



Monitoring
Analytics

Activities of the Market Monitoring Unit 2023

Independent Market Monitor for PJM
December 20, 2024

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Preface

This report is posted pursuant to Section VI.C of Attachment M to the PJM Open Access Transmission Tariff (the “PJM Market Monitoring Plan” or “Plan”), which directs the Market Monitoring Unit (“Market Monitor,” also known as the “MMU,” Independent Market Monitor for PJM” or “IMM”) “to prepare a detailed public annual report about the Market Monitoring Unit’s activities, subject to protection of confidential, proprietary, and commercially sensitive information and the protection of the confidentiality of ongoing investigations and monitoring activities.”¹

Monitoring Analytics, LLC serves as the Independent Market Monitor for PJM.² PJM is a regional transmission organization (RTO) that is responsible for ensuring the reliability of the electric power supply system and operating the wholesale power market in 13 states and the District of Columbia. The MMU is responsible for promoting a robust, competitive and nondiscriminatory electric power market in PJM by implementing the PJM Market Monitoring Plan.

The Federal Energy Regulatory Commission (FERC) assigns three core functions to MMUs: monitoring, reporting, and market design.³ The PJM Market Monitoring Plan provides the Market Monitoring Unit shall objectively monitor the competitiveness of PJM Markets, investigate violations of FERC or PJM Market Rules, recommend changes to PJM Market Rules, prepare reports for the Authorized Government Agencies and take such other actions as are specified in the Plan.⁴

The PJM Market Monitoring Plan provides that the MMU is responsible for monitoring: compliance with the PJM Market Rules; actual or potential design flaws in the PJM Market Rules; structural problems in the PJM markets that may inhibit a robust and competitive market; the potential for a market participant to exercise market power or violate any of the PJM or FERC Market Rules; the actual exercise of market power or violation of the PJM or FERC Market Rules; PJM’s implementation of the PJM Market Rules or operation of the PJM markets; and such matters as are necessary to prepare reports.⁵

¹ PJM Open Access Transmission Tariff (OATT) Attachment M § VI.C.

² See 144 FERC ¶ 61,238 (2013).

³ 18 CFR § 35.28(g)(3)(ii); see also *Wholesale Competition in Regions with Organized Electric Markets*, Order No. 719, FERC Stats. & Regs. ¶31,281 (2008) (“Order No. 719”), *order on reh’g*, Order No. 719-A, FERC Stats. & Regs. ¶31,292 (2009), *reh’g denied*, Order No. 719-B, 129 FERC ¶ 61,252 (2009).

⁴ PJM Open Access Transmission Tariff (OATT) Attachment M § IV.A.

⁵ OATT Attachment M § IV; 18 CFR § 1c.2.

To perform its monitoring function, the MMU screens and monitors the conduct of market participants under the MMU's broad purview to monitor, investigate, evaluate and report on the PJM markets.⁶ The MMU has direct, confidential access to the FERC.⁷ The MMU may also refer matters to the attention of state commissions.⁸

The MMU monitors market behavior for violations of FERC Market Rules.⁹ The MMU investigates and refers "Market Violations," which refers to any "tariff violation, violation of a Commission-approved order, rule or regulation, market manipulation, or inappropriate dispatch that creates substantial concerns regarding unnecessary market inefficiencies..."^{10 11} The MMU also monitors PJM for compliance with the rules, in addition to market participants.¹²

Another important component of the monitoring function is the review of inputs to mitigation. The actual or potential exercise of market power is addressed in part through *ex ante* mitigation rules incorporated in PJM's market clearing software for the energy market, the capacity market and the regulation market. If a market participant fails the TPS test in any of these markets its offer should be set to the lower of its price-based or cost-based offer. The MMU monitors offer capping and identifies situations when it does

⁶ OATT Attachment M § IV.

⁷ OATT Attachment M § IV.K.3.

⁸ OATT Attachment M § IV.H.

⁹ OATT § 1 (Definitions–E–F) ("FERC Market Rules' mean the market behavior rules and the prohibition against electric energy market manipulation codified by the Commission in its Rules and Regulations at 18 CFR §§ 1c.2 and 35.37, respectively; the Commission-approved PJM Market Rules and any related proscriptions or any successor rules that the Commission from time to time may issue, approve or otherwise establish."); OATT § 1 (Definitions–O–P–Q) ("PJM Market Rules' shall mean the rules, standards, procedures, and practices of the PJM Markets set forth in the PJM Tariff, the PJM Operating Agreement, the PJM Reliability Assurance Agreement, the PJM Consolidated Transmission Owners Agreement, the PJM Manuals, the PJM Regional Practices Document, the PJM-Midwest Independent Transmission System Operator Joint Operating Agreement or any other document setting forth market rules.")

¹⁰ The FERC defines manipulation as engaging "in any act, practice, or course of business that operates or would operate as a fraud or deceit upon any entity." 18 CFR § 1c.2(a)(3). Manipulation may involve behavior that is consistent with the letter of the rules, but violates their spirit. An example is market behavior that is economically meaningless, such as equal and opposite transactions, which may entitle the transacting party to a benefit associated with volume. Unlike market power or rule violations, manipulation must be intentional. The MMU must build its case, including an inference of intent, on the basis of market data.

¹¹ OATT Attachment M § I (Definitions–L–M–N).

¹² OATT Attachment M § IV.C.

not prevent the exercise of market power. Effective offer capping prevents the exercise of market power and ensures competitive pricing, provided that the cost-based offer accurately reflects short run marginal costs.

The MMU performs its reporting function by preparing annual and quarterly state of the market reports, including detailed market design recommendations, and detailed reports on specific market issues. The MMU issues reports on each RPM base residual auction. The MMU's reports also respond to the needs of FERC, state regulators, or other regulatory authorities, to assist policy development, decision making in regulatory proceedings, and in support of investigations. The MMU participates in FERC technical conferences as appropriate.

In order to perform its role in PJM market design, the MMU evaluates existing and proposed PJM Market Rules as well as the design and implementation of the PJM markets.¹³ The MMU initiates and proposes changes to the design of such markets or the PJM Market Rules in stakeholder or regulatory proceedings.¹⁴ In support of this function, the MMU engages in discussions with stakeholders, state commissions, PJM management, and the PJM Board; participates in PJM stakeholder meetings regarding market design matters; publishes proposals, reports or studies on such market design issues; and makes filings with the Commission on market design issues.¹⁵ The MMU may also recommend changes to the PJM Market Rules to the staff of the Commission's Office of Energy Market Regulation, state commissions, and the PJM Board.¹⁶ The MMU may provide in its annual, quarterly and other reports "recommendations regarding any matter within its purview."¹⁷

The MMU posts market data, public reports, presentations, regulatory filings and market messages on the Monitoring Analytics web page at: <http://www.monitoringanalytics.com>.

Monitoring

Market Surveillance

The MMU analyzes and monitors all of the PJM markets, including the Day-Ahead Energy Market, the Real-Time Energy Market, the RPM Base Residual Auctions and Incremental Auctions, the Regulation Market, the reserve markets and the Annual, Monthly, Long Term and Balance of Planning Period Auction Markets in Financial

¹³ OATT Attachment M § IV.D.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ OATT Attachment M § VI.A.

Transmission Rights (FTRs). The MMU monitors the provision of other cost-based ancillary services including black start service and reactive service. The MMU analyzes and monitors transmission issues, including transmission outages, transmission line ratings, competition to build transmission facilities, and the impact of transmission on competition. The MMU analyzes and monitors generation and transmission planning issues, including the queue process. This ongoing market analysis and monitoring is the basis for all MMU activities.

The MMU monitors and supports correct development of inputs to prospective mitigation based on cost-based offers. Correctly defined cost-based offers for the energy market, the reserve markets, and the regulation market should be based on short run marginal costs. The MMU reviews units' fuel cost policies to ensure that they define, in an algorithmic, verifiable and systematic way, how the market value of fuel is calculated in cost-based offers. The MMU calculates energy market opportunity costs for environmentally limited units, which include the impact of state regulations (e.g., Illinois Climate and Equitable Jobs Act (CEJA) (2021)). The MMU evaluates eligibility for Frequently Mitigated Unit (FMU) adders. The MMU reviews fuel costs, emissions rates, heat rates, and variable operations and maintenance costs, as well as the submitted cost-based offers. If a cost-based offer does not adhere to the PJM Market Rules, the MMU recommends that PJM issue a penalty, as defined in OA Schedule 2.

The MMU monitors participant development of inputs to prospective mitigation in the capacity market, including Avoidable Cost Rates and net revenues in RPM; unit-specific offers in the capacity market under the Minimum Offer Price Rule; offer caps for capacity resources, including unit specific offer caps and risk premia. In the course of this monitoring, the MMU provides feedback to participants and engages in discussions about the appropriateness of costs and cost levels.

The MMU monitors compliance with the RPM and CP must offer rules and reviews exception requests to these rules. The MMU monitors compliance with the Minimum Offer Price Rule (MOPR) and reviews unit specific exception requests. The MMU verifies and confirms the results of the Three Pivotal Supplier Test in the capacity market. The MMU monitors compliance with the must offer rule and operating parameter requirements for capacity resources in the day-ahead energy market. The MMU monitors compliance with the must offer requirement and event performance in the synchronized reserve market. The MMU monitors costs included in black start service rates. The MMU reviews proposed deactivations to identify potential market power issues. The MMU also monitors other tariff requirements related to offers in the energy market, the capacity market and the ancillary services markets.

If the MMU determines that it has identified a significant market problem or a potential market violation by a market participant or PJM that may require further inquiry, a

referral, and/or action by the Commission, the MMU is required to notify the Commission's Office of Enforcement.¹⁸

If the MMU determines that it has sufficient credible information that PJM's or a participant's market behavior may require investigation, it is required to submit a formal confidential referral of such behavior to the Commission's Office of Enforcement.¹⁹ Such referrals typically include substantial analysis of the issue referred. After a referral, the MMU provides further assistance to FERC staff at their request.

The MMU monitors how PJM implements the market rules. For example, the MMU replicates the clearing of the capacity market and provides feedback to PJM when it identifies issues, and monitors the clearing of the energy market, including operator interventions. The MMU monitors uplift payments, especially the determination of whether a resource follows PJM's dispatch instructions and whether a resource is eligible for uplift payments. The MMU monitors PJM's application of the Three Pivotal Supplier Test in the energy, capacity and regulation markets. The MMU analyzes the causes of shortage pricing events. The MMU monitors the testing and application processes for demand response, energy efficiency, and distributed energy resources. The MMU monitors outage reporting and the outage approval process. The MMU verifies and confirms the results of PJM's application of the FTR Forfeiture Rule, a retroactive mitigation measure, prior to PJM billing PJM members. The MMU provides detailed information to market participants who have questions about the application of the rule to the participant's portfolio. The MMU monitors the profitability of virtual transactions and whether the profitability is the result of false arbitrage due to modeling and operational differences between the day-ahead and real-time energy markets.

If the MMU believes that market design flaws exist that could be remedied by rule changes, the MMU is required to inform the Commission's Office of Energy Market Regulation.²⁰

Discussions with Market Participants

The PJM Market Monitoring Plan provides that in addition to informing Commission staff, the MMU may "Engage in discussions regarding issues relating to the PJM Market Rules or FERC Market Rules in order to understand such issues and to attempt to resolve informally such issues or other issues."²¹ In fulfilling this role in 2023, the MMU monitored participant behavior and discussed relevant matters with market participants. In addition, the MMU received and investigated confidential complaints.

¹⁸ OATT Attachment M § IV.I.

¹⁹ *Id.*

²⁰ OATT Attachment M § IV.I.2.

²¹ OATT Attachment M, § IV.J.1.

The MMU regularly discusses issues with market participants from all parts of the market. For example, the MMU engaged in discussions with market participants, including generation owners, renewable suppliers, demand side providers, industrial customers, financial participants, public power entities, transmission owners, load serving entities, state public utility commissions, environmental interests, and public advocates.

The MMU typically communicates with market participants to inquire about offering behavior and/or operational behavior. These communications help inform the MMU of issues market participants face in the market (e.g. inefficient reserve deployment communications). The MMU provides input to market participants when their behavior does not meet the PJM rules (e.g. cost offer violations) and competitive behavior (e.g. withholding). In some situations, when there is disagreement, these communications can lead to referrals to the Commission.

The MMU calculates opportunity cost adders for generators subject to environmental limitations that constrain dispatch.²² The opportunity cost adders are included in the energy offers. The MMU has numerous interactions with Market Participants throughout the year related to these calculations.

Discussions with PJM

The MMU engaged in discussions with PJM about, among other things, the fuel cost policy approval process, specific generator fuel cost policies, unit specific parameter limit adjustments, parameter limit exceptions, cost-based offers, and the application of penalties for incorrect cost-based offers; the energy must offer requirement; the calculation of variable operating and maintenance expense includable in energy offers; the definition of following dispatch; the application of uplift rules; RPM rules (e.g., ELCC, market seller offer caps, MOPR offer floors; must offer exceptions; market power mitigation; the application of rules in RPM auctions); credit and default issues; FTR issues; reactive power; regulation; reserve measurement and deployment; reserve market design; reserve performance; market efficiency transmission projects; transmission constraints; transmission constraint penalty factors; distributed energy resources; and changes to the reserve markets.

Communications with Regulators

The MMU provides information to regulators, subject to compliance with applicable rules protecting confidentiality:

The MMU communicated with FERC staff regarding current issues; provided data in response to requests from FERC staff; met with the FERC Office of Enforcement; met with the Department of Justice Antitrust Division; met with state regulators; met with the Organization of PJM States, Inc. (OPSI); met with the OPSI Advisory Committee; and

²² PJM. Manual 15: Cost Development Guidelines. Rev. 45 (Sep. 1, 2024).

met with the Consumer Advocates of PJM States (CAPS) to answer questions and discuss a range of topics.

Referrals

The MMU filed confidential referrals of market violations under OATT Attachment M § IV.I.1 with FERC's Office of Enforcement.

Reporting²³

Reports and Analyses

Publication of four state of the market reports fulfilled the reporting requirements in the tariff and Commission regulations on market monitoring policy by providing a comprehensive analysis of PJM markets and an assessment of the competitiveness of each market.²⁴ The reports also provided detailed recommendations related to market design and the details rules related to market design.²⁵

Other Reports:

- Analysis of the 2022/2023 RPM Base Residual Auction – Revised (January 13, 2023).
- Report to the North Carolina Utilities Commission: Congestion in the Dominion Service Territory in North Carolina (September 15, 2023).
- Report to the Ohio Public Utility Commission – Congestion in the State of Ohio (September 8, 2023).
- Analysis of the 2024/2025 RPM Base Residual Auction (October 30, 2023).
- Activities of the Market Monitoring Unit: 2022 (November 28, 2023).

Market Messages

- Data Submission Window Opening for the 2025/2026 RPM Base Residual Auction (January 13, 2023).
- MMU Calculated Net Revenue Values for the 2025/2026 RPM Base Residual Auction (January 18, 2023).
- Outage Reporting During Winter Storm Elliot (January 26, 2023).
- Start Cost and Environmental Credit Changes (January 30, 2023).
- Fuel Cost Policy Periodic Review (February 1, 2023).
- Press Release - 2022 State of the Market Report for PJM (March 9, 2023).

²³ Public reports by the MMU are posted at <<https://www.monitoringanalytics.com/reports/Reports/2023.shtml>>.

²⁴ OATT Attachment M § VII.A

²⁵ See 2023 State of the Market Report for PJM: Volume 2, Section 2: Recommendations, (March 14, 2024).

- Members Committee Letter – 2022 State of the Market Report for PJM (March 9, 2023).
- IMM Determinations Posted for the PJM 2025/2026 RPM Base Residual Auction (March 16, 2023).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2023/2024 and 2024/2025 Delivery Years (March 20, 2023).
- IMM Letter to PJM General Counsel re Liaison Committee Participation (March 21, 2023).
- Press Release - 2023 Quarterly State of the Market Report for PJM: January through March (May 11, 2023).
- Members Committee Letter – 2023 Quarterly State of the Market Report for PJM: January through March (PDF) (May 11, 2023).
- Start Cost Changes (PDF) (May 23, 2023).
- IMM Notice of Disclosure of Information (PDF) (May 31, 2023).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2024/2025 and 2025/2026 Delivery Years (PDF) (June 30, 2023).
- State of the Market Report for PJM: January through June (PDF) (August 10, 2023).
- Press Release - 2023 Quarterly State of the Market Report for PJM: January through June (PDF) (August 10, 2023).
- Temporary Operating Parameter Limit (PLS) Exceptions due to Pipeline Restrictions (PDF) (September 8, 2023).
- Data Submission Window Opening for the 2024/2025 RPM Third Incremental Auction (PDF) (September 29, 2023).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2024/2025 and 2025/2026 Delivery Years (PDF) (September 29, 2023).
- Joint IMM Letter re Gas Electric Harmonization (PDF) (October 10, 2023).
- Press Release - 2023 Quarterly State of the Market Report for PJM: January through September (November 9, 2023).
- IMM Determinations Posted for the PJM 2024/2025 RPM Third Incremental Auction (November 29, 2023).
- Notification Time Parameter in the Day-Ahead Energy Market (December 14, 2023).
- 2024 VOM Adders in MIRA (December 20, 2023).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2024/2025 and 2025/2026 Delivery Years (December 28, 2023).

Data Postings

Marginal Fuel Postings

- 202210_Marginal_Fuel_Postings.csv (March 1, 2023).
- 202211_Marginal_Fuel_Postings.csv (March 1, 2023).

- 202212_Marginal_Fuel_Postings.csv (March 1, 2023).
- 202301_Marginal_Fuel_Postings.csv (March 1, 2023).
- 202302_Marginal_Fuel_Postings.csv (April 6, 2023).
- 202303_Marginal_Fuel_Postings.csv (May 2, 2023).
- 202304_Marginal_Fuel_Postings.csv (June 2, 2023).
- 202305_Marginal_Fuel_Postings.csv (July 3, 2023).
- 202306_Marginal_Fuel_Postings.csv (August 2, 2023).
- 202307_Marginal_Fuel_Postings.csv (September 1, 2023).
- 202308_Marginal_Fuel_Postings.csv (October 4, 2023).
- 202309_Marginal_Fuel_Postings.csv (November 1, 2023).
- 202310_Marginal_Fuel_Postings.csv (December 1, 2023).

Percentage of PJM Load by State

- PJM Load by State - 2022 (XLS) (March 1, 2023).
- PJM Load by State - 2023 (XLS) (July 10, 2023).

Components of PJM Price

- Monthly Total Price Table – 2022 (November 14, 2023).
- Monthly Total Price Table – 2023 (November 14, 2023).

Industry Briefings

As part of its reporting role, the MMU provided briefings and presentations to industry groups and the Federal Energy Regulatory Commission (FERC). In 2023, the MMU shared the results of its analyses, experience and knowledge regarding competitive markets, market monitoring and market power mitigation at various conferences and meetings.

- Speaker. “IMM Capacity Market Design Proposal,” Organization of PJM States, OPSI Spring Meeting, Charleston, WV, April 17, 2023.
- Speaker. “Sustainability: Sustainable Operations in the Energy Transition,” ELCON Spring Workshop, Washington, DC, April 25, 2023.
- Speaker. “Unpacking the IRA: Data from PJM Markets,” Harvard Electric Policy Group, Webinar, May 31, 2023.
- Speaker. “Gas-Electric Harmonization: What needs to change for this winter and how will it affect markets?,” Organization of PJM States, OPSI Annual Meeting, Covington, KY, October 16, 2023.
- Speaker. “Meeting of OPSI Market Monitoring Advisory Committee with PJM Market Monitor,” Organization of PJM States, OPSI Annual Meeting, Covington, KY, October 17, 2023.
- Speaker, “Do PJM’s energy markets need reform?” Organization of PJM States, OPSI Annual Meeting, Covington, KY, October 17, 2023.

- Speaker. “Perspectives on Market Reform and Capacity Markets,” Platts Nodal Trader Conference, Washington, D.C. October 26, 2023.

FERC Proceedings

In 2023, the MMU intervened in proceedings at the FERC, filed substantive pleadings, most of which addressed market design issues and participated in numerous settlement and technical conferences with FERC staff in an effort to achieve compensation for reactive capability that is consistent with the PJM market design.

- **New MBR Filings.** The Market Monitor routinely intervenes in requests by owners of generating facilities in PJM for new market based rates authorization. (Docket Nos. ER23-857, ER23-944, ER23-1220, ER23-1470, ER23-1512, ER23-1585, ER23-1757, ER23-2113, ER23-2130, ER23-2376, ER23-2441, ER23-2481, ER23-2526, ER23-2554, ER23-2528, ER23-2614, ER23-2590, ER23-2759, ER23-2943, ER23-2941, ER23-2749, ER23-1601, ER23-2915, ER24-100, ER24-102, ER24-101, ER24-109, ER24-134, ER24-153, ER24-343, ER24-333, ER24-334, ER24-438, ER24-551, ER24-552, ER24-553).
- **ELCC/CIR Complaint (Docket No. EL23-13).** Comments of the Independent Market Monitor for PJM (January 13, 2023).
- **LDA Reliability Requirement (Docket No. ER23-729 and EL23-19).** Comments of the Independent Market Monitor for PJM (January 20, 2023). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (February 3, 2023). Answer of the Independent Market Monitor for PJM (February 16, 2023).
- **Triennial MBR Filings (Docket Nos. ER10-1618, et al).** Comments of the Independent Market Monitor for PJM (February 13, 2023).
- **Market Participant Default Even Revisions (Docket No. ER23-1058).** Comments of the Independent Market Monitor for PJM (March 1, 2023). Letter of the Independent Market Monitor for PJM (March 14, 2023).
- **DC Energy Complaint (Docket No. EL18-170).** Comments of the Independent Market Monitor for PJM (March 10, 2023).
- **Maintenance Adder Cost Revisions (ER23-1138).** Comments of the Independent Market Monitor for PJM – Corrected (March 15, 2023).
- **Transmission Constrain Penalty Factor Revisions (Docket No. ER23-918).** Answer of the Independent Market Monitor for PJM (March 15, 2023).
- **Generation Capacity Resources CIRS in ELCC (Docket No. ER23-1067).** Answer to Protest of the Independent Market Monitor for PJM. (March 16, 2023).
- **Liaison Committee (Docket No. EL23-50).** Complaint of the Independent Market Monitor for PJM (March 24, 2023).
- **PSC WV Complaint (Docket No. EL23-45).** Comments of the Independent Market Monitor for PJM (March 28, 2023).
- **Market Suspension Rule (Docket No. ER23-1431).** Comments of the Independent Market Monitor for PJM. (April 11, 2023).

- **PAI Complaints (Docket No. EL23-53, et al).** Comments of the Independent Market Monitor for PJM. (April 28, 2023).
- **PJM BRA Delay (Docket No. ER23-1609).** Comments of the Independent Market Monitor for PJM (May 2, 2023).
- **IMM LC Complaint (Docket No. EL23-50).** Comments of the Independent Market Monitor for PJM. (May 2, 2023).
- **CRF Formula (Docket No. EL21-91-000, -002).** Answer of the Independent Market Monitor for PJM. (May 9, 2023).
- **Order No. 2222 (Docket No. ER22-962-001, -002).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (May 30, 2023). Comments of the Independent Market Monitor for PJM (September 25, 2023).
- **Black Start Fuel Assured Units (Docket No. ER23-1874).** Comments of the Independent Market Monitor for PJM. (June 6, 2023). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (July 6, 2023).
- **PAI Trigger (Docket No. ER23-1996).** Comments of the Independent Market Monitor for PJM. (June 22, 2023).
- **Energy Harbor/Vistra Merger (Docket No. EC23-74).** Comments of the Independent Market Monitor for PJM (Public Version). (June 23, 2023). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (August 14, 2023). Comments of the Independent Market Monitor for PJM. (October 10, 2023).
- **MD Solar 2 (Docket No. EL23-52-001).** Answer of the Independent Market Monitor for PJM to Motion to Sever. (July 17, 2023).
- **PJM Response to Black Start Deficiency Letter (Docket No. ER23-1874).** Comment of the Independent Market Monitor for PJM (August 28, 2023).
- **MBR Triennial Reviews (Docket No. ER23-9, et al).** Comments of the Independent Market Monitor for PJM. (August 28, 2023).
- **CIP IROL (Docket No. ER23-2649).** Comments of the Independent Market Monitor for PJM. (September 8, 2023). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (October 10, 2023).
- **Capacity Accreditation (Docket No. AD23-10).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (October 19, 2023).
- **MSOC/CIFP (Docket Nos. ER24-98 and ER24-99).** Motions for Extension, Shortened Answer Period, and Expedited Action of the Independent Market Monitor for PJM. (October 20, 2023). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (October 24, 2023). Protest of the Independent Market Monitor for PJM. (November 9, 2023). Comments on Response to Deficiency Notice, Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (December 21, 2023). Comments on Response to Deficiency Notice, Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (December 22, 2023).

- **CPower Complaint. (Docket No. EL23-104).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (November 2, 2023).
- **IMM CIFP Complaint (Docket No. EL24-12).** Complaint of the Independent Market Monitor for PJM. (November 7, 2023). Answer of the Independent Market Monitor for PJM. (November 21, 2023).
- **FTR Bilateral Reform (Docket No. ER24-374).** Protest of the Independent Market Monitor for PJM. (November 30, 2023).
- **OCC Complaint (Docket No. EL23-105).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (December 4, 2023).
- **Peak Market Activity Credit Requirements (ER24-461).** Comments of the Independent Market Monitor for PJM. (December 12, 2023).

FERC Technical Conferences

- **Modernizing Electricity Market Design (Docket No. AD21-10).** Comments of the Independent Market Monitor for PJM (January 18, 2023).
- **Transmission Planning and Cost Management (Docket Nos. AD22-8 and AD21-15).** Post-Technical Conference Comments of the Independent Market Monitor for PJM. (April 17, 2023).
- **PJM Capacity Market Forum (AD23-7).** Speaker materials of the Independent Market Monitor for PJM. (June 15, 2023).

Settlement Proceedings

In 2023, the IMM participated in multiple settlement conferences, technical conferences, and hearing conferences, in proceedings concerning the establishment of rates for reactive capability under Schedule 2 of the PJM OATT. Issues in these cases included: the appropriate power factor; unit specific rates, applicability of the *AEP* Method; ability of battery storage resources to deliver reactive power, deliverability of reactive to the PJM Grid; and prevention of double recovery.

In 2023, the MMU participated in settlement proceedings in numerous dockets for reactive capability rates.

- **Fern Solar Reactive (Docket No. ER20-2186-003 and EL20-62-001).** Initial Brief of the Independent Market Monitor for PJM (February 15, 2023). Reply Brief of the Independent Market Monitor for PJM (March 10, 2023). Brief of Exceptions of the Independent Market Monitor for PJM (May 15, 2023). Reply Brief on Exceptions of the Independent Market Monitor for PJM (June 5, 2023).
- **Covanta Essex Reactive (Docket No. ER22-965, et al).** Comments in Opposition of Offer of Settlement of the Independent Market Monitor for PJM (March 10, 2023).
- **Crete and Lincoln (Docket Nos. EL22-84, et al.)**
- **Black Rock Wind Force Reactive (Docket No. ER22-944 and EL22-34).** Comments in Opposition to Offer of Settlement of the Independent Market Monitor for PJM (March 22, 2023).

- **Covanta Fairfax Reactive (Docket No. ER22-967-004).** Comments in Opposition to Offer of Settlement the Independent Market Monitor for PJM (April 3, 2023).
- **Jackson Generation Reactive (Docket No. ER22-1089 and EL22-48).** Comments of the Independent Market Monitor for PJM in Opposition to Offer of Settlement. (April 17, 2023).
- **Blooming Grove Reactive (Docket No. ER22-2148-000, -003).** Comments of the Independent Market Monitor for PJM in Opposition to Offer of Settlement. (June 5, 2023).
- **Indeck Niles Reactive (Docket Nos. EL22-35 and ER22-907).** Comments of the Independent Market Monitor for PJM in Opposition to Offer of Settlement. (July 31, 2023).
- **Seneca/Yards Creek Reactive (Docket No. ER14-1400, et al).** Comments of the Independent Market Monitor for PJM. (August 24, 2023).
- **Red Oak Power Reactive (Docket No. ER23-2956-001).** Comments of the Independent Market Monitor for PJM in Opposition to Offer of Settlement. (September 19, 2023).
- **Bellflower Solar Reactive (Docket No. ER23-628-002).** Comments of the Independent Market Monitor for PJM in Opposition to Offer of Settlement. (October 19, 2023).
- **Headwater Wind II Reactive (Docket No. ER23-1211).** Comments of the Independent Market Monitor for PJM in Opposition to Offer of Settlement. (October 26, 2023).
- **CPV Three Rivers Reactive (Docket Nos. ER23-982-002 and EL23-47-000).** Comments in Opposition to Offer of Settlement of the Independent Market Monitor for PJM. (December 20, 2023).

State Proceedings

In 2023, the MMU addressed market topics in proceedings at state public utility commissions and state legislatures:

New Jersey Department of Environmental Protection

- DEP Docket No. 07-21-11 and Proposal Number: PRN 2021-117

New Jersey Board of Public Utilities

- ZEC Revenue Review (Docket No. EO18080899, et al). Comments of the Independent Market Monitor for PJM. (July 7, 2023). Supplemental Comments of the Independent Market Monitor for PJM. December 6, 2023).

Court Proceedings

In 2023, the MMU addressed market topics and enforcement issues in proceedings in federal and state courts.

Department of Energy

- National Transmission Needs Study. Comments of the Independent Market Monitor for PJM (April 20, 2023).

United States Court of Appeals

- **FTR Forfeiture Rule.** XO Energy v FERC. Oral Argument (DC Cir. Case No. 22-1096).
- **Transmission Constraint Penalty Factor.** Citadel v. FERC (D.C. Cir. Case No. 22-1090), Intervenor for Respondents Brief (with PJM).
- **ORDC Remand.** (6th Cir. Case No. 22-3176). Brief of Intervenor in Support of Respondent (May 15, 2024).
- **DPL Zone.** P3 vs. FERC; Constellation vs. FERC; ESPA vs FERC, (3rd Cir. Case No. 23-1778, 23-1790, 23-1808); Reply of the Independent Market Monitor for PJM (June 5, 2023).

Participation in Stakeholder Process

During 2023, the MMU regularly participated in meetings of all the major PJM committees and task forces, and formally presented information, analysis and recommendations to committees and task forces as needed.²⁶ The MMU made formal presentations at these stakeholder meetings.

Markets and Reliability Committee (MRC)

- Proposed Modifications to Capacity Market Rules (April 26, 2024).
- Proposed Redline to CP Penalty Issue Charge Proposal (April 26, 2024).
- PAI Definitions and Penalty Rate (May 4, 2023).
- PJM's Proposed Changes to Reserve Requirements (May 31, 2023).
- Reserve Certainty Issue Charge - IMM Redline (September 20, 2023).
- IMM Reserve Certainty Issue Charge – Clean (September 20, 2023).
- Schedule Selection Process (October 25, 2023).

Members Committee/MC Webinar (MC)

- Market Monitor Report (January 23, 2023).
- Market Monitor Report (February 21, 2023).
- Market Monitor Report (March 20, 2023).

²⁶ OATT Attachment M § IV.D.

- Market Monitor Report (May 22, 2023).
- Market Monitor Report (June 20, 2023).
- Market Monitor Report (July 24, 2023).
- Market Monitor Report (September 18, 2023).
- Market Monitor Report (October 23, 2023).
- Market Monitor Report (November 13, 2023).
- Market Monitor Report (December 18, 2023).

Market Implementation Committee (MIC)

- Offer Capping Issue Charge (January 11, 2023).
- Offer Capping and Combined Cycle Modeling (January 11, 2023).
- Reserve Capability Calculation with Segmented Ramp Rates (April 12, 2023).
- Schedule Selection: IMM Package (September 6, 2023).

MIC Special Session: Performance Impact of Multi-Schedule Model on the Market Clearing Engine

- Education: Schedule Selection and Market Power Mitigation (March 29, 2023).
- Multischedule Model and Mitigation: IMM Package (May 24, 2023).
- Least Cost Schedule Analysis (July 17, 2023).

MIC Special Session: Operating Reserve Clarification for Resources Operating as Requested by PJM

- Uplift - Operating Reserve Clarification (September 11, 2023).

Operating Committee (OC)

- Transmission Outage Coordination (March 9, 2023).

Operating Committee Special Session: Outage Coordination

- Transmission Outage Coordination (February 9, 2023).

Finance Committee (FC)

- Monitoring Analytics – Financial Results 2022 – Confidential (March 22, 2023).
- MA Preliminary 2024 Budget (July 27, 2023).
- MA Proposed 2024 Budget (August 31, 2023).

Electric Gas Coordination Senior Task Force (EGCSTF)

- IMM Presentation on Gas Nomination Cycles and Units Operating Parameters (July 18, 2023).
- IMM Presentation on Gas Nomination Cycles and Units Operating Parameters (August 15, 2023).
- IMM EGCSTF Proposal (October 19, 2023).

Resource Adequacy Senior Task Force (RASTF)

- IMM Capacity Market Design Proposal (January 31, 2023).
- High Level Capacity Market Design Proposal (February 10, 2023).

Resource Adequacy Senior Task Force (RASTF – CIFP)

- Capacity Market Design Proposal: Sustainable Capacity Market (SCM) (June 13, 2023).
- IMM Proposal: Sustainable Capacity Market (SCM) (June 28, 2023).
- Sustainable Capacity Market Proposal Part 3 (July 27, 2023).
- Executive Summary of IMM Capacity market design proposal: Sustainable Capacity Market (SCM) (August 16, 2023).
- IMM Comments on PJM CIFP Proposals (August 18, 2023).

Regulation Market Design Senior Task Force (RMDSTF).

- Regulation Market Strawman Proposal (April 18, 2023).
- Regulation Market Proposal (July 18, 2023).
- Regulation Market Proposal – Revised (August 7, 2023).

Cost Development Subcommittee (CDS)

- Manual 15 CC Heat Input Language – Redlined (February 1, 2023).
- Fuel Cost Policy Periodic Review (February 1, 2023).
- Opportunity Cost Calculator – Issue Charge (February 1, 2023)
- Manual 15 Opportunity Cost Calculator Updates (February 1, 2023)
- IMM OC Adder Redlines – Manual 15 (March 1, 2023).
- Synchronous Condensing Costs – Problem Statement and Issue Charge (July 6, 2023).
- Synchronous Condensing Costs (July 6, 2023).
- Synchronous Condensing Costs – Problem Statement and Issue Charge (August 25, 2023).
- Synchronous Condensing Costs – Education (August 25, 2023).
- Synchronous Condensing Costs – Options Matrix (September 28, 2023).
- Synchronous Condensing Costs – November 30, 2023).

PJM-NYISO Joint Initiative

The MMU participated in discussions concerning Ramapo PAR cost allocations.

PJM-MISO Joint Initiative

The MMU participated in discussions concerning the Market to Market Freeze Date alternatives and the coordination of interregional planning.

Other Activities

OPSI Advisory Committee

The OPSI Advisory Committee is established pursuant to Section III.G of Attachment M of the OATT, which provides:

“There shall be an OPSI Advisory Committee comprised of five (5) representatives appointed by the Organization of PJM States, Inc. The OPSI Advisory Committee shall meet with the Market Monitoring Unit on a regular basis and as otherwise necessary to receive and discuss information relevant to this Plan. In addition to the specific responsibilities regarding budget and termination set forth in Sections III.E and III.F, the OPSI Advisory Committee may provide advice to the Commission, Market Monitor, the PJM Board, stakeholder committees, and stakeholder working groups regarding any matter concerning the Market Monitor, Market Monitoring Unit or Market Monitoring Plan. Any formal advice shall be in writing and, subject to confidentiality provisions, shall be made publicly available.”

The MMU met with the OPSI Advisory Committee on October 26, 2023. The OPSI Advisory Committee Meeting with Dr. Joseph Bowring (President, Monitoring Analytics, LLC), the Independent Market Monitor for PJM is a separate meeting and not a part of the OPSI Annual Meeting. This meeting is open to the public.

Market Monitoring Unit Advisory Committee

The Market Monitoring Unit Advisory Committee (“MMUAC”) is established pursuant to Section III.H of Attachment M of the OATT, which provides:

“There shall be an MMU Advisory Committee, chaired by the Market Monitor that is open to all stakeholders and representatives of Authorized Government Agencies. The MMU Advisory Committee shall act as a liaison between stakeholders and the MMU and shall provide advice from time to time on matters relevant to the MMU's responsibilities under this Plan. The MMU Advisory Committee shall have no authority to direct, supervise, review, or otherwise interfere with the functions of the MMU under this Plan, nor any authority to terminate or propose to terminate the Market Monitor.”

The MMU convened a meeting of the MMUAC on December 1, 2023. The MMU requested comments from stakeholders concerning the MMU's implementation of the

PJM Market Monitoring Plan. The MMU discussed: the MLSA Cases: A Decade to Resolve; Gas-Electric Issues; Reserves Market Design; IMM Analysis of Mergers and Acquisitions Affecting the PJM Market; and Capacity Interconnection Rights.