

177 FERC ¶ 61,209
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Richard Glick, Chairman;
James P. Danly, Allison Clements,
and Mark C. Christie.

PJM Interconnection, L.L.C.

Docket Nos. EL19-58-006
ER19-1486-003

ORDER ON VOLUNTARY REMAND

(Issued December 22, 2021)

1. This case is before the Commission on voluntary remand from the United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit).¹ At issue on remand is whether the Commission erred in: (1) deeming PJM Interconnection, L.L.C.'s (PJM) Open Access Transmission Tariff (Tariff) and the Amended and Restated Operating Agreement of PJM (Operating Agreement) unjust and unreasonable as they pertain to the PJM reserve market; and (2) setting a replacement rate.

2. In this order, as further discussed below, we affirm in part, and reverse in part the determinations in the Commission's prior orders. Specifically, we affirm the Commission's finding that PJM satisfied its burden under section 206 of the Federal Power Act (FPA)² to show that the bifurcation of Tier 1 and Tier 2 Synchronized Reserve products, misalignment of the day-ahead and real-time reserve markets, and the provisions regarding resources' reserve capability and offer rules are unjust and unreasonable. However, we reverse the Commission's prior determination and find that PJM failed to meet its burden to show that the currently effective Reserve Penalty Factors and two-step Operating Reserve Demand Curves (ORDCs) are unjust and unreasonable. We also reverse the Commission's determination that the prior backward-looking energy

¹ *Am. Mun. Power, Inc. v. FERC*, No. 20-1372 (D.C. Cir. Aug. 23, 2021) (order granting unopposed motion for voluntary remand). The consolidated appeals involve challenges to *PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,153 (May 2020 Order), *order on reh'g*, 173 FERC ¶ 61,123 (2020) (November 2020 Rehearing Order); and *PJM Interconnection, L.L.C.*, 173 FERC ¶ 61,134 (2020) (November 2020 Compliance Order), *order on reh'g*, 174 FERC ¶ 61,180 (2021) (March 2021 Compliance Rehearing Order).

² 16 U.S.C. § 824e.

and ancillary services offset (E&AS Offset) is unjust and unreasonable, as that determination was based in large part on the findings regarding the Reserve Penalty Factors and ORDCs. Given the reversal of the Commission's prior determinations regarding Reserve Penalty Factors and ORDCs, we also direct PJM to submit a compliance filing within 60 days of the date of this order to revise its Tariff and Operating Agreement records previously accepted in this proceeding (to become effective May 1, 2022) to reflect the currently effective Reserve Penalty Factors and the ORDCs and restore its Tariff provisions related to its prior backward-looking E&AS Offset, effective November 12, 2020. Additionally, we recognize that PJM will need to delay the base residual auction (BRA) for the 2023/2024 delivery year to incorporate the revised E&AS Offset in the BRA for the 2023/2024 delivery year. Accordingly, we direct PJM to submit a compliance filing within 30 days of the date of this order proposing a new schedule for that BRA and subsequent BRAs. We will not require PJM to re-run auctions that utilized the forward-looking offset as doing so would undermine the expectations of the entities who are making commitments for the 2022/2023 delivery year.

I. Background

3. A detailed background of this proceeding is explained in prior orders, and we need not repeat it here.³ As relevant to this order on remand, on March 29, 2019, PJM submitted filings pursuant to FPA sections 205 and 206⁴ asserting that the reserve market provisions of its Tariff and Operating Agreement are unjust and unreasonable and proposing revisions to the Tariff and Operating Agreement as a just and reasonable replacement rate.⁵

³ For a comprehensive history, see March 2021 Compliance Rehearing Order, 174 FERC ¶ 61,180; November 2020 Rehearing Order, 173 FERC ¶ 61,123.

⁴ 16 U.S.C. §§ 824d-824e.

⁵ May 2020 Order, 171 FERC ¶ 61,153 at P 1. PJM filed the proposed revisions to the Operating Agreement pursuant to section 206 of the FPA, in Docket No. EL19-58-000, and filed pursuant to section 205 to include the same revisions to its Tariff, Attachment K-Appendix, which merely repeats certain provisions of the Operating Agreement, in Docket No. ER19-1486-000. PJM Transmittal at 1 n.1. As PJM recognized in its transmittal letter, because PJM does not have authority under its Operating Agreement to file these revisions unilaterally pursuant to section 205, its section 205 filing remains subject to the requirements of section 206 of the FPA. *Id.* All citations to the "PJM Transmittal" herein, unless otherwise noted, refer to the transmittal filed in Docket No. EL19-58-000, which, aside from the cover letter and Attachments A and B, is identical to the transmittal filed in Docket No. ER19-1486-000.

4. PJM contended that: (1) its currently effective ORDCs fail to address uncertainties around load, wind, and solar forecasts, and unanticipated supply resource outages, which require PJM operators to frequently bias the load forecasts used to schedule supply resources and make out-of-market generator commitments not reflected in market prices to preserve reliability; (2) reserve market clearing prices do not reflect the operational value of flexibility; (3) a Reserve Penalty Factor of \$850/MWh is below the legitimate opportunity cost some resources could face in shortage or near-shortage conditions, as a result of the \$2,000/MWh energy offer price cap; (4) its Synchronized Reserve product definition has led to under-compensation and poor performance because it is subdivided into Tier 1 and Tier 2 reserve products with disparate rules for commitment, compensation, and non-performance; and (5) its reserve products are misaligned between the day-ahead and real-time markets, leading to inadequate procurement of forward reserves and inefficient commitment and pricing outcomes.⁶

5. PJM proposed a replacement rate design that would: (1) establish Reserve Penalty Factors of \$2,000/MWh to align with the maximum price-setting energy offer cap of \$2,000/MWh; (2) revise the shape of the ORDCs to be based on a probabilistic calculation of the risk of a reserve shortage due to operational uncertainties; (3) consolidate the Tier 1 and Tier 2 reserve products into one product with uniform commitment, compensation, and non-performance penalty structures; and (4) align reserve procurement in the day-ahead and real-time markets by establishing two 10-minute reserve requirements (Synchronized Reserve Requirement and Primary Reserve Requirement) and one 30-minute reserve requirement (30-minute Reserve Requirement) in each market.⁷ PJM states that, based on simulations, it estimates the annual increase in energy and reserve market billing from its proposal to be approximately \$556 million.⁸

6. In the May 2020 Order, the Commission granted PJM's complaint and found that PJM's existing reserve market design is no longer just and reasonable. The Commission largely adopted PJM's proposed revisions as the just and reasonable replacement rate, subject to certain modifications in a compliance filing.⁹ The Commission also found that the adoption of the proposed revisions rendered the backward-looking E&AS Offset aspect of PJM's Reliability Pricing Model (RPM) capacity market unjust and

⁶ May 2020 Order, 171 FERC ¶ 61,153 at P 8; November 2020 Rehearing Order, 173 FERC ¶ 61,123 at P 4.

⁷ May 2020 Order, 171 FERC ¶ 61,153 at P 9; November 2020 Rehearing Order, 173 FERC ¶ 61,123 at P 5.

⁸ PJM Transmittal at 114.

⁹ May 2020 Order, 171 FERC ¶ 61,153 at PP 2, 22, 24, 74.

unreasonable.¹⁰ The Commission established a forward-looking E&AS Offset as the just and reasonable replacement rate and directed PJM to submit a compliance filing within 45 days of the date of the order.¹¹

7. In the May 2020 Order, the Commission found the bifurcation of Tier 1 and Tier 2 Synchronized Reserve products, misalignment of the day-ahead and real-time reserve markets, and various provisions related to resources eligibility for reserves, resources' reserve capability, and offer rules unjust and unreasonable. Specifically, the Commission found that PJM demonstrated that its current reserve product definitions and procurement across the day-ahead and real-time markets are inefficient, provide perverse incentives for resource performance, and inhibit efficient procurement of the types of reserves needed to address various operational uncertainties.¹² The Commission found that “the Tier 1/Tier 2 reserve product distinction among Synchronized Reserves, and particularly the lack of performance obligations and non-performance penalties for resources providing Tier 1 reserves, has failed to properly incentivize performance from Tier 1 reserves when they are called upon to convert reserves into energy.”¹³ The Commission explained that “counting resources toward satisfying the critically important Synchronized Reserve Requirement when those resources have no explicit obligation to respond to a Synchronized Event and face no consequences for failing to respond unnecessarily increases operational uncertainty and is inconsistent with a general market design that seeks to align incentives for resources with the needs of the PJM system.”¹⁴ Further, the Commission agreed that PJM’s “procurement of only 30-minute Reserves in the day-ahead market and only 10-minute reserves in the real-time market hinders true co-optimization of energy and reserves in the resource commitment timeframe.”¹⁵

8. In finding PJM’s existing reserve market design unjust and unreasonable, the Commission also determined, among other things, that PJM’s existing ORDCs do not reflect the actual quantity of reserves that PJM operators require to operate the system

¹⁰ *Id.* PP 2, 308.

¹¹ *Id.* PP 2, 308, 310.

¹² *Id.* PP 74, 84-89, 95.

¹³ *Id.* P 84.

¹⁴ *Id.* P 85.

¹⁵ *Id.* P 84.

reliably, and thus the reserve prices that emerge from the market do not properly reflect the marginal cost of procuring necessary reserves.¹⁶

9. In determining the replacement rate, as relevant to the instant remand order, the Commission: (1) adopted PJM's proposed Reserve Penalty Factors of \$2,000/MWh for all reserve products;¹⁷ (2) adopted PJM's proposal to establish a downward-sloping portion of its ORDCs to the right of the applicable minimum reserve requirement, using empirical probability formulas, to value reserves in excess of the minimum reserve requirements;¹⁸ (3) adopted PJM's proposal to consolidate Tier 1 and Tier 2 Synchronized Reserve products;¹⁹ (4) adopted PJM's proposal to align its day-ahead and real-time reserve markets;²⁰ and (5) adopted various changes related to resources' eligibility for reserves, determining resources' reserve capability, and offer rules.²¹

10. In light of the replacement rate adopted in the May 2020 Order, the Commission found the backward-looking E&AS Offset unjust and unreasonable. Specifically, the Commission found that the changes to the shape of the ORDCs and the increase to the Reserve Penalty Factors that anchor those ORDCs significantly alter expectations about future energy and ancillary services revenues, and thus the historical approach of the backward-looking E&AS Offset would not reflect future prices.²² The Commission determined that the magnitude of the expected impact these changes will have on reserve procurement and energy and ancillary services revenues must be recognized in the E&AS Offset.²³

¹⁶ *Id.* P 81 & nn.149-150 (citing PJM Transmittal at 34-35 and attach. E, Pilog Aff. ¶ 27).

¹⁷ *Id.* PP 8, 153.

¹⁸ *Id.* PP 219-225.

¹⁹ *Id.* PP 115-121.

²⁰ *Id.* PP 254-256.

²¹ *Id.* PP 271-278.

²² *Id.* PP 310-315.

²³ *Id.* PP 310-314. The Commission stated that the increase in the Reserve Penalty Factors, removal of the cap on the additivity of Reserve Penalty Factors, and addition of a new reserve product with its own Reserve Penalty Factor increase the potential for very high prices during extreme shortage conditions. Therefore, the Commission found that the energy and ancillary services revenues received in the past would not be

11. The November 2020 Rehearing Order reached the same results. In the November 2020 Compliance Order, the Commission accepted PJM's Tariff and Operating Agreement revisions regarding the reserve market reforms, effective May 1, 2022, and the revisions to incorporate a forward-looking E&AS Offset, effective November 12, 2020.²⁴

II. Voluntary Remand

12. On August 13, 2021, prior to briefs being filed with the D.C. Circuit, the Commission submitted an unopposed motion for voluntary remand of the agency record in the consolidated appeals of the Commission orders to permit the Commission to further consider, and to issue a further order on, the matters set for judicial review.²⁵

13. On August 23, 2021, the D.C. Circuit issued an order granting the Commission's unopposed motion for voluntary remand of the record of these proceedings for further proceedings consistent with the Commission's motion.²⁶

representative of the revenues a generation developer would expect to receive in the future, and thus a backward-looking E&AS Offset is no longer just and reasonable. *Id.* P 315.

²⁴ November 2020 Compliance Order, 173 FERC ¶ 61,134 at P 3.

²⁵ *Am. Mun. Power, Inc. v. FERC*, Motion for Voluntary Remand, No. 20-1372 (filed D.C. Cir. Aug. 13, 2021) (Remand Motion). In the Remand Motion, the Commission stated it contacted all parties to the proceeding and that petitioner IMM consents to the motion; all other petitioners, as well as intervenor-respondent P3 do not oppose the motion; intervenor-respondent Exelon Corporation takes no position on the motion, and intervenor-respondent PJM takes no position on the motion at that time. Remand Motion at 1-2.

²⁶ *Am. Mun. Power, Inc. v. FERC*, No. 20-1372 (D.C. Cir. Aug. 23, 2021) (order granting unopposed motion for voluntary remand). *See also* 16 U.S.C. § 825l(a) (providing that the Commission retains authority to act while it retains the record); *see also id.* § 825l(b) (providing that the court obtains exclusive jurisdiction upon the Commission's filing of the record with the reviewing court). The Commission previously has been granted voluntary remand in a number of cases and issued orders on the remanded record without additional briefing. *See, e.g., Midwest Indep. Transmission Sys. Operator, Inc.*, 162 FERC ¶ 61,173 (2018); *ISO New England Inc.*, 155 FERC ¶ 61,023 (2016); *Pub. Utils. With Existing Contracts in the Calif. Indep. Sys. Operator Corp. Region*, 125 FERC ¶ 61,228 (2008).

14. On October 9, 2021, the Public Interest and Customer Organizations (PICOs)²⁷ filed a motion for expedited order on remand. PICOs request that the Commission issue an order on remand that: (1) resolves in its entirety the proceeding in Docket No. ER19-105-000 pertaining to PJM's quadrennial review of and associated proposed Tariff revisions to the Variable Resource Requirement (VRR) Curve used in PJM capacity auctions pursuant to *Delaware Division of Public Advocate*;²⁸ and (2) removes the 10% adder from the going-forward calculation of the E&AS Offset in the Net Cost of New Entry (Net CONE) calculation.²⁹ PICOs further request that the Commission issue the order on remand in time for the BRA for the 2023/2024 delivery year.³⁰ PICOs assert that because the Commission's determination on the 10% adder for the E&AS Offset may also affect the unit-specific market seller offer cap determinations for combustion turbines, which the Independent Market Monitor must make by October 31, 2021, an order by that date would reduce uncertainty regarding the upcoming auction and best facilitate smooth implementation of the next BRA.³¹ PICOs note that several Commissioners expressed skepticism of the 10% adder on grounds similar to those of the D.C. Circuit in *Delaware Division of Public Advocate*.³² PICOs state that they seek only prospective relief and are not asking that the Commission direct PJM to rerun or re-clear past auctions.³³ PICOs contend that more fundamental changes are needed to PJM's

²⁷ PICOs consist of the Office of the People's Counsel for: the District of Columbia; Maryland Office of the People's Counsel; Delaware Division of the Public Advocate; the Pennsylvania Office of Consumer Advocate; Sierra Club; Natural Resources Defense Council; American Municipal Power, Inc. (AMP); and the PJM Industrial Customer Coalition.

²⁸ *Del. Div. of the Pub. Advoc. v. FERC*, 3 F.4th 461 (D.C. Cir. 2021) (*Delaware Division of the Public Advocate*). In *Delaware Division of the Public Advocate*, the D.C. Circuit remanded the Commission's application of a 10% adder to estimates of hypothetical combustion turbine resources' energy offers in PJM in orders in Docket No. ER19-105.

²⁹ PICOs Motion at 1-2. PICOs submitted their motion in Docket No. ER19-105-006 in addition to the dockets of the instant proceeding.

³⁰ *Id.* at 2. PICOs note that PJM requested a waiver to delay the December 1, 2021 BRA by 55 days. *Id.* at 2 n.2. The Commission granted PJM's waiver request on October 25, 2021. *PJM Interconnection, L.L.C.*, 177 FERC ¶ 61,050 (2021).

³¹ PICOs Motion at 2, 11.

³² *Id.* at 7-8.

³³ *Id.* at 8-9.

VRR Curve that may be better addressed in response to PJM's forthcoming filing from PJM's fifth quadrennial review.³⁴ PICO's also note that other issues concerning PJM's ORDC presented by the voluntary remand may be addressed in a separate order.

15. On October 22, 2021, PJM Power Providers Group (P3) submitted comments requesting that the Commission deny PICO's motion and reaffirm the use of the 10% adder for the VRR Curve. P3 argues that the Commission should respond to the D.C. Circuit's remand in *Delaware Division of Public Advocate* by considering the publicly-available evidence and cite that as support for why continuing to include the 10% adder is the product of reasoned decision-making.³⁵

16. On November 10, 2021, PICO's submitted a motion for leave to answer and answer arguing that the data P3 cites do not support P3's contentions and that P3 misapprehends the evidentiary standard.³⁶ PICO's also assert that adjusting the Net CONE value to not include the 10% adder should be implemented in the January 2022 BRA.

17. On November 12, 2021, PJM submitted a motion to answer and answer in response to PICO's answer limited to the timelines and feasibility of implementation. PJM asserts that it would need at least 45 days to update auction parameters and recalculate the market seller offer cap for combustion turbine resources in advance of an RPM auction should the Commission order the removal of the 10% adder on remand. PJM requests that in the event the Commission directs the removal of the 10% adder for the BRA for the 2023/2024 delivery year, it should issue an order no later than December 10, 2021.

18. On November 12, 2021, PJM submitted a motion requesting an extension of the effective date for the Tariff and Operating Agreement revisions accepted in this proceeding effective May 1, 2022 to October 1, 2022. PJM states that it requests the extension because of vendor and testing issues and the need to avoid implementation

³⁴ *Id.* at 9.

³⁵ P3 October 22, 2021 Comments at 2. P3 submitted its motion in Docket No. ER19-105-006 in addition to the dockets of the instant proceeding. To the extent the comments address Docket No. ER19-105-006, they are outside the scope of the instant proceeding.

³⁶ PICO's Answer at 5-7.

during the summer months.³⁷ PJM notes that the timeline and dates may change subject to the outcome of further Commission action on remand.³⁸

19. On December 2, 2021, P3 submitted comments stating that, while frustrated that PJM will need more time and money to implement the reforms, “P3 reluctantly understands the folly of implementing market reforms that PJM’s internal systems are incapable of managing.”³⁹ P3 also requests that the Commission allow the revised reserve pricing rules to remain in place, noting that changes to the reserve pricing rules would impact the E&AS calculations used to set market offer caps and inject additional uncertainty into the markets.⁴⁰

20. On December 7, 2021, Joint Movants⁴¹ submitted a supplemental and renewed protest, a motion for an order on remand that grants rehearing, and a motion to lodge new evidence.⁴² Joint Movants contend that it is in the public interest to reopen the record and consider newly available evidence from Winter Storm Uri, that occurred in February 2021, after the May 2020 Order and November Rehearing Order.⁴³ Joint Movants assert that PJM’s proposed changes to its ORDC were based in part on the

³⁷ PJM Motion at 3-4.

³⁸ *Id.* at 4. PJM proposes to leave the applicable tariff records in the eTariff system with the existing effective date of “12/31/9998” and if a revised target implementation date is warranted, PJM commits to, in consultation with its stakeholders, submit an informational filing describing the revised target implementation date, and ultimately memorialize the final implementation date in the eTariff system when there is greater certainty regarding the outcome of the proceeding. *Id.* at 4-5.

³⁹ P3 December 2, 2021 Comments at 3.

⁴⁰ *Id.* at 3-7.

⁴¹ Joint Movants consist of: AMP; Delaware Division of the Public Advocate; District of Columbia Office of the People’s Counsel; Maryland Office of People’s Counsel; Old Dominion Electric Cooperative; Pennsylvania Office of Consumer Advocate; PJM Industrial Customer Coalition; Public Power Association of New Jersey; and Southern Maryland Electric Cooperative, Inc.

⁴² On December 14, 2021, the Commission issued a notice shortening the answer period to Joint Movants’ motion to December 20, 2021.

⁴³ Joint Movants Motion at 12.

ORDC utilized by the Electric Reliability Council of Texas (ERCOT).⁴⁴ Joint Movants state that during Winter Storm Uri, pursuant to the ORDC, real-time prices in ERCOT reached at or near the high system-wide offer cap for most of the four-day event.⁴⁵ Joint Movants argue that the Commission should consider how the events of Winter Storm Uri in ERCOT impact and call into question PJM's proposed reserve market changes.⁴⁶ Joint Movants also argue that there has been no demonstration that PJM's reserve market provisions were unjust and unreasonable.⁴⁷

21. On December 20, 2021, PJM submitted an answer to Joint Movants' December 7, 2021 motions. PJM argues that there is no legal basis for reopening the record in this proceeding because the events in ERCOT, which is a non-jurisdictional, single-state entity with a market design, resource mix, and underlying regulatory structure distinct from PJM's, do not in any way constitute "a change in core circumstances that go to the very heart of the case."⁴⁸ PJM argues that there are no facts in dispute concerning Winter Storm Uri and that the Commission completed an analysis of that event.⁴⁹ PJM argues that this case involves the Commission's analysis under the FPA of whether PJM's existing reserve market is unjust and unreasonable, and the Commission's statutory duty to set the just and reasonable replacement rate.⁵⁰ PJM contends that the extensive record in this proceeding provides the Commission with more than enough evidence to adjudicate the central questions at issue. PJM argues that if the attenuated legal and factual nexus between Winter Storm Uri and this proceeding can be used as a basis for reopening the record, then any party may invoke Winter Storm Uri or other

⁴⁴ *Id.* at 13. Joint Movants note that PJM's proposal to enable the summation of Reserve Penalty Factors to rise up to \$12,000/MWh is higher than the \$9,000/MWh high system-wide offer cap value used in ERCOT's energy-only market. *Id.* (citing May 2020 Order (Glick, Cmm'r, *dissenting* at P 25)).

⁴⁵ *Id.* at 14.

⁴⁶ *Id.* at 15.

⁴⁷ *Id.* at 20-23.

⁴⁸ PJM December 20, 2021 Answer at 3-4.

⁴⁹ *Id.* at 3.

⁵⁰ *Id.* at 4.

reliability events as grounds for reopening any proceeding subject to the Commission's general rate and transmission jurisdiction under FPA section 201.⁵¹

22. On December 20, 2021, the Electric Power Supply Association (EPSA) and P3 submitted an answer to Joint Movants' December 7, 2021 motions. P3 and EPSA argue that if the Commission does not intend to reaffirm the orders, the Commission should establish additional procedures to permit all interested parties to supplement the record and fully brief any issues of concern.⁵² P3 and EPSA state that full briefing is important because the Joint Movants presented a skewed and incomplete view of actions by the Public Utility Commission of Texas (PUCT) in the wake of Winter Storm Uri, including misrepresenting the scope of issues that the PUCT identified as needing correction.⁵³ P3 and EPSA contend that the broad range of reforms required in ERCOT and any lessons from Winter Storm Uri are not necessarily helpful for purposes of evaluating the instant proceeding.⁵⁴

III. Procedural Matters

23. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2021), prohibits an answer to an answer unless otherwise ordered by the decisional authority. We are not persuaded to accept PICOs' November 10, 2021 and PJM's November 12, 2021 answers to answers related to PICOs' October 9, 2021 motion for expedited order on remand and will, therefore, reject them.⁵⁵ We also deny Joint Movants' motion to lodge and reopen the record. Rule 716 provides that a proceeding may be reopened for good cause only when reopening is warranted by a change in condition of fact or law or by the public interest.⁵⁶ A decision to reopen the record is a discretionary one for the Commission, and Commission policy discourages reopening records, except in extraordinary circumstances, in order to prevent

⁵¹ 16 U.S.C. § 824.

⁵² *Id.* at 3.

⁵³ *Id.* at 3-4

⁵⁴ *Id.* at 5.

⁵⁵ We note that PICOs' motion, P3's comments, and PICOs' and PJM's answers were also filed in Docket No. ER19-105. While we reject the answers with respect to the instant proceeding, this order does not address the filings with respect to Docket No. ER19-105.

⁵⁶ 18 C.F.R. § 385.716(c).

administrative chaos and provide finality to proceedings.⁵⁷ Further, a demonstration of extraordinary circumstances requires a showing of a material change that goes to the very heart of the case.⁵⁸ We find that Joint Movants have failed to show compelling changes of law or fact or that it is in the public interest that would necessitate reopening the record to lodge the materials that they seek to lodge. Joint Movants have not demonstrated that Winter Storm Uri and the actions in ERCOT are extraordinary circumstances, as it relates to this proceeding, that warrant reopening the record. Moreover, the Commission is aware of Winter Storm Uri, so there is no need to reopen the record for this purpose.

IV. Commission Determination

24. Upon further consideration of the record in this proceeding, we affirm the Commission's findings regarding the unjustness and unreasonableness of PJM's separate treatment of Tier 1 and Tier 2 Synchronized Reserve products;⁵⁹ its current misalignment of the day-ahead and real-time reserve markets;⁶⁰ and various provisions related to resources' eligibility for reserves, determining resources' reserve capability, and offer rules.⁶¹ We rely on the specific findings the Commission made on these issues in the May 2020 Order and the November 2020 Rehearing Order.

25. However, we revise the Commission's findings regarding several aspects of the reserve market provisions in the PJM Tariff and Operating Agreement. As further explained below, we find that PJM failed to meet its burden under section 206 of the FPA to show that two aspects of its currently effective reserve market are unjust and unreasonable and thus deny PJM's complaint regarding those two aspects. Specifically, we find that PJM failed to demonstrate that the currently effective Reserve Penalty

⁵⁷ See, e.g., *Ass'n of Bus. Advocating Tariff Equity Coal. of MISO Transmission Customers v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569-A, 171 FERC ¶ 61,154, at P 29, *order on reh'g*, Opinion No. 569-B, 173 FERC ¶ 61,159 (2020); *Gas Producing Enters., Inc.*, 28 FERC ¶ 61,008 (1984) (citing *Consolidated Gas Supply Corp.*, 24 FERC ¶ 61,283 (1983), *Transcontinental Gas Pipe Line Corp.*, 23 FERC ¶ 61,152 (1983), and *ICC v. Jersey City*, 322 U.S. 503 (1944)).

⁵⁸ See, e.g., *CMS Midland, Inc.*, 56 FERC ¶ 61,177, at 61,624 (1991).

⁵⁹ May 2020 Order, 171 FERC ¶ 61,153 at PP 84-85, 88-90, 115-121; November 2020 Rehearing Order, 173 FERC ¶ 61,123 at PP 25-28.

⁶⁰ May 2020 Order, 171 FERC ¶ 61,153 at PP 86, 254-256.

⁶¹ *Id.* PP 271-278.

Factors and two-step ORDCs are unjust and unreasonable.⁶² Further, because the May 2020 Order based its finding that the backward-looking E&AS Offset is unjust and unreasonable largely on the Reserve Penalty Factors and ORDCs being unjust and unreasonable, we reverse that finding here. As discussed below, we are not determining that a forward-looking E&AS Offset is unjust and unreasonable. Rather, due to the lack of a record that the backward-looking offset is unjust and unreasonable, we are merely restoring the *status quo ante* with respect to the E&AS Offset given the findings that we now reverse on remand.

26. Given our findings, we direct PJM to submit a compliance filing to revise its Tariff and Operating Agreement records previously accepted in this proceeding (to become effective May 1, 2022) to reflect the currently effective Reserve Penalty Factors and the ORDCs, and restore its tariff provisions related to its prior backward-looking E&AS Offset, effective November 12, 2020, as discussed in the body of this order. Given that PJM will have to revise various capacity auction parameters that depend on the E&AS Offset directed in this order, including the VRR Curve and market seller offer caps, we recognize that PJM will need to delay the BRA for the 2023/2024 delivery year that is currently planned for January 25, 2022 so that PJM may implement the rate directed in this order prior to that BRA. We direct PJM to propose a new schedule, including all relevant dates, for the upcoming BRA and subsequent BRAs in a compliance filing within 30 days of the date of this order.

27. We deny PJM's November 12, 2021 motion seeking an extension of the May 1, 2022 effective date for certain Tariff and Operating Agreement revisions accepted in the November 2020 Compliance Order. As PJM notes in its motion, the timeline and dates discussed in PJM's motion may change based on this order on remand. With the changes adopted here, it is unclear whether PJM still requires an extension of time for the effective date of the reserve market revisions not revised by this order (e.g., the revisions to the Tier 1 and Tier 2 Synchronized Reserve products, alignment of the day-ahead and real-time reserve markets, and various provisions related to resources' eligibility for reserves, determining resources' reserve capability, and offer rules). PJM should address any necessary revisions to the effective dates for these provisions in its compliance filing.

A. ORDC - Reserve Penalty Factors

28. In the May 2020 Order, the Commission relied on broad statements regarding the amount of operational uncertainty PJM faces and the performance of PJM's reserve

⁶² While we need not address PJM's proposed replacement rate with respect to Reserve Penalty Factors and the ORDCs, we note that PJM states that, based on simulations, it estimates the annual increase in energy and reserve market billing from its proposal to be approximately \$556 million. PJM Transmittal at 114.

markets to find several discrete aspects of PJM's markets unjust and unreasonable, including its currently effective Reserve Penalty Factors of \$850/MWh for the Synchronized Reserve Requirement and Primary Reserve Requirement, and \$300/MWh for the Extended Synchronized Reserve Requirement and Extended Primary Reserve Requirement. The May 2020 Order's sole finding specific to the justness and reasonableness of PJM's currently effective Reserve Penalty Factors was that "the recent increase in the energy market offer cap . . . increases the probability that resources will face opportunity costs of providing reserves in excess of the existing Reserve Penalty Factors."⁶³ Upon reconsideration, we find there is insufficient evidence to find PJM's Reserve Penalty Factors unjust and unreasonable, for the reasons discussed below. Accordingly, we deny this aspect of PJM's complaint, and direct PJM to submit a compliance filing to revise its Tariff and Operating Agreement records previously accepted in this proceeding (to become effective May 1, 2022) to maintain the currently effective Reserve Penalty Factors.

29. PJM's primary argument is that its \$850/MWh Reserve Penalty Factors are no longer just and reasonable because Order No. 831⁶⁴ directed PJM to increase its cost-based incremental energy market offer cap to \$2,000/MWh, and thus "\$2,000/MWh is the lowest reasonable level at which the penalty factor can be set and still be consistent with the actions that system operators are required to take to maintain reserves."⁶⁵ We disagree. The costs of a resource providing reserves are mainly based on that resource's lost opportunity costs: the difference between the prevailing locational marginal price (LMP) and its energy offer, i.e., its foregone net energy market revenues. Thus, even when LMPs in the PJM region exceed \$1,000/MWh, there is usually reserve capacity available at a cost much less than \$1,000/MWh.

30. PJM relies on a hypothetical example where a resource's opportunity cost could exceed \$850/MWh and cause a "false positive" economic shortage.⁶⁶ While the Commission may rely on economic theory to justify a filing,⁶⁷ it may do so only when

⁶³ May 2020 Order, 171 FERC ¶ 61,153 at P 82.

⁶⁴ *Offer Caps in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 831, 157 FERC ¶ 61,115 (2016), *order on reh'g & clarification*, Order No. 831-A, 161 FERC ¶ 61,156 (2017), *amended by* 165 FERC ¶ 61,136 (2018).

⁶⁵ PJM Transmittal at 33.

⁶⁶ *See id.* at 29-30.

⁶⁷ *S.C. Pub. Serv. Auth. v. FERC*, 762 F.3d 41, 65 (D.C. Cir. 2014) ("[a]gencies do not need to conduct experiments in order to rely on the prediction that an unsupported

that theory is based on “reasonable economic propositions.”⁶⁸ Here PJM does not provide support for concluding that its hypothetical situation has or is likely to occur with sufficient frequency that it renders PJM’s currently effective rules unjust and unreasonable. As Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor of PJM (IMM) and the Maryland Public Service Commission (Maryland Commission) explain, actual observed short-run marginal costs in PJM have rarely exceeded \$850/MWh,⁶⁹ and PJM itself previously declined to suggest changes to the Reserve Penalty Factors after finding that “so few busses experienced >\$1,000 prices in only one five-minute interval” during two reserve shortage events that occurred in 2018.⁷⁰

31. In addition to its claim of changed circumstances caused by the adoption of a \$2,000/MWh cost-based incremental energy market offer cap, PJM cites four actions operators might take to maintain reserves that have costs greater than \$850/MWh: (1) deploying 30-minute emergency and pre-emergency demand response at a cost up to \$1,849/MWh; (2) deploying one-hour emergency and pre-emergency demand response at a cost up to \$1,425/MWh; (3) deploying two-hour emergency and pre-emergency demand response at a cost up to \$1,100/MWh; and (4) purchasing emergency energy from neighboring regions at a cost that is capped at \$2,700/MWh for price-setting purposes.⁷¹ None of these actions show that PJM’s existing tariff is unjust and unreasonable because, as PJM explains in its filing, it sets the prices of emergency and pre-emergency demand response and emergency energy purchases at amounts that exceed the Reserve Penalty Factors by design.⁷² Specifically, PJM explains that the currently effective market rules cap energy market offers submitted by 30-minute emergency and pre-emergency demand response at “\$1,000/megawatt-hour, plus the

stone will fall”) (quoting *Associated Gas Distribs. v. FERC*, 824 F.2d 981, 1008 (D.C. Cir. 1987)).

⁶⁸ *Id.*

⁶⁹ IMM Protest at 32-33.

⁷⁰ Maryland Commission Protest at 7 (citing PJM, *PJM Market Participants’ Response to Prices Exceeding \$1,000/MWh* (2019), <https://www.pjm.com/-/media/committees-groups/committees/mc/20190422-webinar/20190422-item-07b-ferc-required-reserve-shortage-report.ashx>).

⁷¹ PJM Transmittal at 48-49. Neither the May 2020 Order nor the November 2020 Rehearing Order relied on these points in finding PJM’s then-existing tariff unjust and unreasonable.

⁷² *Id.* at 93, 103.

applicable Reserve Penalty Factor for the Primary Reserve Requirement [\$850/MWh], minus \$1.00,” cap offers submitted by one-hour emergency and pre-emergency demand response at “\$1,000/MWh plus half of that Reserve Penalty Factor,” cap offers submitted by two-hour emergency and pre-emergency demand response at \$1,100/MWh, and cap offers for emergency energy at “the energy offer cap plus the sum of the applicable Reserve Penalty Factors for the Synchronized Reserve Requirement and Primary Reserve Requirement.”⁷³

32. Therefore, under the existing reserve market design, the prices for emergency actions exceed the Reserve Penalty Factors, and the fact that PJM may have to call on such resources does not render the Reserve Penalty Factors unjust and unreasonable. Moreover, PJM failed to provide a factual record demonstrating that PJM operators routinely incur costs greater than \$850/MWh by dispatching emergency resources to maintain reserves.

33. In its answer, PJM attempts to demonstrate that its \$850/MWh Reserve Penalty Factors are unjust and unreasonable by citing “a review of all the LMPs and energy and Synchronized Reserve offers for [the] period from January 1, 2014, through April 30, 2019,” which found that “lost opportunity costs, which constitute the bulk of offers used in forming the Synchronized Reserve supply stack, exceeded \$1,000/MWh on 3.6% of the days (70 of 1,947 days).”⁷⁴

34. We disagree that these data show that Reserve Penalty Factors are unjust and unreasonable. First, PJM cites the percentage of days in which offers with lost opportunity costs over \$1,000/MWh were used in forming the Synchronized Reserve supply stack. However, these data say nothing about how often those resources with lost opportunity cost offers that exceeded \$850/MWh would have been selected to provide Synchronized Reserve, even if the Reserve Penalty Factor were set at \$2,000/MWh (i.e., how often PJM actually went economically short of reserves at a \$850/MWh Reserve Penalty Factor when it would have been able to procure sufficient reserves if the Reserve Penalty Factor were \$2,000/MWh).

35. Second, the data showing that the Synchronized Reserve supply stack contained offers that exceeded \$1,000/MWh on 3.6% of the days, overstates the degree of the problem because it fails to take into account the number of pricing intervals in which the offers exceeded \$1,000. Reserves are settled on an interval basis rather than a daily basis and a day has 288 five-minute pricing intervals. Citing the percentage of days with at least (and as few as) one pricing interval that met the criteria may overstate the degree of

⁷³ *Id.*

⁷⁴ PJM Answer at 51.

the problem. Therefore, the additional data PJM provides in its answer are not sufficient to demonstrate that its \$850/MWh Reserve Penalty Factors are unjust and unreasonable.

B. ORDC - Reserves Beyond the Minimum Reserve Requirement

36. In the May 2020 Order, the Commission relied on broad statements regarding the amount of operational uncertainty PJM faces, PJM operators' practice of load forecast biasing, and the prevalence of reserve market uplift to find several discrete aspects of PJM's markets unjust and unreasonable, including the shape of its ORDCs beyond the minimum reserve requirements.⁷⁵ Upon reconsideration, we find that PJM failed to demonstrate that the operator bias it cited is caused by its currently effective ORDCs, and thus that the biasing data PJM provides does not demonstrate that its ORDCs are unjust and unreasonable. Accordingly, we deny this aspect of PJM's complaint, and we direct PJM to submit a compliance filing to revise its Tariff and Operating Agreement records previously accepted in this proceeding (to become effective May 1, 2022) to maintain the currently effective ORDCs for Synchronized Reserve and Primary Reserve.⁷⁶

37. PJM's currently effective ORDCs consist of \$850/MWh Reserve Penalty Factors associated with the Synchronized Reserve Requirement and Primary Reserve Requirement, and \$300/MWh Reserve Penalty Factors associated with the Extended Synchronized Reserve Requirement and Extended Primary Reserve Requirement. In other words, PJM's currently effective ORDCs consist exclusively of discrete steps associated with discrete reserve requirements and do not procure any reserves beyond those minimum requirements.

38. PJM's principal argument is that its ORDCs are unjust and unreasonable because its operators routinely bias the forecasts input to its intermediate-term security-constrained economic dispatch (IT SCED) software, and without this bias PJM would be unable to maintain reliability and, for example, would have been short reserves in 29.1% of all real-time pricing intervals in 2018.⁷⁷ However, we agree with the IMM that PJM's analysis of operator bias unreasonably focuses solely on positive forecast bias and does not systematically analyze operator bias overall.⁷⁸ In fact, PJM operators bias the IT SCED forecast upwards approximately one third of the time, bias it downwards

⁷⁵ See May 2020 Order, 171 FERC ¶ 61,153 at PP 77-81.

⁷⁶ Given our findings in this order, we also eliminate the informational posting requirements tied to the changes to the ORDCs. See May 2020 Order, 171 FERC ¶ 61,153 at PP 240-241.

⁷⁷ See PJM Transmittal at 33-37, 54-55, Pulong Aff. ¶ 16.

⁷⁸ IMM First Answer at 6-7.

approximately half of the time, and apply no bias for the balance of time.⁷⁹ This biasing pattern does not indicate that PJM operators systematically “put their thumb on the scale” to compensate for a deficiency in PJM’s ORDCs, but rather indicates that IT SCED bias is part of a continuum that starts with longer-term forecasts, transitions to near-term forecasts, and then ultimately relies on operators’ independent judgment to reliably operate the PJM system.⁸⁰ A pattern of operators reflecting their expert judgment in imperfect computer-generated forecasts is not sufficient to demonstrate that PJM’s ORDCs are unjust and unreasonable.

39. Furthermore, PJM’s claim that it would have been short reserves in 29.1% of all real-time pricing intervals in 2018 if not for IT SCED bias incorrectly assumes a one-for-one causal relationship between the positive MW bias applied to IT SCED and the amount of additional reserves committed.⁸¹ As the IMM explains, IT SCED is an advisory tool that PJM operators use to conduct a form of sensitivity analysis, and PJM operators do not necessarily follow IT SCED recommendations.⁸² PJM provided the same characterization of IT SCED in its comments in the uplift cost allocation and transparency rulemaking in Docket No. RM17-2-000, where it explained:

... in PJM there are no “automated” commitments either real-time or day-ahead. Instead, several applications, including PJM’s intermediate-term security constrained economic dispatch (IT SCED) software, provide commitment suggestions to PJM operators while considering maintaining power balance and controlling transmission constraints. PJM operators perform additional analyses once these suggestions are received, including running transmission studies to ensure committing the resource will not result in overloads prior to finally committing a unit. Both these analyses and the operators’ decisions all occur after the clearing of the Day-ahead Energy Market, which occurs by 1:30 PM on the day prior to the Operating Day.⁸³

⁷⁹ *Id.* at 7; IMM Protest at 46, tbl. 2.

⁸⁰ IMM First Answer at 6-7.

⁸¹ PJM Transmittal at 54-55, Pilog Aff. ¶ 16.

⁸² IMM First Answer at 10; IMM Second Answer at 6-7; IMM Rehearing Request at 13-14.

⁸³ PJM, Comments, Docket No. RM17-2-000, at 13 (filed Apr. 10, 2017).

We find that PJM has failed to demonstrate the actual impacts that IT SCED bias has on PJM's market or its reserve levels. As a result, the evidence PJM provides regarding IT SCED bias fails to demonstrate that the currently effective ORDCs are unjust and unreasonable. Additionally, we note that PJM's currently effective ORDCs have not caused PJM to fall short of the North American Electric Reliability Corporation (NERC)-specified minimum reserve requirement. As the IMM explains, PJM rarely enters reserve shortage conditions and had zero five-minute market intervals of Primary Reserve shortage in 2018.⁸⁴

40. To bolster its claims about the ill effects of operator actions, PJM points to the January 30-31, 2019 cold snap event, wherein Synchronized Reserve prices were \$0/MWh for 29 hours of the 48-hour period, and less than \$10/MWh for 41 hours of the 48-hour period.⁸⁵ PJM claims that “[o]ut-of-market actions by PJM dispatchers to ensure adequate reserves during these stressed conditions led to a spike in uplift.”⁸⁶ However, the IMM's comprehensive analysis of the cold snap⁸⁷ demonstrates that “PJM supply was readily available, . . . [g]enerator outage rates were low, natural gas prices remained below the cost of fuel oil, and reserves were plentiful, as a number of generators scheduled their capacity beyond PJM's dispatch instructions . . . to prepare for the winter peak that morning.”⁸⁸ Further, the IMM explains that uplift increased due to above-average natural gas prices, but remained at “unremarkable levels.”⁸⁹ In fact, the total uplift for January 2019, at \$7.9 million, was less than the monthly average uplift amounts for 2018 and 2017, which were \$16.5 million and \$10.6 million, respectively.⁹⁰ Accordingly, we find that the market outcomes observed during the January 2019 cold snap event do not demonstrate that the currently effective ORDCs are unjust and unreasonable.

41. Similar to its arguments regarding the January 2019 event, PJM claims that operator actions and the deficiencies of its reserve markets have caused unreasonably low

⁸⁴ IMM Protest at 44.

⁸⁵ PJM Transmittal at 20-21.

⁸⁶ *Id.* at 21.

⁸⁷ *See* IMM Protest, Attach. A.

⁸⁸ *Id.* at 10-11; IMM Rehearing Request at 14-15. *See also* PJM Load/Customer Coalition Protest at 18-20; PJM Load/Customer Coalition Rehearing Request at 12.

⁸⁹ IMM Protest at 10-11.

⁹⁰ *Id.* at 18.

reserve prices and unreasonably high uplift throughout the year.⁹¹ But as the IMM explains, \$0/MWh reserve prices occur when, in advance of the peak hour of the day, PJM schedules generating units such as coal and combined-cycle natural gas units that have inflexibility in starting up and shutting down yet have a large dispatchable range.⁹² PJM must commit these resources several hours before the peak hour of the day to meet expected energy demand, even if their full dispatchable range will not be in economic merit for energy in the interim. The portion of these resources' dispatchable range that is not in economic merit for energy is available to provide reserves at a cost of \$0/MWh (i.e., their lost opportunity costs for providing these reserves is \$0/MWh) until the peak of the day, and PJM is often able to fulfill its reserve requirements with these resources with \$0/MWh opportunity costs in other hours with lower energy demand.⁹³ In other words, the price for these reserves is low because the cost of providing them is free or close to it. The IMM explains that coal units provided 28.6% of PJM's energy output in 2018 and offered 47.3% of their capacity as dispatchable, and natural gas combined-cycle units provided 30.9% of PJM's energy output in 2018 and offered 49.6% of their capacity as dispatchable.⁹⁴ Given the fact that many of the resources in PJM have inflexibility in starting up and shutting down that necessitates committing them hours ahead of time and have a large dispatchable range that allows them to offer a large amount of reserves, we find that the observed reserve prices are a reflection of supply and demand conditions in the PJM market, and not a demonstration that PJM's reserve markets are unjust and unreasonable.

42. With respect to uplift, the IMM explains that Synchronized Reserve uplift payments largely stem from incorrect settlement calculations and a mismatch between the dispatch interval and the pricing interval,⁹⁵ an issue PJM recently corrected.⁹⁶ The IMM

⁹¹ PJM Answer at 12-13 (explaining that, in 2018, the Synchronized Reserve price was \$0/MWh in 56.8% of hours, the Non-Synchronized Reserve price was \$0/MWh in 97.5% of hours, and roughly 50% of the current reserve market was settled through uplift payments).

⁹² IMM Protest at 13-14; IMM Rehearing Request at 15.

⁹³ See PJM Transmittal at 26 (explaining that PJM's Synchronized Reserve Requirement of approximately 1,600 MW and Primary Reserve Requirement of approximately 2,300 MW are 1.05% and 1.51%, respectively, of PJM's peak demand of approximately 150,000 MW).

⁹⁴ IMM Protest at 14 & n.19.

⁹⁵ IMM Second Answer at 8-9, attach. A; IMM Rehearing Request at 16-17.

⁹⁶ *PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,104 (2021).

also explains that reserve market uplift is caused by PJM's practice of co-optimizing Non-Synchronized Reserve using the IT SCED run rather than the real-time security-constrained economic dispatch (RT SCED) run and simplifying lost-opportunity cost calculations.⁹⁷ We agree with the IMM that reserve market uplift does not stem from any deficiency of PJM's ORDCs. Therefore, we find that the uplift data PJM cites do not demonstrate that its ORDCs are unjust and unreasonable.

43. Furthermore, we find nothing in the Commission's price formation policies that supports finding the currently effective ORDCs unjust and unreasonable. While the Commission recognized in its uplift cost allocation and transparency final rule, Order No. 844, that "operator-initiated commitments . . . can affect energy and ancillary services prices and can result in uplift," it only required that RTOs/ISOs post information about all operator-initiated commitments on their websites.⁹⁸ The Commission did not establish an across-the-board policy that market rules will be deemed unjust and unreasonable if they permit uplift—i.e., if operator actions are not unfailingly reflected in market prices.

44. Finally, PJM cites the Commission's finding in the order addressing PJM's RPM settlement that "a downward sloping [capacity market] demand curve provides a better indication of the incremental value of different capacity levels than the current vertical demand curve" to argue that its current stepped ORDCs are unjust and unreasonable.⁹⁹ While the Commission did find PJM's prior capacity construct unjust and unreasonable, it did so based on myriad factors in addition to the fact that the prior capacity construct effectively created a vertical capacity demand curve; it did not categorically find that vertical demand curves are unjust and unreasonable.¹⁰⁰ For the reasons discussed above,

⁹⁷ IMM Second Answer at 8-9, attach. A; IMM Rehearing Request at 17.

⁹⁸ *Uplift Cost Allocation & Transparency in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 844, 163 FERC ¶ 61,041, at P 99 (2018).

⁹⁹ PJM Transmittal at 37-38 (citing *PJM Interconnection, L.L.C.*, 117 FERC ¶ 61,331, at P 76 (2006)).

¹⁰⁰ Specifically, in the initial order on the RPM, the Commission found

PJM's existing capacity construct to be unjust and unreasonable. PJM has shown that the existing construct will, in the future, fail to achieve the intended goal of ensuring reliable service. It does not enable market participants to see the reliability problems in particular locations, does not provide price signals that would elicit solutions to reliability problems in enough time before the problems occur, and does

we find that the evidence PJM presents in this proceeding is not sufficient to demonstrate that the currently effective ORDCs are unjust and unreasonable, and therefore our prior findings regarding the tradeoffs between vertical and sloped demand curves are not alone sufficient to meet PJM's burden to show that the currently effective ORDCs unjust and unreasonable. Here, PJM's proposal was submitted pursuant to FPA section 206, which requires more than a showing that an alternative rate would be just and reasonable to demonstrate that the existing rate is unjust and unreasonable.¹⁰¹

C. Energy and Ancillary Services Offset

45. The energy, ancillary services, and capacity markets are designed to work together to ensure that PJM can meet its reserve targets in each delivery year and that competitive resources have an opportunity to earn sufficient revenues to cover their costs.¹⁰² An important aspect of PJM's capacity market design is the E&AS Offset, which is an estimate of the net revenues a capacity resource will earn from the energy and ancillary services markets during a given delivery year. Among other things, PJM uses the E&AS Offset for the reference resource to determine its Net CONE, which in turn influences the shape of the VRR Curve, i.e., the capacity market demand curve. Prior to the instant proceeding, PJM utilized a backward-looking E&AS Offset, which predicted revenues during the upcoming delivery year based on LMPs, fuel prices, and other conditions

not allow transmission and demand response to compete on a level playing field with generation to solve reliability problems. These factors, in conjunction with other factors (such as load growth in particular locations, and the lack of price signals sent by the energy markets) render PJM's current construct unreasonable on a long-term basis. While one or more of the elements of PJM's current capacity construct may exist and be just and reasonable in other regional transmission organizations, the Commission finds the combination of these elements, results in an unjust and unreasonable capacity construct within PJM.

PJM Interconnection, L.L.C., 115 FERC ¶ 61,079, at P 29 (2006).

¹⁰¹ *Emera Me. v. FERC*, 854 F.3d 9, 21 (D.C. Cir. 2017) ("The proponent of a rate change under section 206 ... bears 'the burden of proving that the existing rate is unlawful. ...' Therefore, unlike section 205, section 206 mandates a two-step procedure that requires FERC to make an explicit finding that the existing rate is unlawful before setting a new rate.") (internal citations omitted).

¹⁰² PJM Transmittal at 68.

observed during the three calendar years prior to the auction for a given delivery year three years in the future.

46. In its filing, PJM estimated that its proposed change to the ORDCs would result in a marked increase in energy and ancillary services revenues.¹⁰³ In the May 2020 Order, the Commission found that, as a result of this projected increase, PJM's backward-looking E&AS Offset was unjust and unreasonable:

the significant reserve market reforms adopted herein, and in particular the changes to the shape of the ORDCs and the increase to the Reserve Penalty Factors that anchor those ORDCs, have fundamentally changed the design of the PJM reserve market in a way that will impact the amount of reserves procured, the price paid for those reserves, related energy prices, and energy and ancillary services revenues received by resources participating in those markets.¹⁰⁴

Our finding here that PJM failed to demonstrate that its Reserve Penalty Factors and ORDCs are unjust and unreasonable has undermined the fundamental basis for the Commission's determination that the backward-looking offset is unjust and unreasonable. Without these fundamental changes to the reserve market, there is insufficient evidence in the record to find that E&AS revenues will increase to such an extent that the backward-looking offset does not reasonably reflect future E&AS revenues and is therefore unjust and unreasonable. Given this finding, we direct PJM to submit a compliance filing to remove the forward-looking E&AS Offset from its Tariff and return to the prior backward-looking E&AS Offset. To be clear, we are not finding that a forward-looking E&AS offset is unjust and unreasonable or that PJM cannot propose a forward-looking E&AS offset. Instead, we find only that the Commission lacks a basis to impose such an offset under section 206 on the present record.

¹⁰³ See *id.*, Keech Aff. ¶ 46 (“PJM estimates the increase in energy and reserve market billing from its proposal to be approximately \$556 million. This is based on the net increase in costs from the removal of the Tier 1 product of \$1.0 million plus \$555 million increase in energy and reserve billing resulting from the ORDC and the addition of the 30-minute reserve market.”). Because PJM's simulations also indicated a weighted Secondary Reserve market clearing price of \$0.00, we infer that the \$555 million increase is due almost entirely to the tariff revisions related to the ORDCs and Reserve Penalty Factors. *Id.* at 115, fig. 11.

¹⁰⁴ May 2020 Order, 171 FERC ¶ 61,153 at P 310.

V. Compliance

47. PJM is directed, within 60 days of the date of this order, to submit a compliance filing with tariff revisions to reflect the determinations made in this order.¹⁰⁵ With respect to the ORDCs and Reserve Penalty Factors, we direct PJM to revise its Tariff and Operating Agreement records previously accepted in this proceeding (to become effective May 1, 2022) to reflect the currently effective Reserve Penalty Factors and ORDCs. As noted earlier, we are unsure whether PJM will be able to implement the reserve market changes not revised by this order (e.g., the revisions to the Tier 1 and Tier 2 Synchronized Reserve products, alignment of the day-ahead and real-time reserve markets, and various provisions related to resources' eligibility for reserves, determining resources' reserve capability, and offer rules) by May 1, 2022. If PJM determines that it cannot implement those changes by May 1, 2022, it should include tariff records proposing a new effective date for those changes.¹⁰⁶ With respect to the changes to the E&AS Offset, which became effective November 12, 2020, we direct PJM to revise those tariff records to become effective November 12, 2020.

48. Further, as noted above, because we direct PJM to implement the revised E&AS Offset in the BRA for the 2023/2024 delivery year and recognize that PJM will need to delay the BRA for the 2023/2024 delivery year, we direct PJM to submit a

¹⁰⁵ In its filing, PJM proposed the same Reserve Penalty Factors for all reserve requirements, including Synchronized Reserve, Primary Reserve, and 30-minute Reserve. PJM Transmittal at 52-53. We note that the Commission accepted PJM's 30-minute Reserve product as part of the replacement rate to align the day-ahead and real-time markets, and PJM, therefore, should include in its compliance filing Reserve Penalty Factors for 30-minute Reserve that are the same as the Reserve Penalty Factors for Synchronized Reserve and Primary Reserve, and ORDCs consistent with these penalty factors.

¹⁰⁶ PJM is reminded to include a higher priority code for tariff records to become effective May 1, 2022 that are different than the previously accepted tariff records, because the Commission accepted the previous tariff records in eTariff to become effective May 1, 2022. We note that eTariff currently reflects the May 1, 2022 effective date directed in the November 2020 Compliance Order rather than the 12/31/9998 effective date referenced by PJM in its motion for those previously accepted tariff records. Should PJM determine that a later effective date is required for any tariff records, it needs to file two sets of tariff records: one set of records to become effective May 1, 2022 with its currently effective tariff provisions (and any tariff provisions accepted by the Commission in other proceedings prior to the compliance filing that will be effective prior to or including May 1, 2022); and a second set of records with the provisions to be effective on a later proposed effective date.

compliance filing within 30 days of the date of this order proposing a new schedule, including all relevant dates, for that BRA and subsequent BRAs. In line with the Commission's general policy, we do not see a need to require PJM to re-run auctions that utilized the forward-looking offset as doing so would undermine the expectations of the parties who are making commitments for the 2022/2023 delivery year.¹⁰⁷

The Commission orders:

(A) The Commission hereby affirms in part, and reverses in part, the determinations in the Commission's prior orders, as discussed in the body of this order.

(B) PJM is hereby directed to file tariff revisions to reflect the determinations in this order, as discussed in the body of the order, within 60 days of the date of this order.

¹⁰⁷ See May 2020 Order, 171 FERC ¶ 61,153 at P 322; *PJM Interconnection, L.L.C.*, 161 FERC ¶ 61,252, at P 55 (2017) ("The Commission generally does not order a remedy that requires rerunning a market because market participants participate in the market with the expectation that the rules in place and the outcomes will not change after the results are set."); *Md. Pub. Serv. Comm'n v. PJM Interconnection, L.L.C.*, 123 FERC ¶ 61,169, at P 49, *order on reh'g*, 125 FERC ¶ 61,340 (2008) ("In a case involving changes in market design, we generally exercise our discretion over remedies and do not order refunds that require rerunning a market."); see also *Bangor Hydro-Elec. Co. v. ISO New England Inc.*, 97 FERC ¶ 61,339 (2001) (finding that rerunning markets, even when a software error results in clearing prices that are inconsistent with the market rules, would do more harm to electric markets than is justifiable), *reh'g denied*, 98 FERC ¶ 61,298 (2002); *Cal. Indep. Sys. Operator Corp.*, 120 FERC ¶ 61,271, at P 25 (2007) (identifying market reruns as the exception, not the rule).

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(C) PJM is hereby directed to submit a compliance with a revised schedule for the BRA for the 2023/2024 delivery year and subsequent BRAs, as discussed in the body of this order, within 30 days of the date of this order.

By the Commission. Commissioner Danly is dissenting with a separate statement to be issued at a later date.
Commissioner Christie is concurring with a separate statement attached.
Commissioner Phillips is not participating.

(S E A L)

Kimberly D. Bose,
Secretary.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.

Docket No. EL19-58-006
ER19-1486-003

(Issued December 22, 2021)

CHRISTIE, Commissioner, *concurring*:

1. Consumers deserve a reliable supply of power at the least cost (consistent with applicable laws). The issues implicated by PJM's proposal to make major changes to its reserve market construct involve both reliability and consumer costs. Achieving the right balance is always the challenge in utility regulation.
2. In general, certain changes to PJM's reserve market construct that were approved in 2020 pose an unacceptable risk that hundreds of millions of dollars of additional costs could be placed on consumers¹ without a conclusive demonstration, in my view, of a commensurate increase in reliability.
3. More specifically, I agree that PJM failed to meet its demanding burden under section 206 of the FPA to show that the aspects of its currently effective reserve construct addressed by today's order are unjust and unreasonable. I also agree that since the replacement Operating Reserve Demand Curve (ORDC) construct and Reserve Penalty Factors formed the bases to change the energy and ancillary services (E&AS) Offset from backward-looking to forward-looking and since the findings in today's order are that the ORDCs and the Reserve Penalty Factors were not shown to be unjust and unreasonable, given this record there is insufficient evidence under section 206 of the FPA to find the backward-looking E&AS Offset to be unjust and unreasonable.² Although, as today's

¹ See Order at P 5 ("PJM states that, based on simulations, it estimates the annual increase in energy and reserve market billing from its proposal to be approximately \$556 million." (footnote omitted)); *see also id.* at n.62 ("While we need not address PJM's proposed replacement rate with respect to Reserve Penalty Factors and the ORDCs, we note that PJM states that, based on simulations, it estimates the annual increase in energy and reserve market billing from its proposal to be approximately \$556 million." (citation omitted)).

² Order at P 46.

order emphasizes, nothing in this order prevents the approval of a forward-looking offset in the future.³

4. Finally, I agree that reserve resources should be accurately calculated and compensated for their reliability benefits and that penalties for non-performance should be applied without discrimination and should be adequate – principles that should apply in all market constructs.⁴ I believe PJM made a good-faith effort to achieve these goals, and today’s order leaves in place a number of the changes PJM proposed and the Commission approved in its prior orders. Further, today’s order does not prevent PJM from proposing additional modifications to its reserve market construct in the future.

For these reasons, I respectfully concur.

Mark C. Christie
Commissioner

³ *Id.*

⁴ *See, e.g., PJM Interconnection, L.L.C.* 176 FERC ¶ 61,056 (2021) (Christie, Comm’r, dissenting at P 2 and *passim*) (quoting *PJM Interconnection, L.L.C.*, 175 FERC ¶ 61,084 (2021) (Christie, Comm’r, concurring at P 2) “‘It is absolutely essential that RTO/ISO capacity markets value and compensate capacity resources as accurately as practicable, for two primary reasons: First, reliability depends on it, and second, consumers should only pay for capacity that actually performs when needed.’”).

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