of capital, which are the debt to
5 equity ratio, rate of return on equity, and interest rate on debt, are all matters of
6 judgment. The elements of the cost of capital are set prior to selecting a black start
7 resource for service, and they define the expected returns to the investors in the
8 black start resources [...]”⁶ Thus, the IMM implicitly acknowledges that there is
9 some zone of reasonableness around both the capital recovery factor values and the
10 inputs used in calculating the values. Contrary to the IMM’s contention, there is
11 no single correct set of capital recovery factor values; instead, there must be an
12 array or range of reasonable capital recovery factor values that can be calculated.

13 **B. Calculating reasonable capital recovery factors and their components involves**
14 **multiple considerations and variations.**

15 **Q. Do you have experience in calculating capital recovery factors and similar cost**
16 **of capital values?**

17 **A.** Yes, I have experience with calculating these sorts of financial metrics and have
18 worked on related questions regarding corporate investment decisions, capital
19 budgeting, and investment project valuation. I also am aware of discussions of a
20 zone or zones of reasonableness around these metrics.

21 **Q. Are the Stated CRFs used for Black Start recovery of capital investment the**
22 **only capital recovery factors PJM uses?**

⁵ Bowring Testimony at 22:12-13.

⁶ Bowring Testimony at 21:12-16 (emphasis added).

1 A. No, they are not. PJM calculates an Avoidable Project Investment Recovery Rate
2 (“APIR”) capital recovery factor for use in determining the Avoidable Cost Rate
3 for a Generation Capacity Resource.⁷ The Avoidable Cost Rate is part of the
4 Capacity Market mitigation.

5 **Q. In addition to capital recovery factors, what other similar measures of capital**
6 **costs or investment metrics are used in the Tariff?**

7 A. PJM and other regional transmission organizations (“RTOs”) also use
8 computations of capital costs such as the after-tax weighted-average cost of capital
9 (“ATWACC”) in their calculations of the Cost of New Entry (“CONE”) and Net
10 CONE. PJM also uses ATWACC in the formula for Black Start capital recovery
11 factors the Commission accepted in Docket No. ER21-1635-001. The CONE and
12 Net CONE, like the Avoidable Cost Rate for a Generation Capacity Resource that
13 has the APIR capital recovery factor as a component, are used in administering the
14 Capacity Market mitigation measures. All of these measures—capital recovery
15 factors, ATWACC, APIR, CONE, and Net CONE—are metrics used for
16 quantifying different components or views of the cost of capital investment in
17 resources.

18 **Q. Is the manner in which these metrics are constructed considered to be clear-**
19 **cut, with only limited variations?**

20 A. No. To the contrary, they are considered to be more art than science. In the context
21 of determining the ATWACC for projecting the CONE in the Electric Reliability
22 Council of Texas, The Brattle Group authors Samuel Newell and others write

⁷ See Tariff, Attachment DD, section 6.8(a).

1 broadly that “[t]he ATWACC is grounded in empiricism but without plentiful data
 2 on the full cost of capital for projects exactly like the ref tech.”⁸ Also, discussing
 3 the 2023 analysis of the ATWACC used in calculating the CONE for the ISO New
 4 England Inc. (“ISO-NE”) Forward Capacity Market, which the Commission
 5 accepted in Docket No. ER24-401-000, Todd Schatzki and Carlo Gallimberti of
 6 The Analysis Group write: “Our recommended values reflect consideration of
 7 multiple financial metrics” and “[r]ecommended values for financial parameters
 8 reflect multiple considerations, including relationship between observable financial
 9 metrics and circumstances of merchant projects in ISO-NE.”⁹ Regarding the cost
 10 of equity (“COE”), one input to the calculation of the ATWACC used for the CONE
 11 calculation in ISO-NE (and a relevant input in the computation of the ATWACC
 12 component of the Black Start capital recovery factor formula in the Tariff), they
 13 write “[p]roject COE is unobservable and thus cannot be directly estimated” and
 14 describe seven scenarios using different analytic approaches.¹⁰ They further state
 15 that, while the “[u]pper bound of estimated company COE in each scenario ranges
 16 from 9.35% to 13.10%,” they recommend a COE value of 13.8%—*outside that*

⁸ *Cost of New Entry Study Status Update, Project No. 54584*, Electric Reliability Council of Texas, Inc. (June 6, 2024), https://interchange.puc.texas.gov/Documents/54584_64_1400659.PDF.

⁹ Todd Schatzki & Carlo Gallimberti, *Analysis of the ATWACC of New Entry for the ISO New England Forward Capacity Market*, New England Power Pool Markets Committee, 3 (Aug. 10, 2023), https://www.iso-ne.com/static-assets/documents/2023/08/a08a_mc_2023_08_08-10_fcm_netcone_updates_mopr_reforms_for_fca19_analysis_group_presentation.pdf.

¹⁰ *Id.* at 13.

1 *range*— citing “multiple considerations,” “other financial metrics,” and “relevant
2 professional experience.”¹¹

3 Similarly, PJM’s determination of the estimated CONE for the Reference Resource,
4 which is used in setting prices on the demand curve for purposes of administering
5 the Capacity Market mitigation measures, requires market observations and
6 judgment to select inputs for the ATWACC calculation, as noted by the authors of
7 the PJM CONE 2026/2027 Report (“2022 CONE Report”) in the Quadrennial
8 Review of the PJM Capacity Market filed September 30, 2022, in Docket No.
9 ER22-2984-000.¹² The authors of the 2022 CONE Report also state, “[t]here is
10 considerable uncertainty in the development of the estimated CONE values for the
11 reference resources, particularly regarding volatile inflation, relevant technologies
12 and plant designs, and the analyst’s judgment on economic life and long-term cost
13 recovery.”¹³ As allowed by the Tariff, PJM and its stakeholders currently are
14 engaged in a “Quick Fix” stakeholder process to update the input values and
15 financial parameters used in the calculation of CONE.

16 **Q. Are the inputs to these metrics the only source of variability?**

17 A. No. There are multiple capital recovery factor equations, each using a different
18 financial model and assumptions, that can be used to determine reasonable capital
19 recovery factor values. For example, the IMM claims that a “financial model,

¹¹ *Id.* at 23-24.

¹² *PJM Interconnection, L.L.C.*, Periodic Review of Variable Resource Requirement Curve Shape and Key Parameters, Docket No. ER22-2984-000, Attachment D, Exhibit No. 2 at 38 (Sept. 30, 2022).

¹³ *Id.* at vii.

1 called a flow to equity (FTE) model, [...] was used to develop the CRF stated in
2 the tariff.”¹⁴ But a different financial model, “[t]he weighted average cost of capital
3 (WACC) model [...] was used to calculate the CRF for black start service after
4 June 6, 2021.”¹⁵ The IMM explains that the weighted average cost of capital model
5 “averages the equity and debt in the calculation of investment return and investment
6 payback” yielding a different capital recovery factor.¹⁶ As the IMM recognizes,
7 different methodologies can be used to calculate different, but still just and
8 reasonable, capital recovery factor values.

9 **C. Placing the Stated CRFs in Context.**

10 **Q. You have testified to the reasons there can be a range of just and reasonable**
11 **capital recovery factor values. Do the capital recovery factors in this**
12 **proceeding and in other PJM settings show such a range?**

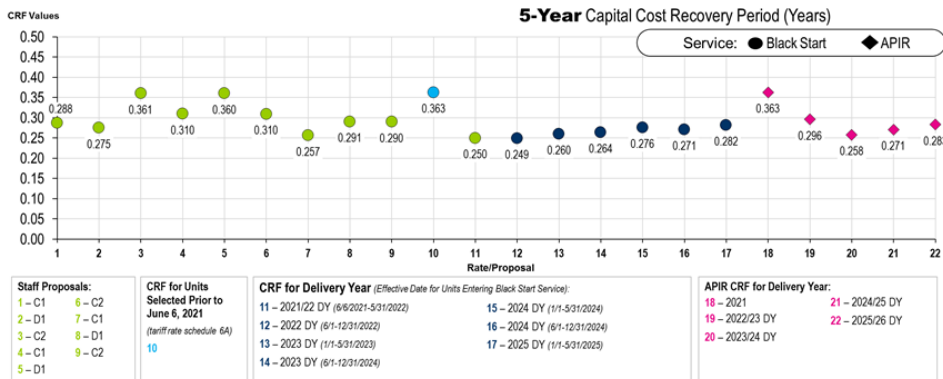
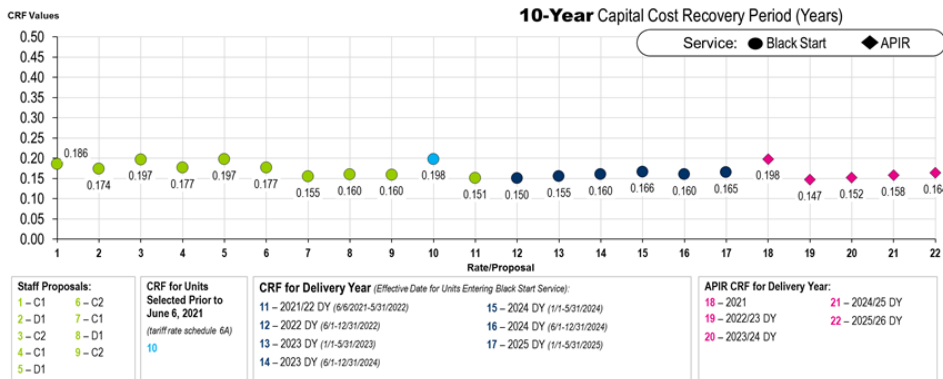
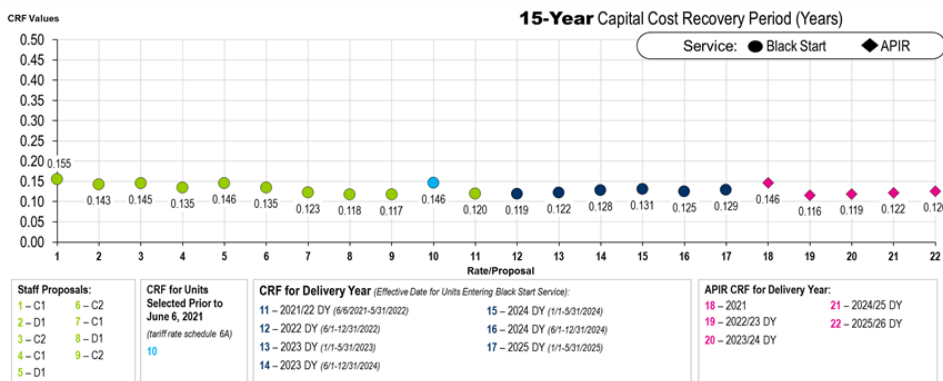
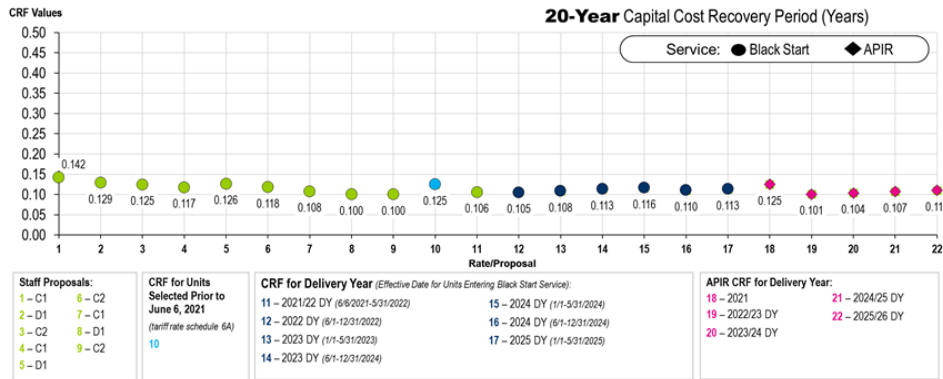
13 A. Yes, they do, and they also show that the Stated CRFs are within that range. I
14 analyzed the range of capital recovery values proposed in this proceeding and used
15 elsewhere in the Tariff, to contextualize the Stated CRFs. The following charts
16 compare, for each commitment term for Black Start Service, the Stated CRFs to
17 nine alternative Trial Staff proposals for the Black Start capital recovery factor
18 values to be applied to Existing Black Start Investment; seven capital recovery
19 factor values calculated utilizing the Commission-approved formula-based
20 methodology for Black Start capital recovery factors for the 2021/2022 Delivery

¹⁴ Exhibit No. IMM-0014 (Comments of the Independent Market Monitor) at 9.

¹⁵ *Id.* at 11.

¹⁶ *Id.*

1 Year forward; and five capacity market APIR values calculated utilizing the FERC-
2 approved methodology for APIR capital recovery factors for the 2021/2022
3 Delivery Year forward. With the exception of the Stated CRF values for five-year
4 commitment terms, the Stated CRF values are not materially outside the range of
5 other capital recovery factor values proposed in this proceeding or approved by the
6 Commission for use in the Tariff.



1
2 Figure 1

1 **D. Asymmetric Risks of Over or Under Estimating the Black Start Capital**
2 **Recovery Factors.**

3 **Q. What other support exists for a range of just and reasonable Black Start**
4 **capacity recovery factor values?**

5 A. When evaluating the sum total of evidence supporting various “zones of
6 reasonableness” for Black Start capital recovery factors, I believe it is worthwhile
7 to consider the asymmetric risks associated with under- and over-estimation of the
8 “correct” capital recovery factor values, if there were such a singular value. The
9 risk of choosing “too high” a capital recovery factor value is, at worst, very modest
10 excess costs. Bearing this out, I would point to the analysis of the revenues under
11 various capital recovery factor values that is further discussed in the Boyle
12 Testimony.¹⁷ This analysis shows the difference in total Black Start revenues for
13 Existing Black Start Investment over the period from 2021 to 2040, comparing
14 revenues¹⁸ under the Stated CRFs to revenues under a reasonable alternative (the
15 “PJM Alternative CRFs” discussed in the Boyle Testimony) that utilizes the current
16 federal income tax rate and depreciation schedules. The difference in total Black
17 Start revenues for Existing Black Start Investment over that period resulting from
18 these two capital recovery factor values is less than \$15 million and below 8 percent
19 of Black Start Service costs, *excluding* variable black start service costs, fuel
20 storage costs, costs for payments to any units under the base formula rate.

¹⁷ See Exhibit No. PJM-0001 (Prepared Answering Testimony of Glen Boyle) (“Boyle Testimony”).

¹⁸ Note that revenues for Existing Black Start Investment represent costs for transmission service customers.

1 In contrast, the long-term risks of choosing “too low” a capital recovery factor value
2 include not only under-provision of Black Start Service in the future but also under-
3 investment in the PJM markets more generally. It is possible too low a capital
4 recovery factor value reinforces investors’ perception of the risk regarding
5 unexpected claw-backs of revenues based on stated rates in more substantive cases
6 in the future.

7 **Q. What other evidence exists for the zone of reasonableness including somewhat**
8 **higher cost recovery factors?**

9 A. While Tariff, Schedule 6A includes provisions for participants to file for unit-
10 specific rates for Black Start cost recovery,¹⁹ there is a risk that resources that could
11 qualify to provide Black Start Service with some investment, but cannot justify that
12 investment at the default values, will opt to forgo the admittedly small revenue
13 potential rather than pursue unit-specific compensation. Economically, this is an
14 argument regarding the opportunity cost of pursuing an investment opportunity. If
15 a PJM market participant is human resource- or budget- constrained, the natural
16 profit-maximizing course of action may be to direct the constrained resources to
17 areas of opportunity where the expected returns are larger in total magnitude,
18 notwithstanding the rate of return.²⁰ For small projects, the administrative, and
19 overhead costs of evaluating and pursuing a capital expenditure opportunity to
20 provide Black Start Service may be large relative to the potential return. This points

¹⁹ Tariff, Schedule 6A, section 17(i).

²⁰ To express this colloquially, if there are proverbial twenty dollar bills laying around everywhere, you don’t stop to pick up pennies.

1 to the zone of reasonableness for the default CRF including higher values to
2 mitigate the reliability risks associated with not attracting sufficient commitments
3 to provide Black Start service.

III. TRIAL STAFF CALCULATES ARTIFICIALLY LOW CAPITAL RECOVERY FACTORS TO REPLACE THE STATED CRFS.

4 **Q. Have you reviewed the prepared direct testimony filed in this proceeding by**
5 **Trial Staff Witnesses Robert Keyton and Raymond He?**

6 A. Yes, I have.

7 **Q. Do you have any observations on that testimony and, specifically, on the**
8 **various sets of capital recovery factors they provide?**

9 A. Yes. Trial Staff appropriately calculated one set of capital recovery factors, Set D1,
10 that simply reduces the federal income tax rate from 36% to 21%, to account for
11 the TCJA's reduction of the federal income tax rate. This calculation assumes that
12 the Stated CRFs is comprised of individual components that can be changed over
13 time without consideration for changes in other components in the same time
14 period, which is not the case. However, the calculation may nonetheless be a useful
15 point of comparison given the Commission's focus in the Hearing Order on the
16 TCJA's reduction in the federal income tax rate.

17 Trial Staff also calculated a set of capital recovery factors, Set E1, that changes not
18 just the federal income tax rate but several other components, including the capital
19 structure, the rate of return on equity ("ROE"), and the cost of debt (collectively,
20 the "cost of capital").

1 **Q. Do you view the methodology underlying Trial Staff's Set E1 as an appropriate**
2 **way to calculate a replacement rate for the Stated CRFs?**

3 A. No, I do not. If I were to alter other underlying components of the Stated CRFs, as
4 Trial Staff proposes, I would look to more relevant proxies for the values being
5 altered than the transmission owners to which the Black Start Units are connected.

6 **Q. What do you mean by more relevant proxies?**

7 A. Trial Staff Witness Robert Keyton explains that he adopted a proxy for generators'
8 cost of capital that has been used in the development of cost of service rates for
9 reactive power service, namely, the cost of capital for the transmission owner to
10 which the generator providing the service is connected.²¹ It is true that connected
11 transmission owners' costs of capital have been used in reactive power rate cases
12 and that Black Start Service, like reactive power service, is an ancillary service.
13 However, there is no need to look to a different line of precedent concerning a
14 different service when the Commission has accepted values that are actually
15 associated with generators as opposed to transmission owners as proxies for
16 generators' cost of capital for Black Start Service, and for use in PJM's capacity
17 markets to determine the APIR for generating facilities that are in service.²²

18 **Q. Does it matter whether the proxy values are associated with transmission**
19 **owners instead of generators?**

20 A. Yes, it does. Transmission owners largely have guaranteed cost recovery over
21 transmission capital expenditures, and thus generally face lower risk than merchant

²¹ *PJM Interconnection, L.L.C.*, Prepared Direct Testimony of Robert J. Keyton Witness for the Trial Staff of the Federal Energy Regulatory Commission, Exhibit No. S-0024, at 11:5-14 (June 5, 2024).

²² *See, e.g.*, Tariff, Schedule 6A, section 18; *id.*, Attachment DD, section 6.8(a).

1 generators. Because the cost of capital is a function of the market's risk free rate
2 and of the premium for the risk associated with the investment, transmission owners
3 thus have a lower cost of capital than merchant generators do. This is borne out by
4 comparing the capital structure, ROE, and cost of debt Mr. Keyton provides for
5 Trial Staff Witness Raymond He's calculation of the E1 set of capital recovery
6 factors to the capital structure, ROE, and cost of debt currently being used in PJM's
7 formulaic Black Start capital recovery factors, and PJM's APIR capital recovery
8 factors. The table provided in Exhibit PJM-0012 compares the generator cost of
9 capital values used in these three calculations to the transmission owner cost of
10 capital values Mr. Keyton supplies for use in Mr. He's E1 set of capital recovery
11 factors. As you can see, the transmission owner proxy values Trial Staff uses are
12 lower than any of the other proxy values that are based on generators' costs of
13 capital. Since the Commission has accepted the three generator-associated proxies,
14 there is no reason to consider artificially lower estimates of the cost of capital used
15 to calculate Black Start capital recovery factors by using transmission owner costs
16 of capital.

IV. CONCLUSION

17 **Q. Does this conclude your testimony?**

18 A. Yes, it does.

PJM Interconnection, L.L.C.

DocuSigned by:
By: 
29/10/2023 15:46:44

Dated: July 17, 2024

Exhibit No. PJM-0012

Comparison of CRF Values and Components							
Capital Recovery Factor	Capital Cost Recovery Period (Years)				Capital Structure (Debt/Equity)	Cost of Debt	ROE/Cost of Equity
	20	15	10	5			
Black Start Trial Staff Proposal (E1)	0.1075	0.1225	0.1548	0.2567	47.40/52.60	3.97%	10.04%
Black Start CRF for 2021/2022 Delivery Year (Effective For Units Entering Black Start Service 06/06/2021 - 05/31/2022)	0.106	0.120	0.151	0.250	50/50	7.5%	12%
Black Start CRF for 2022 Delivery Year (Effective For Units Entering Black Start Service 06/01/2022 - 12/31/2022)	0.105	0.119	0.150	0.249	50/50	7.5%	12%
Black Start CRF for 2023 Delivery Year (Effective For Units Entering Black Start Service 01/01/2023 - 05/31/2023)	0.108	0.122	0.155	0.260	50/50	9.53%	12%
Black Start CRF for 2023 Delivery Year (Effective For Units Entering Black Start Service 06/01/2023 - 12/31/2023)	0.113	0.128	0.160	0.264	50/50	9.53%	12%
Black Start CRF for 2024 Delivery Year (Effective For Units Entering Black Start Service 01/01/2024 - 05/31/2024)	0.116	0.131	0.166	0.276	50/50	7.5%	12%
Black Start CRF for 2024 Delivery Year (Effective For Units Entering Black Start Service 06/01/2024 - 12/31/2024)	0.110	0.125	0.160	0.271	50/50	7.5%	12%
Black Start CRF for 2025 Delivery Year (Effective For Units Entering Black Start Service 01/01/2025 - 05/31/2025)	0.113	0.129	0.165	0.282	50/50	7.5%	12%
APIR CRF for 2021/22 Delivery Year	0.125	0.146	0.198	0.363	50/50	7%	12%
APIR CRF for 2022/23 Delivery Year	0.101	0.116	0.147	0.296	50/50	7%	12%

Comparison of CRF Values and Components							
Capital Recovery Factor	Capital Cost Recovery Period (Years)				Capital Structure (Debt/Equity)	Cost of Debt	ROE/Cost of Equity
	20	15	10	5			
APIR CRF for 2023/24 Delivery Year	0.104	0.119	0.152	0.258	55/45	6%	13%
APIR CRF for 2024/25 Delivery Year	0.107	0.122	0.158	0.271	55/45	6%	13%
APIR CRF for 2025/26 Delivery Year	0.110	0.126	0.164	0.283	55/45	6%	13%

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.

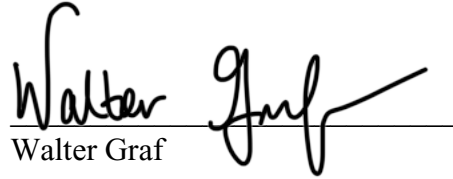
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**Docket Nos. EL21-91-003
ER21-1635-00_**

VERIFICATION

I, Dr. Walter Graf, pursuant to 28 U.S.C. § 1746, state, under penalty of perjury, that I am the Dr. Walter Graf referred to in the foregoing document entitled “Affidavit in Support of Settlement of Dr. Walter Graf on behalf of PJM Interconnection, L.L.C.,” that I have read the same and am familiar with the contents thereof, and that the facts set forth therein are true and correct to the best of my knowledge, information, and belief.

By:


Walter Graf

Dated: August 2, 2024

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.) **Docket Nos. EL21-91-003**
) **ER21-1635-00_**

**AFFIDAVIT IN SUPPORT OF SETTLEMENT OF ADRIAN KIMBROUGH ON
BEHALF OF THE INDICATED SUPPLIERS**

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I. INTRODUCTION.....1

**II. THE SETTLEMENT CRFS REPRESENT A JUST AND REASONABLE
RESOLUTION.....2**

TABLE OF ACRONYMS

ABBREVIATION or ACRONYM	TERM
CONE	Cost of New Entry
CRF	Capital Recovery Factor
FERC	Federal Energy Regulatory Commission
IMM	PJM Independent Market Monitor
OATT	Open Access Transmission Tariff
PJM	PJM Interconnection, L.L.C.
ROE	Return on Equity
TCJA	Tax Cuts and Jobs Act of 2017

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.) **Docket Nos. EL21-91-003**
) **ER21-1635-00**

**AFFIDAVIT IN SUPPORT OF SETTLEMENT OF ADRIAN KIMBROUGH ON
BEHALF OF THE INDICATED SUPPLIERS**

I. INTRODUCTION

1. My name is Adrian J. Kimbrough. My business address is 417 Denison Street, Highland Park, NJ 08904. I am a Senior Vice President at Gabel Associates, Inc. (“Gabel Associates”), an energy, environmental, and public utility consulting firm. In my current role as a Senior Vice President at Gabel Associates as well as my prior role as an Energy Industry Analyst with the Federal Energy Regulatory Commission (“FERC” or the “Commission”), I have provided testimony and expert reports on multiple occasions before various utility commissions, including FERC. Topics addressed cover a range of subject matters including, but not limited to, cost-of-service ratemaking, valuations, cost-benefit analyses, and stranded cost analyses. A copy of my resume and list of proceedings that I have appeared in is provided as an exhibit to the prepared answering testimony submitted by the Indicated Suppliers¹ on July 17, 2024 in Docket No. EL21-91-003 (“Answering Testimony”).²
2. My formal education includes a B.A. in Political Science from the University of California, Berkeley, and a M.B.A. with concentrations in finance and economics from the Harvard Business School. My professional background includes roles as an Energy Industry Analyst with FERC and as a Cryptologic Linguist with the United States Marine Corps.
3. The purpose of my affidavit is to provide support for the revised capital recovery factors (“CRFs”) (the “Settlement CRFs”) that are being submitted in the above-captioned dockets as part of an Offer of Settlement (“Settlement Agreement”) among PJM Interconnection, L.L.C., (“PJM”) American Municipal Power, Inc., the Indicated Suppliers, and the PJM Industrial Customer Coalition (collectively, the “Settling Parties”). My affidavit focuses on demonstrating that the Settlement CRFs represent a reasonable compromise that resolves the issue that led the Commission to set this case for hearing and settlement procedures. As part of my affidavit, I will address certain arguments that were raised by PJM’s Independent Market Monitor (“IMM”) in its comments opposing the settlement that the Settling Parties filed in January 2024. I also address the related arguments and

¹ The Indicated Suppliers are collectively Dynegy Marketing and Trade, LLC, Hazleton Generation, LLC, J-POWER USA Development Co., Ltd., LS Power Development, LLC, and Vistra Corp.

² *PJM Interconnection, L.L.C.*, Prepared Answering Testimony of Adrian Kimbrough on Behalf of the Indicated Suppliers, Docket No. EL21-91-003, Exhibit No. IS-0002 (July 17, 2024).

recommendations of the IMM as provided in its direct testimony in Docket No. EL21-91-003 as appropriate.

4. I conclude that the Settlement Agreement represents a reasonable compromise that accounts for the reduction in the federal corporate tax rate adopted in the Tax Cuts and Jobs Act of 2017 (“TCJA”) and will reduce rates for customers. The Settlement CRFs result in a rate of return for units that were selected to provide Black Start Service³ prior to June 6, 2021 (“Legacy Units”) that is lower than the 12% return that the IMM has claimed was the basis for the CRFs stated in Schedule 6A of PJM’s Open Access Transmission Tariff (“OATT”) that are currently being applied to the Legacy Units (the “Legacy CRFs”). Additionally, the Settlement CRFs are lower than the CRF values that would result from using updated information about the cost of capital for generation resources in the PJM market. While the IMM has argued that a further reduction in the CRFs is required to account for the impact of 100% bonus depreciation, there has not been any showing that the investments made by the Legacy Units qualified for 100% bonus depreciation or that such units were eligible to claim bonus depreciation.

II. THE SETTLEMENT CRFS REPRESENT A JUST AND REASONABLE RESOLUTION

5. Under the Settlement Agreement, the Settling Parties have agreed to reduce the CRFs used in calculating the capital cost recovery rate for Legacy Units, effective January 1, 2024. If the Settlement Agreement is approved, the result would be an immediate rate reduction. Table 1 below provides a comparison of the Legacy CRFs and the Settlement CRFs.

Table 1: Legacy CRFs vs Settlement CRFs

Age of Existing Units (Years)	Remaining Life of Plant (Years)	Legacy CRFs	Settlement CRFs
25 Plus	5	.3630	.3097
21 to 25	10	.1980	.1767
16 to 20	15	.1460	.1348
11 to 15	20	.1250	.1180

6. The Settlement CRFs will result in each of the Legacy Units receiving less compensation than PJM originally committed to providing when the unit was selected to offer Black Start Service. To estimate the reduction in rates that will result from the Settlement CRFs, I calculated the present value of the Black Start Service payments for each commitment term using the Legacy CRFs and again using the Settlement CRFs. For the discount rate, I used the IMM’s weighted average cost of capital assumptions, including a debt capitalization

³ *PJM Interconnection, L.L.C.*, Prepared Direct Testimony of Commission Trial Staff Witness Raymond He, Docket No. EL21-93-003, Exhibit No. S-0006 at 2 (June 5, 2024) (defining “Black Start Service” under the OATT as “the capability of generating units to start without an outside electrical supply or the demonstrated ability of a generating unit with a high operating factor (subject to Transmission provider concurrence) to automatically remain operating at reduced levels when disconnected from the grid”).

ratio of 50%, debt cost of 7%, equity cost of 12%, and federal income tax rates of 36% and 21% for the Legacy CRFs and Settlement CRFs scenarios, respectively. The difference in the present value of all annual payments represents the total savings. As shown in Table 2 below, acceptance of the Settlement CRFs would result in savings ranging from \$111,793 to \$240,485 per \$1 million in Black Start capital costs. This would mean, for instance, that a Legacy Unit recovering \$10 million in capital costs over a 20-year term would see a total reduction in its Black Start payments of approximately \$1,117,932. A copy of my analysis is provided as Exhibit 1 to this affidavit.

Table 2: Settlement CRF Savings

Remaining Life of Plant (Years)	Legacy CRFs	Proposed Settlement CRF	Present Value of CRF Savings per \$1 million in Black Start Capex
5	.3630	.3097	\$240,485
10	.1980	.1767	\$175,690
15	.1460	.1348	\$133,414
20	.1250	.1180	\$111,793

7. My calculations also confirm that the Settlement CRFs are consistent with the values that result from incorporating a 21% tax rate into the model that the IMM claims was used to calculate the Legacy CRFs provided in response to Discovery Request S-IMM-1.1 (the “IMM Model”). I came to this conclusion by incorporating a 21% tax rate into the IMM Model. Specifically, I modified the model assumptions tab to include the 21% federal tax rate. After adjusting the federal tax rate, I then used the solver function in Excel to recalculate the CRFs while maintaining a 12% return on equity (“ROE”). The resulting values are shown in Table 3 below. I also am providing a copy of my calculations as Exhibit 2 to this affidavit.

Table 3: Recalculated CRFs

Remaining Life of Plant (Years)	Settlement CRFs	IMM Model With 21% Tax Rate
5	.3097	.3135
10	.1767	.1787
15	.1348	.1363
20	.1180	.1185

As reflected in Table 3, recalculating the CRFs based on a 21% federal corporate income tax rate using the IMM Model results in CRFs that are *higher* than the Settlement CRFs for all commitment periods. This means that the Settlement CRFs would result in a return

that is less than the 12% return that the IMM claims was the basis for the calculation of the Legacy CRFs.

8. While the return resulting from the Settlement CRFs differs based on the length of the commitment term, the Settlement CRFs would result in returns of less than 12% in all cases. To calculate the return resulting from the Settlement CRFs, I modified the IMM Model by changing the CRF for each commitment term to the applicable Settlement CRF. I have included the rates of return for each commitment term in Table 4 below. My calculations are further detailed in Exhibit 1 to this affidavit.

Table 4: Settlement CRF Rates of Return

Remaining Life of Plant (Years)	Proposed Settlement CRF	Rate of Return
5	.3097	10.96%
10	.1767	11.50%
15	.1348	11.67%
20	.1180	11.89%

9. The fact that the Settlement CRFs are consistent with, or even lower than, the CRFs that result from incorporating a 21% federal tax rate into the IMM Model supports the conclusion that the Settlement CRFs represent a reasonable compromise. Although FERC never accepted the IMM Model, it is reasonable to use the assumptions in that model for purposes of Settlement. For instance, as I explained in my Answering Testimony,⁴ there is evidence that supports the conclusion that the 12% rate of return that the IMM claims was used to calculate the Legacy CRFs has not accurately reflected the ROE needed to justify an investment in generation capacity in PJM for well over a decade and, thus, represents a conservative value. For example, the most recent estimate of the Cost of New Entry (“CONE”) in PJM recommends an ROE of 16.12%. If the IMM Model were updated to include a 21% tax rate and an ROE of 16.12%, the result would be CRF values that exceed the Legacy CRFs. The results are similar if the model is adjusted to account for the recommended ROE of 14.1% from the 2022 CONE study that was approved by the Commission last year. The results of my analysis are reflected in Table 5 below. My calculations are provided as Exhibit 3⁵ and Exhibit 4⁶ to my affidavit.

⁴ *PJM Interconnection, L.L.C.*, Prepared Answering Testimony of Adrian Kimbrough on Behalf of the Indicated Suppliers, Docket No. EL21-91-003, Exhibit No. IS-0001 PUB at 28:6-12 (July 17, 2024).

⁵ Exhibit 3 to my affidavit shows my calculations of the CRF using 21% FIT and 14.1% CONE ROE.

⁶ Exhibit 4 to my affidavit shows my calculations of the CRF using 21% FIT and 16.1% CONE ROE.

Table 5: Recalculated CRFs Based on Updated ROE

Remaining Life of Plant (Years)	Legacy CRFs	Settlement CRF	CRFs Based On 16.12% ROE	CRFs Based On 14.1% ROE
5	.3630	.3097	.3287	.3212
10	.1980	.1767	.1960	.1875
15	.1460	.1348	.1554	.1459
20	.1250	.1180	.1386	.1286

10. The IMM Model also determines the CRF needed to achieve a 12% return based on the assumption that a generator's capital costs were incurred on the first day of the year in which the unit was placed into service. This is an unrealistic assumption because generation resources cannot be constructed in a single day. By assuming that all capital costs were incurred on a single day, the IMM Model ignores the time value of money associated with the capital costs incurred over the course of the construction period. The implication of this assumption is that the IMM Model overstates the rate of return resulting from any given CRFs. For instance, the return resulting from the Settlement CRFs would be lower than the rates of return shown in Table 4 above if the construction period were accounted for in the model. The results of my analysis are reflected in Table 6 and my calculations are provided as Exhibit 5 to this affidavit.

Table 6: Settlement CRF Rate of Return (with Construction Period)

Remaining Life of Plant (Years)	Proposed Settlement CRF	Rate of Return
5	.3097	7.93%
10	.1767	9.44%
15	.1348	10.03%
20	.1180	10.40%

11. The IMM Model employs a 50/50 capital structure, which is the capital structure that has been approved by FERC for calculating the CRFs for units selected to provide Black Start Service after June 6, 2021. The 7% debt interest rate also is consistent with the debt interest rate that has been used by PJM to calculate CRFs for units selected to provide Black Start Service after June 6, 2021, which has ranged between 7.5% to 9.53%.⁷
12. The IMM Model also includes a state tax rate of 9%, which the IMM has claimed was derived from a CONE study prepared in 2005. That study noted that “[t]he state tax rate

⁷ *PJM Interconnection, L.L.C.*, Prepared Direct Testimony of Commission Trial Staff Witness Robert J. Keyton, Docket No. EL21-93-003, Exhibit No. S-0024 at 9:20-22 (June 5, 2024).

for New Jersey was 9.0%, Maryland 7.0%, and Illinois 7.3%.⁸ Thus, if the IMM's account is correct, then it appears that the state tax rate included in the IMM Model reflected the tax rate in New Jersey. The tax rate in New Jersey has increased since the CONE study that the IMM claims was the basis for these values, which provides support for the conclusion that a 9% tax rate remains appropriate within the context of settlement.⁹

13. My analysis shows the Settlement CRFs represent reasonable compromise values in the context of settlement that account for the decrease in the federal corporate tax rate, but are lower than the CRFs that would result from using more up-to-date information regarding the cost of capital of generation resources within the PJM region.
14. I understand that the IMM has criticized the Settlement CRFs because its interpretation is that the Settlement CRFs do not account for bonus depreciation. These criticisms have no merit. There is no evidence that the Legacy Units were eligible for, or have claimed, 100% bonus depreciation for their investments in Black Start capability. The IMM has acknowledged Legacy Units placed into service prior to September 2017 were not eligible for bonus depreciation.¹⁰ The answering testimonies submitted by the Indicated Suppliers in this proceeding also show that Legacy Units did not claim 100% bonus depreciation even for those resources that were placed into service after the effective date of the TCJA.¹¹ To be clear, I am not suggesting that a hearing must be held to explore the extent to which units placed into service after September 2017 qualified for 100% bonus depreciation. Instead, my point is that the Commission could find that the Settlement represents a just and reasonable result given the evidence that has been provided in this proceeding.
15. This concludes my affidavit.

⁸ *PJM Interconnection, L.L.C.*, Reliability Pricing Model Filing, ER05-1410-000, Tab I, Independent Study to Determine Cost of New Entry Combustion Turbine Power Plan Revenue Requirement at 4 (filed Aug. 31, 2005).

⁹ *PJM Interconnection, L.L.C.*, Prepared Direct Testimony of Commission Trial Staff Witness Raymond He, Docket No. EL21-93-003, Exhibit No. S-0020 at 2 (June 5, 2024) (showing tax rate in New Jersey ranging from 10.05% in 2021, and 11.5% in 2022 and 2023).

¹⁰ *PJM Interconnection, L.L.C.*, Comments of the Independent Market Monitor for PJM in Opposition to Offer of Settlement, Docket No. EL21-91-003, Exhibit No. IMM-0001 at 12:27-28 (filed Feb. 20, 2024) ("The settlement CRF rates with zero bonus depreciation are correct for resources placed in service before September 27, 2017").

¹¹ See, e.g., *PJM Interconnection, L.L.C.*, Prepared Answering Testimony of William Taylor on Behalf of J-POWER USA Development Co., LTD., Docket No. EL21-91-003, Exhibit No. JP-0001 PUB at 6:3-6 (July 17, 2024).

VERIFICATION OF ADRIAN KIMBROUGH

Pursuant to 28 U.S.C. § 1746, I state under penalty of perjury that the foregoing affidavit is true and correct to the best of my knowledge, information, and belief.

Executed this 12th day of August 2024.

Adrian Kimbrough _____

Adrian Kimbrough, MBA
Senior Vice President
Gabel Associates, Inc.

Age of Existing Units (Years)	Remaining Life of Plant (Years)	Legacy CRF	Settlement CRF	Modeled CRF	Recalculated IRR	Target IRR	CRF Change
25 Plus	5	0.3630	0.3097	0.3097	10.96%	12.00%	-5.33%
21 to 25	10	0.1980	0.1767	0.1767	11.50%	12.00%	-2.13%
16 to 20	15	0.1460	0.1348	0.1348	11.67%	12.00%	-1.12%
11 to 15	20	0.1250	0.1180	0.1180	11.90%	12.00%	-0.70%

IRR Change	Discount Rate (WACC)	Legacy CRF Payments (PV \$000)	Recalculated CRF Payments (PV \$000)	Change in Payments (PV \$000)	Change in Payments (PV \$)	Goal Seek Reference
-1.04%	8.516%	1,564.28	1,323.79	(240.48)	(240,485)	(10.35)
-0.50%	8.516%	1,432.91	1,257.22	(175.69)	(175,690)	(4.98)
-0.33%	8.516%	1,346.98	1,213.56	(133.41)	(133,414)	(3.30)
-0.10%	8.516%	1,322.14	1,210.35	(111.79)	(111,793)	(1.02)

Variables

CRF 0.3097000
Internal Rate c 10.965%

Cash flow summary

Cost recovery	1	2	3	4	5
Annual revenue	\$309,700	\$309,700	\$309,700	\$309,700	\$309,700
Fixed O&M	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255
Interest rate p	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Taxable incom	\$224,700	\$185,786	\$201,798	\$217,316	\$232,467
Income tax pa	\$63,163	\$52,224	\$56,726	\$61,088	\$65,347
Debt payment	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011
After tax cash	(\$500,000)	\$124,591	\$135,530	\$131,029	\$126,667	\$122,408

Debt Payment Summary

Payment numl	1	2	3	4	5
Interest payme	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Principal paym	\$86,945	\$93,032	\$99,544	\$106,512	\$113,968
Total debt pay	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945
Outstanding p	\$413,055	\$320,023	\$220,479	\$113,968	\$0

Variables

CRF 0.1767000
Internal Rate c 11.502%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$176,700	\$176,700	\$176,700	\$176,700	\$176,700	\$176,700	\$176,700
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Taxable incom	\$91,700	\$49,233	\$61,444	\$72,894	\$83,692	\$93,938	\$100,772
Income tax pa	\$25,777	\$13,839	\$17,272	\$20,491	\$23,526	\$26,406	\$28,327
Debt payment	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$79,734	\$91,672	\$88,239	\$85,021	\$81,985	\$79,105

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Principal paym	\$36,189	\$38,722	\$41,433	\$44,333	\$47,436	\$50,757	\$54,310
Total debt pay	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189
Outstanding pi	\$463,811	\$425,089	\$383,657	\$339,324	\$291,888	\$241,131	\$186,822

8	9	10
\$176,700	\$176,700	\$176,700
\$0	\$0	\$0
\$59,049	\$59,049	\$59,049
\$13,078	\$9,010	\$4,657
\$104,573	\$108,641	\$112,994
\$29,396	\$30,539	\$31,763
\$71,189	\$71,189	\$71,189

7/1/2013	7/1/2014	7/1/2015	7/1/2016
\$77,184	\$76,116	\$74,972	\$73,749

8	9	10
\$13,078	\$9,010	\$4,657
\$58,111	\$62,179	\$66,532
\$71,189	\$71,189	\$71,189
\$128,711	\$66,532	\$0

Variables

CRF 0.1348000
Internal Rate c 11.670%

Cash flow summary

Cost recovery	1	2	3	4	5	6	7
Annual revenue	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Taxable incom	\$49,800	\$6,193	\$17,183	\$27,328	\$36,729	\$45,480	\$50,714
Income tax pa	\$13,999	\$1,741	\$4,830	\$7,682	\$10,325	\$12,784	\$14,256
Debt payment	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$65,904	\$78,162	\$75,073	\$72,221	\$69,578	\$67,118

Debt Payment Summary

Payment numl	1	2	3	4	5	6	7
Interest payme	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Principal paym	\$19,897	\$21,290	\$22,780	\$24,375	\$26,081	\$27,907	\$29,861
Total debt pay	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
Outstanding pi	\$480,103	\$458,813	\$436,032	\$411,657	\$385,576	\$357,669	\$327,808

8	9	10	11	12	13	14	15
\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$52,804	\$55,041	\$57,434	\$59,995	\$62,735	\$65,666	\$68,803	\$72,160
\$14,843	\$15,472	\$16,145	\$16,865	\$17,635	\$18,459	\$19,341	\$20,284
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$65,647	\$65,059	\$64,431	\$63,758	\$63,038	\$62,268	\$61,444	\$60,562

8	9	10	11	12	13	14	15
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$31,951	\$34,187	\$36,580	\$39,141	\$41,881	\$44,813	\$47,949	\$51,306
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
\$295,858	\$261,670	\$225,090	\$185,949	\$144,068	\$99,255	\$51,306	\$0

7/1/2021
\$59,619

Variables

CRF 0.1180000
Internal Rate c 11.898%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Taxable incom	\$33,000	-\$11,146	-\$733	\$8,795	\$17,536	\$25,580	\$30,058
Income tax pa	\$9,276	-\$3,133	-\$206	\$2,472	\$4,929	\$7,191	\$8,449
Debt payment	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$61,527	\$73,937	\$71,010	\$68,331	\$65,874	\$63,613

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Principal paym	\$12,196	\$13,050	\$13,964	\$14,941	\$15,987	\$17,106	\$18,304
Total debt pay	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
Outstanding pi	\$487,804	\$474,753	\$460,790	\$445,848	\$429,861	\$412,755	\$394,452

8	9	10	11	12	13	14	15
\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$31,339	\$32,710	\$34,177	\$35,747	\$37,426	\$39,223	\$41,146	\$43,204
\$8,810	\$9,195	\$9,607	\$10,048	\$10,521	\$11,026	\$11,566	\$12,145
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$62,354	\$61,994	\$61,609	\$61,196	\$60,755	\$60,283	\$59,778	\$59,237

8	9	10	11	12	13	14	15
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$19,585	\$20,956	\$22,423	\$23,992	\$25,672	\$27,469	\$29,392	\$31,449
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$374,867	\$353,911	\$331,488	\$307,496	\$281,824	\$254,355	\$224,964	\$193,515

16	17	18	19	20
\$118,000	\$118,000	\$118,000	\$118,000	\$118,000
\$0	\$0	\$0	\$0	\$0
\$29,525	\$0	\$0	\$0	\$0
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$74,929	\$106,809	\$109,330	\$112,027	\$114,912
\$21,063	\$30,024	\$30,733	\$31,491	\$32,302
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2021	7/1/2022	7/1/2023	7/1/2024	7/1/2025	7/1/2026
\$58,659	\$49,741	\$40,779	\$40,071	\$39,313	\$38,502

16	17	18	19	20
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$33,650	\$36,006	\$38,526	\$41,223	\$44,109
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$159,864	\$123,858	\$85,332	\$44,109	\$0

Parameter	Parameter Value
Equity funding	50.00%
Debt funding	50.00%
Return on equ	12.00%
Debt interest	7.00%
Federal incom	21.00%
State income	9.00%
Effective inco	28.11%
Capital Invest	\$1,000,000
Inflation rate	2.50%

Year **15 Year MACRS Factors**

1	0.0500000
2	0.0950000
3	0.0855000
4	0.0769500
5	0.0692550
6	0.0623295
7	0.0590490
8	0.0590490
9	0.0590490
10	0.0590490
11	0.0590490
12	0.0590490
13	0.0590490
14	0.0590490
15	0.0590490
16	0.0295245
17	0.0000000
18	0.0000000
19	0.0000000
20	0.0000000

Age of Existing Units (Years)	Remaining Life of Plant (Years)	Legacy CRF	Settlement CRF	Modeled CRF	Recalculated IRR	Target IRR	CRF Change
25 Plus	5	0.3630	0.3097	0.3135	12.00%	12.00%	-4.95%
21 to 25	10	0.1980	0.1767	0.1787	12.00%	12.00%	-1.93%
16 to 20	15	0.1460	0.1348	0.1363	12.00%	12.00%	-0.97%
11 to 15	20	0.1250	0.1180	0.1185	12.00%	12.00%	-0.65%

IRR Change	Discount Rate (WACC)	Legacy CRF Payments (PV \$000)	Recalculated CRF Payments (PV \$000)	Change in Payments (PV \$000)	Change in Payments (PV \$)	Goal Seek Reference
0.00%	8.516%	1,564.28	1,340.02	(224.25)	(224,255)	(0.00)
0.00%	8.516%	1,432.91	1,271.71	(161.20)	(161,202)	(0.00)
0.00%	8.516%	1,346.98	1,226.96	(120.01)	(120,014)	(0.00)
0.00%	8.516%	1,322.14	1,215.27	(106.87)	(106,868)	(0.00)

Variables

CRF 0.3134971
Internal Rate c 12.000%

Cash flow summary

	1	2	3	4	5
Cost recovery					
Annual revenue	\$313,497	\$313,497	\$313,497	\$313,497	\$313,497
Fixed O&M	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255
Interest rate p	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Taxable incom	\$228,497	\$189,583	\$205,595	\$221,114	\$236,264
Income tax pa	\$64,231	\$53,292	\$57,793	\$62,155	\$66,414
Debt payment	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945

After tax cash flow to equity investors for IRR calculation

	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011
Assumed inves						
After tax cash	(\$500,000)	\$127,321	\$138,260	\$133,759	\$129,397	\$125,138

Debt Payment Summary

	1	2	3	4	5
Payment numl					
Interest payme	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Principal paym	\$86,945	\$93,032	\$99,544	\$106,512	\$113,968
Total debt pay	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945
Outstanding pi	\$413,055	\$320,023	\$220,479	\$113,968	\$0

Variables

CRF 0.1787363
Internal Rate c 12.000%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$178,736	\$178,736	\$178,736	\$178,736	\$178,736	\$178,736	\$178,736
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Taxable incom	\$93,736	\$51,269	\$63,480	\$74,930	\$85,729	\$95,975	\$102,808
Income tax pa	\$26,349	\$14,412	\$17,844	\$21,063	\$24,098	\$26,978	\$28,899
Debt payment	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$81,198	\$93,136	\$89,703	\$86,485	\$83,449	\$80,569

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Principal paym	\$36,189	\$38,722	\$41,433	\$44,333	\$47,436	\$50,757	\$54,310
Total debt pay	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189
Outstanding pi	\$463,811	\$425,089	\$383,657	\$339,324	\$291,888	\$241,131	\$186,822

8	9	10
\$178,736	\$178,736	\$178,736
\$0	\$0	\$0
\$59,049	\$59,049	\$59,049
\$13,078	\$9,010	\$4,657
\$106,610	\$110,678	\$115,030
\$29,968	\$31,111	\$32,335
\$71,189	\$71,189	\$71,189

7/1/2013	7/1/2014	7/1/2015	7/1/2016
\$78,648	\$77,580	\$76,436	\$75,213

8	9	10
\$13,078	\$9,010	\$4,657
\$58,111	\$62,179	\$66,532
\$71,189	\$71,189	\$71,189
\$128,711	\$66,532	\$0

Variables

CRF 0.1362884
Internal Rate c 12.000%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$136,288	\$136,288	\$136,288	\$136,288	\$136,288	\$136,288	\$136,288
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Taxable incom	\$51,288	\$7,681	\$18,672	\$28,816	\$38,217	\$46,969	\$52,203
Income tax pa	\$14,417	\$2,159	\$5,249	\$8,100	\$10,743	\$13,203	\$14,674
Debt payment	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$66,974	\$79,232	\$76,143	\$73,291	\$70,648	\$68,188

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Principal paym	\$19,897	\$21,290	\$22,780	\$24,375	\$26,081	\$27,907	\$29,861
Total debt pay	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
Outstanding pi	\$480,103	\$458,813	\$436,032	\$411,657	\$385,576	\$357,669	\$327,808

8	9	10	11	12	13	14	15
\$136,288	\$136,288	\$136,288	\$136,288	\$136,288	\$136,288	\$136,288	\$136,288
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$54,293	\$56,529	\$58,923	\$61,483	\$64,223	\$67,155	\$70,292	\$73,648
\$15,262	\$15,890	\$16,563	\$17,283	\$18,053	\$18,877	\$19,759	\$20,702
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$66,717	\$66,129	\$65,501	\$64,828	\$64,108	\$63,338	\$62,514	\$61,632

8	9	10	11	12	13	14	15
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$31,951	\$34,187	\$36,580	\$39,141	\$41,881	\$44,813	\$47,949	\$51,306
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
\$295,858	\$261,670	\$225,090	\$185,949	\$144,068	\$99,255	\$51,306	\$0

7/1/2021
\$60,689

Variables

CRF 0.1184802
Internal Rate c 12.000%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$118,480	\$118,480	\$118,480	\$118,480	\$118,480	\$118,480	\$118,480
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Taxable incom	\$33,480	-\$10,666	-\$253	\$9,275	\$18,016	\$26,060	\$30,538
Income tax pa	\$9,411	-\$2,998	-\$71	\$2,607	\$5,064	\$7,326	\$8,584
Debt payment	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$61,872	\$74,282	\$71,355	\$68,677	\$66,219	\$63,958

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Principal paym	\$12,196	\$13,050	\$13,964	\$14,941	\$15,987	\$17,106	\$18,304
Total debt pay	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
Outstanding pi	\$487,804	\$474,753	\$460,790	\$445,848	\$429,861	\$412,755	\$394,452

8	9	10	11	12	13	14	15
\$118,480	\$118,480	\$118,480	\$118,480	\$118,480	\$118,480	\$118,480	\$118,480
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$31,820	\$33,190	\$34,657	\$36,227	\$37,906	\$39,703	\$41,626	\$43,684
\$8,944	\$9,330	\$9,742	\$10,183	\$10,656	\$11,161	\$11,701	\$12,279
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$62,699	\$62,339	\$61,954	\$61,542	\$61,100	\$60,628	\$60,123	\$59,583

8	9	10	11	12	13	14	15
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$19,585	\$20,956	\$22,423	\$23,992	\$25,672	\$27,469	\$29,392	\$31,449
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$374,867	\$353,911	\$331,488	\$307,496	\$281,824	\$254,355	\$224,964	\$193,515

16	17	18	19	20
\$118,480	\$118,480	\$118,480	\$118,480	\$118,480
\$0	\$0	\$0	\$0	\$0
\$29,525	\$0	\$0	\$0	\$0
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$75,410	\$107,290	\$109,810	\$112,507	\$115,393
\$21,198	\$30,159	\$30,868	\$31,626	\$32,437
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2021	7/1/2022	7/1/2023	7/1/2024	7/1/2025	7/1/2026
\$59,004	\$50,086	\$41,125	\$40,416	\$39,658	\$38,847

16	17	18	19	20
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$33,650	\$36,006	\$38,526	\$41,223	\$44,109
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$159,864	\$123,858	\$85,332	\$44,109	\$0

Parameter	Parameter Value
Equity funding	50.00%
Debt funding	50.00%
Return on equ	12.00%
Debt interest	7.00%
Federal incom	21.00%
State income	9.00%
Effective inco	28.11%
Capital Invest	\$1,000,000
Inflation rate	2.50%

Year **15 Year MACRS Factors**

1	0.0500000
2	0.0950000
3	0.0855000
4	0.0769500
5	0.0692550
6	0.0623295
7	0.0590490
8	0.0590490
9	0.0590490
10	0.0590490
11	0.0590490
12	0.0590490
13	0.0590490
14	0.0590490
15	0.0590490
16	0.0295245
17	0.0000000
18	0.0000000
19	0.0000000
20	0.0000000

Age of Existing Units (Years)	Remaining Life of Plant (Years)	Legacy CRF	Settlement CRF	Modeled CRF	Recalculated IRR	Target IRR	CRF Change
25 Plus	5	0.3630	0.3097	0.3212	14.10%	14.10%	-4.18%
21 to 25	10	0.1980	0.1767	0.1875	14.10%	14.10%	-1.05%
16 to 20	15	0.1460	0.1348	0.1459	14.10%	14.10%	-0.01%
11 to 15	20	0.1250	0.1180	0.1286	14.10%	14.10%	0.36%

IRR Change	Discount Rate (WACC)	Legacy CRF Payments (PV \$000)	Recalculated CRF Payments (PV \$000)	Change in Payments (PV \$000)	Change in Payments (PV \$)	Goal Seek Reference
0.00%	9.566%	1,564.28	1,349.18	(215.09)	(215,094)	(0.00)
0.00%	9.566%	1,432.91	1,285.91	(147.01)	(147,006)	(0.00)
0.00%	9.566%	1,346.98	1,246.85	(100.13)	(100,133)	0.00
0.00%	9.566%	1,322.14	1,235.60	(86.54)	(86,541)	0.00

Variables

CRF 0.3212438
Internal Rate c 14.100%

Cash flow summary

	1	2	3	4	5
Cost recovery					
Annual revenue	\$321,244	\$321,244	\$321,244	\$321,244	\$321,244
Fixed O&M	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255
Interest rate p	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Taxable incom	\$236,244	\$197,330	\$213,342	\$228,860	\$244,011
Income tax pa	\$66,408	\$55,469	\$59,970	\$64,333	\$68,592
Debt payment	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945

After tax cash flow to equity investors for IRR calculation

	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011
Assumed inves						
After tax cash	(\$500,000)	\$132,890	\$143,829	\$139,328	\$134,966	\$130,707

Debt Payment Summary

	1	2	3	4	5
Payment numl					
Interest payme	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Principal paym	\$86,945	\$93,032	\$99,544	\$106,512	\$113,968
Total debt pay	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945
Outstanding pi	\$413,055	\$320,023	\$220,479	\$113,968	\$0

Variables

CRF 0.1874582
Internal Rate c 14.100%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$187,458	\$187,458	\$187,458	\$187,458	\$187,458	\$187,458	\$187,458
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Taxable incom	\$102,458	\$59,991	\$72,202	\$83,652	\$94,450	\$104,697	\$111,530
Income tax pa	\$28,801	\$16,864	\$20,296	\$23,515	\$26,550	\$29,430	\$31,351
Debt payment	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$87,468	\$99,406	\$95,973	\$92,755	\$89,719	\$86,839

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Principal paym	\$36,189	\$38,722	\$41,433	\$44,333	\$47,436	\$50,757	\$54,310
Total debt pay	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189
Outstanding pi	\$463,811	\$425,089	\$383,657	\$339,324	\$291,888	\$241,131	\$186,822

8	9	10
\$187,458	\$187,458	\$187,458
\$0	\$0	\$0
\$59,049	\$59,049	\$59,049
\$13,078	\$9,010	\$4,657
\$115,332	\$119,399	\$123,752
\$32,420	\$33,563	\$34,787
\$71,189	\$71,189	\$71,189

7/1/2013	7/1/2014	7/1/2015	7/1/2016
\$84,918	\$83,850	\$82,706	\$81,483

8	9	10
\$13,078	\$9,010	\$4,657
\$58,111	\$62,179	\$66,532
\$71,189	\$71,189	\$71,189
\$128,711	\$66,532	\$0

Variables

CRF 0.1459290
Internal Rate c 14.100%

Cash flow summary

Cost recovery	1	2	3	4	5	6	7
Annual revenue	\$145,929	\$145,929	\$145,929	\$145,929	\$145,929	\$145,929	\$145,929
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Taxable incom	\$60,929	\$17,322	\$28,312	\$38,457	\$47,858	\$56,609	\$61,843
Income tax pa	\$17,127	\$4,869	\$7,959	\$10,810	\$13,453	\$15,913	\$17,384
Debt payment	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$73,905	\$86,162	\$83,073	\$80,221	\$77,579	\$75,119

Debt Payment Summary

Payment numl	1	2	3	4	5	6	7
Interest payme	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Principal paym	\$19,897	\$21,290	\$22,780	\$24,375	\$26,081	\$27,907	\$29,861
Total debt pay	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
Outstanding pi	\$480,103	\$458,813	\$436,032	\$411,657	\$385,576	\$357,669	\$327,808

8	9	10	11	12	13	14	15
\$145,929	\$145,929	\$145,929	\$145,929	\$145,929	\$145,929	\$145,929	\$145,929
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$63,933	\$66,170	\$68,563	\$71,124	\$73,864	\$76,795	\$79,932	\$83,289
\$17,972	\$18,600	\$19,273	\$19,993	\$20,763	\$21,587	\$22,469	\$23,412
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$73,648	\$73,060	\$72,431	\$71,759	\$71,039	\$70,269	\$69,445	\$68,563

8	9	10	11	12	13	14	15
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$31,951	\$34,187	\$36,580	\$39,141	\$41,881	\$44,813	\$47,949	\$51,306
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
\$295,858	\$261,670	\$225,090	\$185,949	\$144,068	\$99,255	\$51,306	\$0

7/1/2021
\$67,619

Variables

CRF 0.1285609
Internal Rate c 14.100%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$128,561	\$128,561	\$128,561	\$128,561	\$128,561	\$128,561	\$128,561
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Taxable incom	\$43,561	-\$585	\$9,828	\$19,356	\$28,096	\$36,141	\$40,619
Income tax pa	\$12,245	-\$165	\$2,763	\$5,441	\$7,898	\$10,159	\$11,418
Debt payment	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$69,119	\$81,529	\$78,602	\$75,924	\$73,466	\$71,205

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Principal paym	\$12,196	\$13,050	\$13,964	\$14,941	\$15,987	\$17,106	\$18,304
Total debt pay	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
Outstanding pi	\$487,804	\$474,753	\$460,790	\$445,848	\$429,861	\$412,755	\$394,452

8	9	10	11	12	13	14	15
\$128,561	\$128,561	\$128,561	\$128,561	\$128,561	\$128,561	\$128,561	\$128,561
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$41,900	\$43,271	\$44,738	\$46,308	\$47,987	\$49,784	\$51,707	\$53,764
\$11,778	\$12,164	\$12,576	\$13,017	\$13,489	\$13,994	\$14,535	\$15,113
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$69,946	\$69,586	\$69,201	\$68,789	\$68,347	\$67,875	\$67,370	\$66,830

8	9	10	11	12	13	14	15
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$19,585	\$20,956	\$22,423	\$23,992	\$25,672	\$27,469	\$29,392	\$31,449
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$374,867	\$353,911	\$331,488	\$307,496	\$281,824	\$254,355	\$224,964	\$193,515

16	17	18	19	20
\$128,561	\$128,561	\$128,561	\$128,561	\$128,561
\$0	\$0	\$0	\$0	\$0
\$29,525	\$0	\$0	\$0	\$0
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$85,490	\$117,370	\$119,891	\$122,588	\$125,473
\$24,031	\$32,993	\$33,701	\$34,459	\$35,271
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2021	7/1/2022	7/1/2023	7/1/2024	7/1/2025	7/1/2026
\$66,251	\$57,333	\$48,372	\$47,663	\$46,905	\$46,094

16	17	18	19	20
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$33,650	\$36,006	\$38,526	\$41,223	\$44,109
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$159,864	\$123,858	\$85,332	\$44,109	\$0

Parameter	Parameter Value
Equity funding	50.00%
Debt funding	50.00%
Return on equity	14.10%
Debt interest	7.00%
Federal income	21.00%
State income	9.00%
Effective income	28.11%
Capital Investment	\$1,000,000
Inflation rate	2.50%

Year **15 Year MACRS Factors**

1	0.0500000
2	0.0950000
3	0.0855000
4	0.0769500
5	0.0692550
6	0.0623295
7	0.0590490
8	0.0590490
9	0.0590490
10	0.0590490
11	0.0590490
12	0.0590490
13	0.0590490
14	0.0590490
15	0.0590490
16	0.0295245
17	0.0000000
18	0.0000000
19	0.0000000
20	0.0000000

Age of Existing Units (Years)	Remaining Life of Plant (Years)	Legacy CRF	Settlement CRF	Modeled CRF	Recalculated IRR	Target IRR	CRF Change
25 Plus	5	0.3630	0.3097	0.3287	16.12%	16.12%	-3.43%
21 to 25	10	0.1980	0.1767	0.1960	16.12%	16.12%	-0.20%
16 to 20	15	0.1460	0.1348	0.1554	16.12%	16.12%	0.94%
11 to 15	20	0.1250	0.1180	0.1386	16.12%	16.12%	1.36%

IRR Change	Discount Rate (WACC)	Legacy CRF Payments (PV \$000)	Recalculated CRF Payments (PV \$000)	Change in Payments (PV \$000)	Change in Payments (PV \$)	Goal Seek Reference
0.00%	10.576%	1,564.28	1,357.97	(206.30)	(206,302)	0.00
0.00%	10.576%	1,432.91	1,299.54	(133.37)	(133,369)	(0.00)
0.00%	10.576%	1,346.98	1,265.46	(81.52)	(81,523)	0.00
0.00%	10.576%	1,322.14	1,254.70	(67.44)	(67,444)	(0.00)

Variables

CRF 0.3287488
Internal Rate c 16.120%

Cash flow summary

	1	2	3	4	5
Cost recovery					
Annual revenue	\$328,749	\$328,749	\$328,749	\$328,749	\$328,749
Fixed O&M	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255
Interest rate p	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Taxable incom	\$243,749	\$204,835	\$220,847	\$236,365	\$251,516
Income tax pa	\$68,518	\$57,579	\$62,080	\$66,442	\$70,701
Debt payment	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011
After tax cash	(\$500,000)	\$138,286	\$149,224	\$144,723	\$140,361	\$136,102

Debt Payment Summary

	1	2	3	4	5
Payment numl					
Interest payme	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Principal paym	\$86,945	\$93,032	\$99,544	\$106,512	\$113,968
Total debt pay	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945
Outstanding pi	\$413,055	\$320,023	\$220,479	\$113,968	\$0

Variables

CRF 0.1960252
Internal Rate c 16.120%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$196,025	\$196,025	\$196,025	\$196,025	\$196,025	\$196,025	\$196,025
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Taxable incom	\$111,025	\$68,558	\$80,769	\$92,219	\$103,018	\$113,264	\$120,097
Income tax pa	\$31,209	\$19,272	\$22,704	\$25,923	\$28,958	\$31,838	\$33,759
Debt payment	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$93,627	\$105,565	\$102,132	\$98,914	\$95,878	\$92,998

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Principal paym	\$36,189	\$38,722	\$41,433	\$44,333	\$47,436	\$50,757	\$54,310
Total debt pay	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189
Outstanding pi	\$463,811	\$425,089	\$383,657	\$339,324	\$291,888	\$241,131	\$186,822

8	9	10
\$196,025	\$196,025	\$196,025
\$0	\$0	\$0
\$59,049	\$59,049	\$59,049
\$13,078	\$9,010	\$4,657
\$123,899	\$127,966	\$132,319
\$34,828	\$35,971	\$37,195
\$71,189	\$71,189	\$71,189

7/1/2013	7/1/2014	7/1/2015	7/1/2016
\$91,077	\$90,009	\$88,865	\$87,642

8	9	10
\$13,078	\$9,010	\$4,657
\$58,111	\$62,179	\$66,532
\$71,189	\$71,189	\$71,189
\$128,711	\$66,532	\$0

Variables

CRF 0.1554427
Internal Rate c 16.120%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$155,443	\$155,443	\$155,443	\$155,443	\$155,443	\$155,443	\$155,443
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Taxable incom	\$70,443	\$26,836	\$37,826	\$47,970	\$57,372	\$66,123	\$71,357
Income tax pa	\$19,801	\$7,543	\$10,633	\$13,484	\$16,127	\$18,587	\$20,058
Debt payment	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$80,744	\$93,002	\$89,913	\$87,061	\$84,418	\$81,958

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Principal paym	\$19,897	\$21,290	\$22,780	\$24,375	\$26,081	\$27,907	\$29,861
Total debt pay	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
Outstanding pi	\$480,103	\$458,813	\$436,032	\$411,657	\$385,576	\$357,669	\$327,808

8	9	10	11	12	13	14	15
\$155,443	\$155,443	\$155,443	\$155,443	\$155,443	\$155,443	\$155,443	\$155,443
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$73,447	\$75,684	\$78,077	\$80,637	\$83,377	\$86,309	\$89,446	\$92,802
\$20,646	\$21,275	\$21,947	\$22,667	\$23,437	\$24,261	\$25,143	\$26,087
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$80,487	\$79,899	\$79,271	\$78,598	\$77,878	\$77,108	\$76,284	\$75,402

8	9	10	11	12	13	14	15
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$31,951	\$34,187	\$36,580	\$39,141	\$41,881	\$44,813	\$47,949	\$51,306
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
\$295,858	\$261,670	\$225,090	\$185,949	\$144,068	\$99,255	\$51,306	\$0

7/1/2021
\$74,459

Variables

CRF 0.1385592
Internal Rate c 16.120%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$138,559	\$138,559	\$138,559	\$138,559	\$138,559	\$138,559	\$138,559
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Taxable incom	\$53,559	\$9,413	\$19,827	\$29,354	\$38,095	\$46,139	\$50,617
Income tax pa	\$15,056	\$2,646	\$5,573	\$8,251	\$10,708	\$12,970	\$14,229
Debt payment	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

After tax cash flow to equity investors for IRR calculation

Assumed inves	1/1/2007	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$76,307	\$88,717	\$85,790	\$83,111	\$80,654	\$78,393

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Principal paym	\$12,196	\$13,050	\$13,964	\$14,941	\$15,987	\$17,106	\$18,304
Total debt pay	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
Outstanding pi	\$487,804	\$474,753	\$460,790	\$445,848	\$429,861	\$412,755	\$394,452

8	9	10	11	12	13	14	15
\$138,559	\$138,559	\$138,559	\$138,559	\$138,559	\$138,559	\$138,559	\$138,559
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$51,899	\$53,270	\$54,736	\$56,306	\$57,986	\$59,783	\$61,705	\$63,763
\$14,589	\$14,974	\$15,386	\$15,828	\$16,300	\$16,805	\$17,345	\$17,924
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$77,134	\$76,774	\$76,389	\$75,976	\$75,535	\$75,063	\$74,558	\$74,017

8	9	10	11	12	13	14	15
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$19,585	\$20,956	\$22,423	\$23,992	\$25,672	\$27,469	\$29,392	\$31,449
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$374,867	\$353,911	\$331,488	\$307,496	\$281,824	\$254,355	\$224,964	\$193,515

16	17	18	19	20
\$138,559	\$138,559	\$138,559	\$138,559	\$138,559
\$0	\$0	\$0	\$0	\$0
\$29,525	\$0	\$0	\$0	\$0
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$95,489	\$127,369	\$129,889	\$132,586	\$135,472
\$26,842	\$35,803	\$36,512	\$37,270	\$38,081
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2021	7/1/2022	7/1/2023	7/1/2024	7/1/2025	7/1/2026
\$73,439	\$64,521	\$55,559	\$54,851	\$54,093	\$53,282

16	17	18	19	20
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$33,650	\$36,006	\$38,526	\$41,223	\$44,109
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$159,864	\$123,858	\$85,332	\$44,109	\$0

Parameter	Parameter Value
Equity funding	50.00%
Debt funding	50.00%
Return on equity	16.12%
Debt interest	7.00%
Federal income	21.00%
State income	9.00%
Effective income	28.11%
Capital Investment	\$1,000,000
Inflation rate	2.50%

Year **15 Year MACRS Factors**

1	0.0500000
2	0.0950000
3	0.0855000
4	0.0769500
5	0.0692550
6	0.0623295
7	0.0590490
8	0.0590490
9	0.0590490
10	0.0590490
11	0.0590490
12	0.0590490
13	0.0590490
14	0.0590490
15	0.0590490
16	0.0295245
17	0.0000000
18	0.0000000
19	0.0000000
20	0.0000000

Age of Existing Units (Years)	Remaining Life of Plant (Years)	Legacy CRF	Settlement CRF	Modeled CRF	Recalculated IRR	Target IRR	CRF Change
25 Plus	5	0.3630	0.3097	0.3097	7.93%	12.00%	-5.33%
21 to 25	10	0.1980	0.1767	0.1767	9.44%	12.00%	-2.13%
16 to 20	15	0.1460	0.1348	0.1348	10.03%	12.00%	-1.12%
11 to 15	20	0.1250	0.1180	0.1180	10.40%	12.00%	-0.70%

IRR Change	Discount Rate (WACC)	Legacy CRF Payments (PV \$000)	Recalculated CRF Payments (PV \$000)	Change in Payments (PV \$000)	Change in Payments (PV \$)	Goal Seek Reference
-4.07%	8.516%	1,564.28	1,323.79	(240.48)	(240,485)	(40.75)
-2.56%	8.516%	1,432.91	1,257.22	(175.69)	(175,690)	(25.59)
-1.97%	8.516%	1,346.98	1,213.56	(133.41)	(133,414)	(19.73)
-1.60%	8.516%	1,322.14	1,210.35	(111.79)	(111,793)	(15.97)

Variables

CRF	0.3097000
Internal Rate c	7.925%

Cash flow summary

Cost recovery	1	2	3	4	5
Annual revenue	\$309,700	\$309,700	\$309,700	\$309,700	\$309,700
Fixed O&M	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255
Interest rate p	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Taxable incom	\$224,700	\$185,786	\$201,798	\$217,316	\$232,467
Income tax pa	\$63,163	\$52,224	\$56,726	\$61,088	\$65,347
Debt payment	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945

After tax cash flow to equity investors for IRR calculation

Assumed invest	3/1/2006	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011
After tax cash	(\$500,000)	\$124,591	\$135,530	\$131,029	\$126,667	\$122,408

Debt Payment Summary

Payment numl	1	2	3	4	5
Interest payme	\$35,000	\$28,914	\$22,402	\$15,434	\$7,978
Principal paym	\$86,945	\$93,032	\$99,544	\$106,512	\$113,968
Total debt pay	\$121,945	\$121,945	\$121,945	\$121,945	\$121,945
Outstanding p	\$413,055	\$320,023	\$220,479	\$113,968	\$0

Variables

CRF 0.1767000
Internal Rate c 9.441%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$176,700	\$176,700	\$176,700	\$176,700	\$176,700	\$176,700	\$176,700
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Taxable incom	\$91,700	\$49,233	\$61,444	\$72,894	\$83,692	\$93,938	\$100,772
Income tax pa	\$25,777	\$13,839	\$17,272	\$20,491	\$23,526	\$26,406	\$28,327
Debt payment	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189

After tax cash flow to equity investors for IRR calculation

Assumed invest	3/1/2006	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$79,734	\$91,672	\$88,239	\$85,021	\$81,985	\$79,105

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$32,467	\$29,756	\$26,856	\$23,753	\$20,432	\$16,879
Principal paym	\$36,189	\$38,722	\$41,433	\$44,333	\$47,436	\$50,757	\$54,310
Total debt pay	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189	\$71,189
Outstanding p	\$463,811	\$425,089	\$383,657	\$339,324	\$291,888	\$241,131	\$186,822

8	9	10
\$176,700	\$176,700	\$176,700
\$0	\$0	\$0
\$59,049	\$59,049	\$59,049
\$13,078	\$9,010	\$4,657
\$104,573	\$108,641	\$112,994
\$29,396	\$30,539	\$31,763
\$71,189	\$71,189	\$71,189

7/1/2013	7/1/2014	7/1/2015	7/1/2016
\$77,184	\$76,116	\$74,972	\$73,749

8	9	10
\$13,078	\$9,010	\$4,657
\$58,111	\$62,179	\$66,532
\$71,189	\$71,189	\$71,189
\$128,711	\$66,532	\$0

Variables

CRF 0.1348000
Internal Rate c 10.027%

Cash flow summary

Cost recovery	1	2	3	4	5	6	7
Annual revenue	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Taxable incom	\$49,800	\$6,193	\$17,183	\$27,328	\$36,729	\$45,480	\$50,714
Income tax pa	\$13,999	\$1,741	\$4,830	\$7,682	\$10,325	\$12,784	\$14,256
Debt payment	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

After tax cash flow to equity investors for IRR calculation

Assumed inves	3/1/2006	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$65,904	\$78,162	\$75,073	\$72,221	\$69,578	\$67,118

Debt Payment Summary

Payment numl	1	2	3	4	5	6	7
Interest payme	\$35,000	\$33,607	\$32,117	\$30,522	\$28,816	\$26,990	\$25,037
Principal paym	\$19,897	\$21,290	\$22,780	\$24,375	\$26,081	\$27,907	\$29,861
Total debt pay	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
Outstanding p	\$480,103	\$458,813	\$436,032	\$411,657	\$385,576	\$357,669	\$327,808

8	9	10	11	12	13	14	15
\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800	\$134,800
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$52,804	\$55,041	\$57,434	\$59,995	\$62,735	\$65,666	\$68,803	\$72,160
\$14,843	\$15,472	\$16,145	\$16,865	\$17,635	\$18,459	\$19,341	\$20,284
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$65,647	\$65,059	\$64,431	\$63,758	\$63,038	\$62,268	\$61,444	\$60,562

8	9	10	11	12	13	14	15
\$22,947	\$20,710	\$18,317	\$15,756	\$13,016	\$10,085	\$6,948	\$3,591
\$31,951	\$34,187	\$36,580	\$39,141	\$41,881	\$44,813	\$47,949	\$51,306
\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897	\$54,897
\$295,858	\$261,670	\$225,090	\$185,949	\$144,068	\$99,255	\$51,306	\$0

7/1/2021
\$59,619

Variables

CRF 0.1180000
Internal Rate c 10.403%

Cash flow summary

	1	2	3	4	5	6	7
Cost recovery							
Annual revenue	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000
Fixed O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Depreciation	\$50,000	\$95,000	\$85,500	\$76,950	\$69,255	\$62,330	\$59,049
Interest rate p	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Taxable incom	\$33,000	-\$11,146	-\$733	\$8,795	\$17,536	\$25,580	\$30,058
Income tax pa	\$9,276	-\$3,133	-\$206	\$2,472	\$4,929	\$7,191	\$8,449
Debt payment	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

After tax cash flow to equity investors for IRR calculation

Assumed inves	3/1/2006	7/1/2007	7/1/2008	7/1/2009	7/1/2010	7/1/2011	7/1/2012
After tax cash	(\$500,000)	\$61,527	\$73,937	\$71,010	\$68,331	\$65,874	\$63,613

Debt Payment Summary

	1	2	3	4	5	6	7
Payment numl							
Interest payme	\$35,000	\$34,146	\$33,233	\$32,255	\$31,209	\$30,090	\$28,893
Principal paym	\$12,196	\$13,050	\$13,964	\$14,941	\$15,987	\$17,106	\$18,304
Total debt pay	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
Outstanding p	\$487,804	\$474,753	\$460,790	\$445,848	\$429,861	\$412,755	\$394,452

8	9	10	11	12	13	14	15
\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000	\$118,000
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049	\$59,049
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$31,339	\$32,710	\$34,177	\$35,747	\$37,426	\$39,223	\$41,146	\$43,204
\$8,810	\$9,195	\$9,607	\$10,048	\$10,521	\$11,026	\$11,566	\$12,145
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2013	7/1/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020
\$62,354	\$61,994	\$61,609	\$61,196	\$60,755	\$60,283	\$59,778	\$59,237

8	9	10	11	12	13	14	15
\$27,612	\$26,241	\$24,774	\$23,204	\$21,525	\$19,728	\$17,805	\$15,747
\$19,585	\$20,956	\$22,423	\$23,992	\$25,672	\$27,469	\$29,392	\$31,449
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$374,867	\$353,911	\$331,488	\$307,496	\$281,824	\$254,355	\$224,964	\$193,515

16	17	18	19	20
\$118,000	\$118,000	\$118,000	\$118,000	\$118,000
\$0	\$0	\$0	\$0	\$0
\$29,525	\$0	\$0	\$0	\$0
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$74,929	\$106,809	\$109,330	\$112,027	\$114,912
\$21,063	\$30,024	\$30,733	\$31,491	\$32,302
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196

7/1/2021	7/1/2022	7/1/2023	7/1/2024	7/1/2025	7/1/2026
\$58,659	\$49,741	\$40,779	\$40,071	\$39,313	\$38,502

16	17	18	19	20
\$13,546	\$11,191	\$8,670	\$5,973	\$3,088
\$33,650	\$36,006	\$38,526	\$41,223	\$44,109
\$47,196	\$47,196	\$47,196	\$47,196	\$47,196
\$159,864	\$123,858	\$85,332	\$44,109	\$0

Parameter	Parameter Value
Equity funding	50.00%
Debt funding	50.00%
Return on equ	12.00%
Debt interest	7.00%
Federal incom	21.00%
State income	9.00%
Effective inco	28.11%
Capital Invest	\$1,000,000
Inflation rate	2.50%

Year **15 Year MACRS Factors**

1	0.0500000
2	0.0950000
3	0.0855000
4	0.0769500
5	0.0692550
6	0.0623295
7	0.0590490
8	0.0590490
9	0.0590490
10	0.0590490
11	0.0590490
12	0.0590490
13	0.0590490
14	0.0590490
15	0.0590490
16	0.0295245
17	0.0000000
18	0.0000000
19	0.0000000
20	0.0000000

Docket Nos. EL21-91-003, et al.**Attachment E****Norton Affidavit**

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.

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Docket No. EL21-91-003

Docket No. ER21-1635-00_

**AFFIDAVIT OF CHRIS NORTON
ON BEHALF OF
AMERICAN MUNICIPAL POWER, INC.**

1. My name is Christopher J Norton (Chris Norton). I am the Assistant Vice President of RTO & Regulatory Affairs for American Municipal Power, Inc. (“AMP”). My business address is 1111 Schrock Road, Suite 100, Columbus, OH 43229. I have personal knowledge of the matters stated herein.
2. AMP is a nonprofit Ohio corporation with members in Ohio, West Virginia, Pennsylvania, Maryland, Michigan, Virginia, Indiana, Kentucky, and Delaware. The majority of AMP’s members are load-serving entities within the PJM Interconnection, L.L.C. (“PJM”) region. To meet those members’ load service responsibilities, AMP purchases transmission and related services from PJM in order to provide service to its members and also purchases and sells electricity products in the markets operated by PJM.
3. As a network customer of PJM, AMP is charged for ancillary services provided under the PJM Open Access Transmission Tariff which includes the costs PJM incurs to secure Black Start Service (Schedule 6A).
4. AMP takes network integration transmission service from PJM to serve the load of its members located in the AEP, APS, ATSI, DPL, PEN, and PL zones of PJM which are

- impacted by PJM's proposal in Docket No. ER21-1635 and the Federal Energy Regulatory Commission's ("FERC") section 206 investigation in Docket No. EL21-91.
5. The purposes of my affidavit are to provide: (1) AMP's perspective of the benefits of the Offer of Settlement ("Settlement") submitted in these proceedings by PJM, AMP, Dynegy Marketing and Trade, LLC, Vistra Corp., Hazleton Generation, LLC, J-POWER USA Development Co., Ltd., LS Power Development, LLC, and the PJM Industrial Customer Coalition; and (2) analysis to assist FERC in determining whether the overall result of the Settlement is just and reasonable.
 6. The Settlement is a negotiated outcome that is supported by FERC's Trial Staff, PJM, and all parties to this proceeding that have a direct financial interest in the appropriate Capital Recovery Factors ("CRFs") for generators selected to provide Black Start service prior to June 6, 2021.
 7. Of particular importance to AMP's interests in ensuring that it is paying just and reasonable rates for Black Start Service, the Settlement provides customers with certain, immediate, and material rate relief. Without the Settlement, customers would face the uncertainty that is inherent in a litigated outcome in complex, multi-party proceedings. The Settlement also serves the important interest of eliminating the need for and costs associated with the further litigation before FERC and appellate proceedings.
 8. In addition to these benefits, AMP analyzed Black Start revenue requirement data provided by PJM under four scenarios: (1) continuation of the current tariff CRFs; (2) application of the Settlement CRFs; (3) implementation of the Independent Market Monitor's proposed CRF rates, which assumes that FERC accepts the Independent Market Monitor's proposed CRF rates to be effective on a prospective basis as of June 1, 2026; and (4) a scenario based

on the current CRFs applicable to units that were selected to provide Black Start Service after June 6, 2021. The PJM data cover the period from 2024 through 2040.

9. I used the January 1, 2024, Network Service Peak Loads (“NSPL”) for AMP’s Members in the affected zones to determine their percentage of the zonal NSPL. I then used those percentages to estimate the financial impact on AMP for each of the scenarios by multiplying the zonal black start revenue requirements PJM provided by AMP’s load ratio share for each of the zones. The calculations are included as Exhibit 1 to my affidavit.
10. Under the proposed Settlement, AMP would pay 6.6% less for Black Start Service than it would pay as compared to the current tariff CRF. *See* Exhibit 1, AMP Impact Tab, Column W, Row 16. While the Independent Market Monitor’s proposed CRF rates would result in a greater discount to AMP than the proposed Settlement amount (Exhibit 1, AMP Impact Tab, Column W, Row 28), the Independent Market Monitor’s proposed CRF rates are subject to the uncertainty and significant cost of litigation. The cost reduction resulting from the Settlement CRFs is acceptable to AMP given the litigation uncertainty and cost as well as the timing issues involved in fully litigating the Independent Market Monitor’s proposal. I recommend that FERC consider this analysis as part of its evaluation of whether to approve the Settlement over the Independent Market Monitor’s objections.
11. This concludes my affidavit.

Docket Nos. EL21-91-003, et al.**Attachment E****Norton Affidavit**

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.

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Docket No. EL21-91-003

Docket No. ER21-1635-00_

VERIFICATION

I, Christopher J Norton being duly sworn, depose and state that the contents of the foregoing Affidavit on behalf of American Municipal Power, Inc. are true, correct, accurate and complete to the best of my knowledge, information, and belief.



Christopher J Norton

Assistant Vice President of RTO & Regulatory Affairs
American Municipal Power, Inc.

SUBSCRIBED AND SWORN to

Before me this 14th day of August, 2024



Notary Public

My Commission Expires 01-02-2029

	2024	2025
Tariff CRF	\$55,028,112.00	\$26,448,407.68
AE	\$1,834,700.27	\$1,834,700.27
AEP	\$18,807,700.79	\$7,671,920.34
APS	\$6,703,458.12	\$4,435,188.08
ATSI	\$4,636,041.80	\$2,632,177.11
COMED	\$7,279,838.03	\$1,819,959.51
DOM	\$4,334,892.99	\$2,315,236.56
DPL	\$520,623.84	\$303,697.24
DUQU	\$1,039,675.25	\$1,039,675.25
PEN	\$3,989,205.43	\$1,662,168.93
PL	\$4,767,277.27	\$2,347,135.83
PS	\$1,114,698.19	\$386,548.57
Settlement CRF	\$48,854,365.36	\$23,724,840.21
AE	\$1,731,957.05	\$1,731,957.05
AEP	\$17,004,719.76	\$7,066,879.33
APS	\$5,871,822.53	\$3,847,563.35
ATSI	\$4,273,072.62	\$2,484,775.19
COMED	\$6,210,925.17	\$1,552,731.29
DOM	\$3,757,070.42	\$2,033,964.09
DPL	\$464,617.34	\$271,026.78
DUQU	\$887,017.70	\$887,017.70
PEN	\$3,560,063.63	\$1,483,359.85
PL	\$4,098,315.44	\$2,020,600.26
PS	\$994,783.69	\$344,965.31
IMM CRF	\$55,028,112.00	\$26,448,407.68
AE	\$1,834,700.27	\$1,834,700.27
AEP	\$18,807,700.79	\$7,671,920.34
APS	\$6,703,458.12	\$4,435,188.08
ATSI	\$4,636,041.80	\$2,632,177.11
COMED	\$7,279,838.03	\$1,819,959.51
DOM	\$4,334,892.99	\$2,315,236.56
DPL	\$520,623.84	\$303,697.24
DUQU	\$1,039,675.25	\$1,039,675.25

	PEN	\$3,989,205.43	\$1,662,168.93
	PL	\$4,767,277.27	\$2,347,135.83
	PS	\$1,114,698.19	\$386,548.57
2024 CRF		\$55,028,112.00	\$26,448,407.68
	AE	\$1,834,700.27	\$1,834,700.27
	AEP	\$18,807,700.79	\$7,671,920.34
	APS	\$6,703,458.12	\$4,435,188.08
	ATSI	\$4,636,041.80	\$2,632,177.11
	COMED	\$7,279,838.03	\$1,819,959.51
	DOM	\$4,334,892.99	\$2,315,236.56
	DPL	\$520,623.84	\$303,697.24
	DUQU	\$1,039,675.25	\$1,039,675.25
	PEN	\$3,989,205.43	\$1,662,168.93
	PL	\$4,767,277.27	\$2,347,135.83
	PS	\$1,114,698.19	\$386,548.57
FERC D1 CRF		\$55,028,112.00	\$26,448,407.68
	AE	\$1,834,700.27	\$1,834,700.27
	AEP	\$18,807,700.79	\$7,671,920.34
	APS	\$6,703,458.12	\$4,435,188.08
	ATSI	\$4,636,041.80	\$2,632,177.11
	COMED	\$7,279,838.03	\$1,819,959.51
	DOM	\$4,334,892.99	\$2,315,236.56
	DPL	\$520,623.84	\$303,697.24
	DUQU	\$1,039,675.25	\$1,039,675.25
	PEN	\$3,989,205.43	\$1,662,168.93
	PL	\$4,767,277.27	\$2,347,135.83
	PS	\$1,114,698.19	\$386,548.57

Notes:

Costs exclude the following items:

- Training costs
- Variable Black Start Service Costs
- Fuel Storage costs
- Annual Revenue Requirements for units on the Base
Formula Rate

2026	2027	2028	2029
\$12,728,692.02	\$8,737,713.89	\$8,737,713.89	\$8,737,713.89
\$1,834,700.27	\$1,834,700.27	\$1,834,700.27	\$1,834,700.27
\$5,492,487.85	\$4,270,836.51	\$4,270,836.51	\$4,270,836.51
\$1,366,757.38	\$0.00	\$0.00	\$0.00
\$2,632,177.11	\$2,632,177.11	\$2,632,177.11	\$2,632,177.11
\$0.00	\$0.00	\$0.00	\$0.00
\$622,812.97	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$779,756.44	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$11,725,783.58	\$8,248,401.91	\$8,248,401.91	\$8,248,401.91
\$1,731,957.05	\$1,731,957.05	\$1,731,957.05	\$1,731,957.05
\$5,121,900.94	\$4,031,669.66	\$4,031,669.66	\$4,031,669.66
\$1,166,073.72	\$0.00	\$0.00	\$0.00
\$2,484,775.19	\$2,484,775.19	\$2,484,775.19	\$2,484,775.19
\$0.00	\$0.00	\$0.00	\$0.00
\$555,813.40	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$665,263.28	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$11,615,160.49	\$7,206,866.41	\$7,206,866.41	\$7,206,866.41
\$1,647,193.90	\$1,513,260.78	\$1,513,260.78	\$1,513,260.78
\$5,056,008.36	\$3,522,585.95	\$3,522,585.95	\$3,522,585.95
\$1,256,488.80	\$0.00	\$0.00	\$0.00
\$2,363,168.61	\$2,171,019.68	\$2,171,019.68	\$2,171,019.68
\$0.00	\$0.00	\$0.00	\$0.00
\$622,812.97	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$669,487.85	\$0.00	\$0.00	\$0.00

\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$11,941,386.08	\$7,689,188.22	\$7,689,188.22	\$7,689,188.22
\$1,706,271.25	\$1,614,536.23	\$1,614,536.23	\$1,614,536.23
\$5,193,529.30	\$3,758,336.13	\$3,758,336.13	\$3,758,336.13
\$1,278,924.40	\$0.00	\$0.00	\$0.00
\$2,447,924.71	\$2,316,315.86	\$2,316,315.86	\$2,316,315.86
\$0.00	\$0.00	\$0.00	\$0.00
\$622,812.97	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$691,923.45	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$12,732,686.66	\$9,031,301.07	\$9,031,301.07	\$9,031,301.07
\$1,870,660.39	\$1,896,346.19	\$1,896,346.19	\$1,896,346.19
\$5,576,196.25	\$4,414,336.62	\$4,414,336.62	\$4,414,336.62
\$1,283,125.10	\$0.00	\$0.00	\$0.00
\$2,683,767.78	\$2,720,618.26	\$2,720,618.26	\$2,720,618.26
\$0.00	\$0.00	\$0.00	\$0.00
\$622,812.97	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$696,124.16	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00

Revenue Cost Summary			
2030	2031	2032	2033
\$8,737,713.89	\$8,737,713.89	\$8,737,713.89	\$8,737,713.89
\$1,834,700.27	\$1,834,700.27	\$1,834,700.27	\$1,834,700.27
\$4,270,836.51	\$4,270,836.51	\$4,270,836.51	\$4,270,836.51
\$0.00	\$0.00	\$0.00	\$0.00
\$2,632,177.11	\$2,632,177.11	\$2,632,177.11	\$2,632,177.11
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$8,248,401.91	\$8,248,401.91	\$8,248,401.91	\$8,248,401.91
\$1,731,957.05	\$1,731,957.05	\$1,731,957.05	\$1,731,957.05
\$4,031,669.66	\$4,031,669.66	\$4,031,669.66	\$4,031,669.66
\$0.00	\$0.00	\$0.00	\$0.00
\$2,484,775.19	\$2,484,775.19	\$2,484,775.19	\$2,484,775.19
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$7,206,866.41	\$7,206,866.41	\$7,206,866.41	\$7,206,866.41
\$1,513,260.78	\$1,513,260.78	\$1,513,260.78	\$1,513,260.78
\$3,522,585.95	\$3,522,585.95	\$3,522,585.95	\$3,522,585.95
\$0.00	\$0.00	\$0.00	\$0.00
\$2,171,019.68	\$2,171,019.68	\$2,171,019.68	\$2,171,019.68
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00

[illegible]

2034	2035	2036	2037
\$8,737,713.89	\$7,383,705.47	\$5,106,056.41	\$5,106,056.41
\$1,834,700.27	\$1,528,916.89	\$0.00	\$0.00
\$4,270,836.51	\$3,222,611.47	\$2,473,879.29	\$2,473,879.29
\$0.00	\$0.00	\$0.00	\$0.00
\$2,632,177.11	\$2,632,177.11	\$2,632,177.11	\$2,632,177.11
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$8,248,401.91	\$6,970,217.96	\$4,820,117.25	\$4,820,117.25
\$1,731,957.05	\$1,443,297.54	\$0.00	\$0.00
\$4,031,669.66	\$3,042,145.22	\$2,335,342.05	\$2,335,342.05
\$0.00	\$0.00	\$0.00	\$0.00
\$2,484,775.19	\$2,484,775.19	\$2,484,775.19	\$2,484,775.19
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$7,206,866.41	\$6,090,080.27	\$4,211,475.32	\$4,211,475.32
\$1,513,260.78	\$1,261,050.65	\$0.00	\$0.00
\$3,522,585.95	\$2,658,009.94	\$2,040,455.64	\$2,040,455.64
\$0.00	\$0.00	\$0.00	\$0.00
\$2,171,019.68	\$2,171,019.68	\$2,171,019.68	\$2,171,019.68
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00

[illegible]

2038	2039	2040	TOTAL
\$5,106,056.41	\$2,693,227.39	\$2,061,566.08	\$191,563,590.94
\$0.00	\$0.00	\$0.00	\$21,710,619.80
\$2,473,879.29	\$2,473,879.29	\$2,061,566.08	\$81,318,495.77
\$0.00	\$0.00	\$0.00	\$12,505,403.59
\$2,632,177.11	\$219,348.09	\$0.00	\$41,705,869.47
\$0.00	\$0.00	\$0.00	\$9,099,797.54
\$0.00	\$0.00	\$0.00	\$7,272,942.53
\$0.00	\$0.00	\$0.00	\$824,321.08
\$0.00	\$0.00	\$0.00	\$2,859,106.94
\$0.00	\$0.00	\$0.00	\$5,651,374.36
\$0.00	\$0.00	\$0.00	\$7,114,413.11
\$0.00	\$0.00	\$0.00	\$1,501,246.76
\$4,820,117.25	\$2,542,406.65	\$1,946,118.38	\$176,211,299.15
\$0.00	\$0.00	\$0.00	\$20,494,825.09
\$2,335,342.05	\$2,335,342.05	\$1,946,118.38	\$75,776,489.15
\$0.00	\$0.00	\$0.00	\$10,885,459.60
\$2,484,775.19	\$207,064.60	\$0.00	\$39,266,989.94
\$0.00	\$0.00	\$0.00	\$7,763,656.47
\$0.00	\$0.00	\$0.00	\$6,346,847.91
\$0.00	\$0.00	\$0.00	\$735,644.12
\$0.00	\$0.00	\$0.00	\$2,439,298.68
\$0.00	\$0.00	\$0.00	\$5,043,423.48
\$0.00	\$0.00	\$0.00	\$6,118,915.70
\$0.00	\$0.00	\$0.00	\$1,339,749.00
\$4,211,475.32	\$2,221,373.95	\$1,700,379.70	\$173,392,871.36
\$0.00	\$0.00	\$0.00	\$18,683,731.31
\$2,040,455.64	\$2,040,455.64	\$1,700,379.70	\$72,236,529.31
\$0.00	\$0.00	\$0.00	\$12,395,135.00
\$2,171,019.68	\$180,918.31	\$0.00	\$35,864,542.02
\$0.00	\$0.00	\$0.00	\$9,099,797.54
\$0.00	\$0.00	\$0.00	\$7,272,942.53
\$0.00	\$0.00	\$0.00	\$824,321.08
\$0.00	\$0.00	\$0.00	\$2,748,838.35

\$0.00	\$0.00	\$0.00	\$5,651,374.36
\$0.00	\$0.00	\$0.00	\$7,114,413.11
\$0.00	\$0.00	\$0.00	\$1,501,246.76
\$4,493,329.64	\$2,370,040.10	\$1,814,178.15	\$179,093,279.48
\$0.00	\$0.00	\$0.00	\$19,637,408.50
\$2,177,013.78	\$2,177,013.78	\$1,814,178.15	\$75,097,970.80
\$0.00	\$0.00	\$0.00	\$12,417,570.60
\$2,316,315.86	\$193,026.32	\$0.00	\$37,704,960.26
\$0.00	\$0.00	\$0.00	\$9,099,797.54
\$0.00	\$0.00	\$0.00	\$7,272,942.53
\$0.00	\$0.00	\$0.00	\$824,321.08
\$0.00	\$0.00	\$0.00	\$2,771,273.95
\$0.00	\$0.00	\$0.00	\$5,651,374.36
\$0.00	\$0.00	\$0.00	\$7,114,413.11
\$0.00	\$0.00	\$0.00	\$1,501,246.76
\$5,277,619.90	\$2,783,719.83	\$2,130,834.70	\$194,838,827.11
\$0.00	\$0.00	\$0.00	\$22,291,118.97
\$2,557,001.64	\$2,557,001.64	\$2,130,834.70	\$83,060,242.76
\$0.00	\$0.00	\$0.00	\$12,421,771.31
\$2,720,618.26	\$226,718.19	\$0.00	\$42,826,124.05
\$0.00	\$0.00	\$0.00	\$9,099,797.54
\$0.00	\$0.00	\$0.00	\$7,272,942.53
\$0.00	\$0.00	\$0.00	\$824,321.08
\$0.00	\$0.00	\$0.00	\$2,775,474.66
\$0.00	\$0.00	\$0.00	\$5,651,374.36
\$0.00	\$0.00	\$0.00	\$7,114,413.11
\$0.00	\$0.00	\$0.00	\$1,501,246.76

% of Total	Notes

11.33%	
42.45%	
6.53%	
21.77%	
4.75%	
3.80%	
0.43%	
1.49%	
2.95%	
3.71%	
0.78%	

11.63%	
43.00%	
6.18%	
22.28%	
4.41%	
3.60%	
0.42%	
1.38%	
2.86%	
3.47%	
0.76%	

10.78%	
41.66%	
7.15%	
20.68%	
5.25%	
4.19%	
0.48%	
1.59%	

3.26%	
4.10%	
0.87%	

10.96%	
41.93%	
6.93%	
21.05%	
5.08%	
4.06%	
0.46%	
1.55%	
3.16%	
3.97%	
0.84%	

11.44%	
42.63%	
6.38%	
21.98%	
4.67%	
3.73%	
0.42%	
1.42%	
2.90%	
3.65%	
0.77%	

	AMP Zonal NSPL	2024	2025	2026
Tariff CRF		\$837,139.38	\$401,319.04	\$289,662.09
AE	0	\$0.00	\$0.00	\$0.00
AEP	2.3763%	\$446,927.39	\$182,307.84	\$130,517.99
APS	0.6858%	\$45,972.32	\$30,416.52	\$9,373.22
ATSI	5.6900%	\$263,790.78	\$149,770.88	\$149,770.88
COMED	0	\$0.00	\$0.00	\$0.00
DOM	0	\$0.00	\$0.00	\$0.00
DPL	0.1656%	\$862.15	\$502.92	\$0.00
DUQU	0	\$0.00	\$0.00	\$0.00
PEN	0.2859%	\$11,405.14	\$4,752.14	\$0.00
PL	1.4302%	\$68,181.60	\$33,568.74	\$0.00
PS	0	\$0.00	\$0.00	\$0.00
Settlement CRF		\$757,051.68	\$369,288.92	\$271,092.37
AE	0	\$0.00	\$0.00	\$0.00
AEP	2.3763%	\$404,083.16	\$167,930.25	\$121,711.73
APS	0.6858%	\$40,268.96	\$26,386.59	\$7,996.93
ATSI	5.6900%	\$243,137.83	\$141,383.71	\$141,383.71
COMED	0	\$0.00	\$0.00	\$0.00
DOM	0	\$0.00	\$0.00	\$0.00
DPL	0.1656%	\$769.41	\$448.82	\$0.00
DUQU	0	\$0.00	\$0.00	\$0.00
PEN	0.2859%	\$10,178.22	\$4,240.93	\$0.00
PL	1.4302%	\$58,614.11	\$28,898.62	\$0.00
PS	0	\$0.00	\$0.00	\$0.00
IMM CRF		\$837,139.38	\$401,319.04	\$263,227.22
AE	0	\$0.00	\$0.00	\$0.00
AEP	2.3763%	\$446,927.39	\$182,307.84	\$120,145.93
APS	0.6858%	\$45,972.32	\$30,416.52	\$8,617.00
ATSI	5.6900%	\$263,790.78	\$149,770.88	\$134,464.29
COMED	0	\$0.00	\$0.00	\$0.00
DOM	0	\$0.00	\$0.00	\$0.00
DPL	0.1656%	\$862.15	\$502.92	\$0.00
DUQU	0	\$0.00	\$0.00	\$0.00
PEN	0.2859%	\$11,405.14	\$4,752.14	\$0.00
PL	1.4302%	\$68,181.60	\$33,568.74	\$0.00
PS	0	\$0.00	\$0.00	\$0.00
2024 CRF		\$837,139.38	\$401,319.04	\$271,471.62
AE	0	\$0.00	\$0.00	\$0.00
AEP	2.3763%	\$446,927.39	\$182,307.84	\$123,413.84
APS	0.6858%	\$45,972.32	\$30,416.52	\$8,770.86
ATSI	5.6900%	\$263,790.78	\$149,770.88	\$139,286.92

COMED	0	\$0.00	\$0.00	\$0.00
DOM	0	\$0.00	\$0.00	\$0.00
DPL	0.1656%	\$862.15	\$502.92	\$0.00
DUQU	0	\$0.00	\$0.00	\$0.00
PEN	0.2859%	\$11,405.14	\$4,752.14	\$0.00
PL	1.4302%	\$68,181.60	\$33,568.74	\$0.00
PS	0	\$0.00	\$0.00	\$0.00
ERC D1 CRF		\$837,139.38	\$401,319.04	\$294,013.21
AE	0	\$0.00	\$0.00	\$0.00
AEP	2.3763%	\$446,927.39	\$182,307.84	\$132,507.15
APS	0.6858%	\$45,972.32	\$30,416.52	\$8,799.67
ATSI	5.6900%	\$263,790.78	\$149,770.88	\$152,706.39
COMED	0	\$0.00	\$0.00	\$0.00
DOM	0	\$0.00	\$0.00	\$0.00
DPL	0.1656%	\$862.15	\$502.92	\$0.00
DUQU	0	\$0.00	\$0.00	\$0.00
PEN	0.2859%	\$11,405.14	\$4,752.14	\$0.00
PL	1.4302%	\$68,181.60	\$33,568.74	\$0.00
PS	0	\$0.00	\$0.00	\$0.00

Revenue Cost Summary					
2027	2028	2029	2030	2031	2032
\$251,258.77	\$251,258.77	\$251,258.77	\$251,258.77	\$251,258.77	\$251,258.77
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$101,487.89	\$101,487.89	\$101,487.89	\$101,487.89	\$101,487.89	\$101,487.89
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$149,770.88	\$149,770.88	\$149,770.88	\$149,770.88	\$149,770.88	\$149,770.88
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$237,188.27	\$237,188.27	\$237,188.27	\$237,188.27	\$237,188.27	\$237,188.27
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$95,804.57	\$95,804.57	\$95,804.57	\$95,804.57	\$95,804.57	\$95,804.57
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$141,383.71	\$141,383.71	\$141,383.71	\$141,383.71	\$141,383.71	\$141,383.71
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$207,238.23	\$207,238.23	\$207,238.23	\$207,238.23	\$207,238.23	\$207,238.23
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$83,707.21	\$83,707.21	\$83,707.21	\$83,707.21	\$83,707.21	\$83,707.21
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$123,531.02	\$123,531.02	\$123,531.02	\$123,531.02	\$123,531.02	\$123,531.02
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$221,107.71	\$221,107.71	\$221,107.71	\$221,107.71	\$221,107.71	\$221,107.71
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$89,309.34	\$89,309.34	\$89,309.34	\$89,309.34	\$89,309.34	\$89,309.34
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$131,798.37	\$131,798.37	\$131,798.37	\$131,798.37	\$131,798.37	\$131,798.37

[illegible]

2033	2034	2035	2036	2037	2038
\$251,258.77	\$251,258.77	\$226,349.79	\$208,557.67	\$208,557.67	\$208,557.67
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$101,487.89	\$101,487.89	\$76,578.92	\$58,786.79	\$58,786.79	\$58,786.79
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$149,770.88	\$149,770.88	\$149,770.88	\$149,770.88	\$149,770.88	\$149,770.88
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$237,188.27	\$237,188.27	\$213,674.21	\$196,878.44	\$196,878.44	\$196,878.44
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$95,804.57	\$95,804.57	\$72,290.50	\$55,494.73	\$55,494.73	\$55,494.73
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$141,383.71	\$141,383.71	\$141,383.71	\$141,383.71	\$141,383.71	\$141,383.71
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$207,238.23	\$207,238.23	\$186,693.31	\$172,018.37	\$172,018.37	\$172,018.37
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$83,707.21	\$83,707.21	\$63,162.29	\$48,487.35	\$48,487.35	\$48,487.35
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$123,531.02	\$123,531.02	\$123,531.02	\$123,531.02	\$123,531.02	\$123,531.02
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$221,107.71	\$221,107.71	\$199,187.82	\$183,530.75	\$183,530.75	\$183,530.75
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$89,309.34	\$89,309.34	\$67,389.45	\$51,732.38	\$51,732.38	\$51,732.38
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$131,798.37	\$131,798.37	\$131,798.37	\$131,798.37	\$131,798.37	\$131,798.37

[illegible]

2039	2040	TOTAL	
\$71,267.70	\$48,988.99	\$4,510,470.14	Tariff CRF
\$0.00	\$0.00	\$0.00	
\$58,786.79	\$48,988.99	\$1,932,371.41	
\$0.00	\$0.00	\$85,762.06	
\$12,480.91	\$0.00	\$2,373,063.97	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$1,365.08	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$16,157.28	
\$0.00	\$0.00	\$101,750.34	
\$0.00	\$0.00	\$0.00	Reduction from Tariff
\$67,276.71	\$46,245.61	\$4,212,771.03	Settlement CRF 6.6%
\$0.00	\$0.00	\$0.00	
\$55,494.73	\$46,245.61	\$1,800,676.71	
\$0.00	\$0.00	\$74,652.48	
\$11,781.98	\$0.00	\$2,234,291.73	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$1,218.23	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$14,419.15	
\$0.00	\$0.00	\$87,512.73	
\$0.00	\$0.00	\$0.00	Reduction from Tariff
\$58,781.60	\$40,406.12	\$3,961,527.61	IMM CRF 12.2%
\$0.00	\$0.00	\$0.00	
\$48,487.35	\$40,406.12	\$1,716,556.65	
\$0.00	\$0.00	\$85,005.84	
\$10,294.25	\$0.00	\$2,040,692.44	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$1,365.08	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$16,157.28	
\$0.00	\$0.00	\$101,750.34	
\$0.00	\$0.00	\$0.00	Reduction from Tariff
\$62,715.58	\$43,110.32	\$4,134,397.71	2024 CRF 8.3%
\$0.00	\$0.00	\$0.00	
\$51,732.38	\$43,110.32	\$1,784,553.08	
\$0.00	\$0.00	\$85,159.70	
\$10,983.20	\$0.00	\$2,145,412.24	

\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$1,365.08	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$16,157.28	
\$0.00	\$0.00	\$101,750.34	
\$0.00	\$0.00	\$0.00	
\$73,662.29	\$50,635.02	\$4,615,028.21	FERC D1 CRF
\$0.00	\$0.00	\$0.00	
\$60,762.03	\$50,635.02	\$1,973,760.55	
\$0.00	\$0.00	\$85,188.51	
\$12,900.26	\$0.00	\$2,436,806.46	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$1,365.08	
\$0.00	\$0.00	\$0.00	
\$0.00	\$0.00	\$16,157.28	
\$0.00	\$0.00	\$101,750.34	
\$0.00	\$0.00	\$0.00	

Reduction from Tariff

-2.3%

Comparison

	Reduction from Tariff
Settlement	6.6%
IMM CRF	12.2%
2024 CRF	8.3%
FERC D1 CRF	-2.3% (increase)

Years	Tariff CRF	Settlement CRF	IMM CRF
5	0.3630	0.3097	0.2475
10	0.1980	0.1767	0.1487
15	0.1460	0.1348	
20	0.1250	0.1180	0.1031

2024 CRF	FERC D1 CRF
0.2710	0.2754
0.1600	0.1739
0.1250	
0.1100	0.1292

Attachment F

Revisions to the PJM Open Access Transmission Tariff (Marked/Redline Format)

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 16 hours of full load operation with 90% confidence and meets any other requirements specified in the PJM manuals. 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 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. 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 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, 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:

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

Where:

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

“Black Start Unit Capacity” is 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. 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 section 5 of this Schedule 6A, X shall be .01 for Hydro units, .02 for CT units. For fuel assured Black Start Units with a

commitment established under section 5 of this 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

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

Where:

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

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

Effective January 1, 2024, tThe 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:

Age of Black Start Unit	Term of Black Start Commitment	Levelized CRF
1 to 5	20	0.1 18025
6 to 10	15	0.1 34846
11 to 15	10	0.1 76798
16+	5	0.3 09763

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 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
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
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.

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:

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

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.

Attachment G

Revisions to the PJM Open Access Transmission Tariff (Clean Format)

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 16 hours of full load operation with 90% confidence and meets any other requirements specified in the PJM manuals. 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 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. 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 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, 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:

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

Where:

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

“Black Start Unit Capacity” is 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. 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 section 5 of this Schedule 6A, X shall be .01 for Hydro units, .02 for CT units. For fuel assured Black Start Units with a

commitment established under section 5 of this 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

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

Where:

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

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

Effective January 1, 2024, 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:

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 selected for Black Start Service after June 6, 2021, shall be updated annually on 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
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
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.

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:

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

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.

FERC rendition of the electronically filed tariff records in Docket No. ER21-01635-009

Filing Data:

CID: C000030

Filing Title: Black Start Offer of Settlement in EL21-91-003

Company Filing Identifier: 9885

Type of Filing Code: 1380

Associated Filing Identifier: 5572

Tariff Title: Intra-PJM Tariffs

Tariff ID: 23

Payment Confirmation:

Suspension Motion:

Tariff Record Data:

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

OATT SCHEDULE 6A, OATT SCHEDULE 6A, 14.7.0, A

Record Narrative Name: OATT SCHEDULE 6A Black Start Service

Tariff Record ID: 510

Tariff Record Collation Value: 298482848 Tariff Record Parent Identifier: 357

Proposed Date: 9998-12-31

Priority Order: 500

Record Change Type: PRO FORMA

Record Content Type: 1

Associated Filing Identifier:

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 16 hours of full load operation with 90% confidence and meets any other requirements specified in the PJM manuals. 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 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. 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 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, 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:

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

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

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

Where:

Fixed BSSC

Black Start Units with a commitment established under section 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:

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

Where:

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

"Black Start Unit Capacity" is 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. 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 section 5 of this Schedule 6A, X shall be .01 for Hydro units, .02 for CT units. For fuel assured Black Start Units with a commitment established under section 5 of this 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

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

Where:

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

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

Effective January 1, 2024, 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:

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 selected for Black Start Service after June 6, 2021, shall be updated annually on 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
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.

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