



Monitoring
Analytics

Activities of the Market Monitoring Unit 2024

Independent Market Monitor for PJM
December 15, 2025

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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 that 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 monitors synchronized reserve event performance, demand response event performance, compliance with energy and capacity must offer rules, generator outages, and generator performance during primary frequency response events. The MMU analyzes and monitors transmission issues, including transmission outages, transmission line ratings, transmission constraint penalty factors, 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 2024, 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. The opportunity cost adders may be included in the cost-based energy offers. The MMU has numerous interactions with Market Participants throughout the year related to these calculations.

The MMU reviews unit specific Market Seller Offer Cap (MSOC) requests and calculates maximum MSOC values when necessary. This activity requires interactions with Market Participants prior to each capacity auction.

Discussions with PJM

In 2024, 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 market 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 market issues; reserve measurement and deployment; reserve market design; reserve performance; market efficiency transmission projects; transmission constraints; transmission constraint penalty factors; distributed energy resources; primary frequency response metrics; generation and transmission interconnection planning issues, and changes to the reserve markets.

Communications with Regulators

In 2024, the MMU provided 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; provided State of the Market Report briefings; met with and provided data in response

to CIDs from 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 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.

Reporting²²

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.²³ The reports also provided detailed recommendations related to market design and the details rules related to market design.²⁴

- 2023 Annual State of the Market Report for PJM. (March 14, 2024).
- 2024 Quarterly State of the Market Report for PJM: January through March. (May 9, 2024).
- 2024 Quarterly State of the Market Report for PJM: January through June. (August 8, 2024).
- 2024 Quarterly State of the Market Report for PJM: January through September. (November 14, 2024).

State Congestion Reports

- North Carolina State Congestion Report (July 14, 2024).

Other Reports:

- Analysis of the 2025/2026 RPM Base Residual Auction - Part A. (September 20, 2024).
- Analysis of the 2025/2026 RPM Base Residual Auction - Part B. (October 15, 2024).
- Analysis of the 2025/2026 RPM Base Residual Auction - Part C. (November 6, 2024).
- Analysis of the 2025/2026 RPM Base Residual Auction – Part D (December 6, 2024).

Market Messages

- VA RGGI Withdrawal Impact on Cost-Based Offers (January 5, 2024).

²² Public reports by the MMU are posted at <<http://www.monitoringanalytics.com>>.

²³ OATT Attachment M § VII.A

²⁴ See 2024 State of the Market Report for PJM: Volume 2, Section 2: Recommendations, (March 13, 2025).

- Data Submission Window Opening for the 2025/2026 RPM Base Residual Auction (January 14, 2024).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2024/2025 and 2025/2026 Delivery Years (February 26, 2024).
- Data Submission Window Opening for the 2025/2026 RPM Base Residual Auction (February 29, 2024).
- Members Committee Letter – 2023 State of the Market Report for PJM (March 14, 2024).
- Press Release - 2023 State of the Market Report for PJM (March 14, 2024).
- IMM Determinations Posted for the PJM 2025/2026 RPM Base Residual Auction (April 18, 2024).
- Press Release - 2024 Quarterly State of the Market Report for PJM: January through March (May 9, 2024).
- Members Committee Letter – 2024 Quarterly State of the Market Report for PJM: January through March (May 9, 2024).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2025/2026 Delivery (June 28, 2024).
- MMU Calculated Net Revenues for the 2026/2027 RPM Base Residual Auction (July 3, 2024).
- Data Submission Window Opening for the 2026/2027 RPM Base Residual Auction (July 8, 2024).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2025/2026 Delivery Year (July 16, 2024).
- Press Release - 2024 Quarterly State of the Market Report for PJM: January through June (August 8, 2024).
- Members Committee Letter – 2024 Quarterly State of the Market Report for PJM: January through June (August 8, 2024).
- IMM Determinations Posted for the PJM 2026/2027 RPM Base Residual Auction (September 5, 2024).
- Data Submission Window Opening for the 2025/2026 RPM Third Incremental Auction (September 27, 2024).
- Press Release - 2024 Quarterly State of the Market Report for PJM: January through September (November 14, 2024).
- Members Committee Letter – 2024 Quarterly State of the Market Report for PJM: January through September. (November 14, 2024).
- VA RGGI Withdrawal Impact on Cost-Based Offers (November 22, 2024).
- IMM Determinations Posted for the PJM 2025/2026 Third Incremental Auction (November 27, 2024).

- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2025/2026 Delivery Year (December 30, 2024).

Data Postings

Marginal Fuel Postings

- 202311_Marginal_Fuel_Postings.csv (January 2, 2024).
- 202312_Marginal_Fuel_Postings.csv (February 15, 2024).
- 202401_Marginal_Fuel_Postings.csv (March 3, 2024).
- 202402_Marginal_Fuel_Postings.csv (April 1, 2024).
- 202403_Marginal_Fuel_Postings.csv (May 3 2024).
- 202404_Marginal_Fuel_Postings.csv (June 3, 2024).
- 202405_Marginal_Fuel_Postings.csv (July 10, 2024).
- 202406_Marginal_Fuel_Postings.csv (August 28, 2024).
- 202407_Marginal_Fuel_Postings.csv (September 3, 2024).
- 202408_Marginal_Fuel_Postings.csv (October 10, 2024).
- 202409_Marginal_Fuel_Postings.csv (November 11, 2024).
- 202410_Marginal_Fuel_Postings.csv (December 9, 2024).

Percentage of PJM Load by State

- PJM Load by State - 2024 (November 11, 2024).
- PJM Load by State - 2023 (July 10, 2024).

Components of PJM Price

The MMU implemented an improved approach to calculating the components of the cost of wholesale power on September 17, 2024.²⁵ The prior calculations were updated to reflect the improved method.

- Monthly Total Price Table – 2001 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2002 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2003 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2004 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2005 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2006 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2007 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2008 (XLSX). (September 17, 2024).

²⁵ See the 2024 *Annual State of the Market Report for PJM*, Volume 2, Section 1: Introduction at 17 for more information; see also the Monitoring Analytics webpage at https://www.monitoringanalytics.com/data/pjm_price.shtml.

- Monthly Total Price Table – 2009 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2010 (XLSX). (September 17, 2024).
- Monthly Total Price Table – 2011 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2012 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2013 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2014 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2015 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2016 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2017 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2018 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2019 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2020 (XLSX). (September 17, 2024).
- Monthly Total Price Table - 2021 (XLSX) (September 17, 2024).
- Monthly Total Price Table - 2022 (XLSX). (November 15, 2024).
- Monthly Total Price Table - 2023 (XLSX). (November 15, 2024).
- Monthly Total Price Table - 2024 (XLSX). (November 15, 2024).

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 2024, 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. “Recent PJM Capacity Market Changes,” Ohio Manufacturers Association Energy Committee, Webinar, (February 28, 2024).
- Speaker. “Enforcers,” EBA 2023 Enforcers and Defenders Forum, Washington, D.C., (March 20, 2024).
- Speaker. “Role of the Market Monitor and the US Power Markets, MIT, Boston, MA, (April 25, 2024).
- Speaker. “Super Panel 1: What Keeps RTOs Up at Night?” Jenner Energy Conference, Washington, DC, (June 4, 2024).
- Speaker. “Super Panel 2: What Can We Do to Meet Skyrocketing Demand?” Jenner Energy Conference, Washington, DC, (June 4, 2024).
- Speaker. “PJM: Meeting Emerging Electricity Demand,” Pennsylvania House Environmental Resources and Energy Committee, Harrisburg, PA, (October 16, 2024).
- Speaker. “Capacity Auctions – What’s Next,” OPSI 2024 Annual Meeting, Columbus Ohio, (October 21, 2024).

- Speaker. “Did the 2025/26 Base Residual Auction send the appropriate price signal?” OPSI 2024 Annual Meeting, Columbus Ohio, (October 21, 2024).
- Speaker. “Meeting of OPSI Market Monitoring Advisory Committee with PJM Market Monitor and PJM,” OPSI 2024 Annual Meeting, Columbus Ohio, (October 22, 2024).
- Speaker. “Panel - Power Congestion Challenges and Nodal Trading,” Nodal Trader Conference, Washington, D.C., (October 25, 2024).
- Speaker. “Technical Conference on Resource Adequacy in Pennsylvania,” Pennsylvania, Public Utility Commission, Harrisburg, PA, (November 25, 2024).

FERC Proceedings

In 2024, 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. ER25-711-000, ER25-153-000, ER25-27-000, ER24-3059-000, ER24-2715-000, ER24-2139-000, ER24-2590-000, ER24-2497-000, ER24-2498-000, ER24-2500-000, ER24-2501-000, ER24-2425-000, ER24-2336-000, ER24-2103-000, ER24-2067-000, ER25-25-000, ER24-3146-000, ER24-3149-000, ER24-3148-000, ER24-1988-000, ER24-3061-000, ER24-1526-000, ER24-1528-000, ER24-1815-000, ER24-2864-000, ER24-1386-000, ER25-70-000, ER24-2681-000, ER24-2680-000, ER24-1243-000, ER24-1608-000, ER24-2589-000, ER24-2920-000, ER24-2271-000, ER24-2272-000, ER24-2273-000, ER24-1271-000, ER24-2603-000, ER24-1163-000, ER24-2132-000, ER24-1732-000, ER24-1659-000, ER24-787-000, ER24-788-000, ER17-2566-005, ER17-2566-000.).
- **Peak Market Activity Credit Requirements (Docket No. ER24-461).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (January 8, 2024). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (January 19, 2024).
- **PJM CIFP (Docket No. ER24-99).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (January 12, 2024). Answer of the Independent Market Monitor for PJM. (January 24, 2024). Request for Rehearing of the Independent Market Monitor for PJM. (February 29, 2024).
- **PJM MSOC (Docket No. ER24-98).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM. (January 16, 2024). Answer of the Independent Market Monitor for PJM. (January 25, 2024).
- **FTR Bilateral Reform (Docket No. ER24-374-001).** Comments of the Independent Market Monitor for PJM. (February 6, 2024).
- **Hunterstown 203 Filing (Docket No. EC24-42).** Comments of the Independent Market Monitor for PJM. (February 6, 2024).

- **Lackawanna Energy Center LOC Complaint (Docket No. EL24-64).** Answer Supporting PJM Answer of the Independent Market Monitor for PJM. (March 11, 2024).
- **PJM Energy Market Offers Revisions (Docket No. ER24-1387).** Protest of the Independent Market Monitor for PJM. (March 25, 2024). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (April 23, 2024).
- **IMM LC Complaint (Docket No. EL23-50).** Request for Rehearing of the Independent Market Monitor for PJM. (March 29, 2024).
- **LS Power OCC Complaint (Docket No. EL24-91).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (April 19, 2024).
- **203 Blanket Authorizations for Investment Companies (AD24-6).** Reply Comments of the Independent Market Monitor for PJM (April 25, 2024).
- **Arclight/Lordstown Section 203 Filing (Docket No. EC24-57).** Comments of the Independent Market Monitor for PJM. (April 26, 2024).
- **Affirmed Motion to Stay (Docket No. ER24-2995-001).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (December 16, 2024).
- **IMM Complaint re EE Payments (Docket No. EL24-126).** Answer and Motion for Leave to Answer and Motion for Summary Disposition of the Independent Market Monitor for PJM (August 15, 2024). Notice of Withdrawal of Complaint of the Independent Market Monitor for PJM (November 19, 2024).
- **JCA EE Complaint (Docket No. EL24-118).** Comments of the Independent Market Monitor for PJM. (July 10, 2024). Comments of the Independent Market Monitor for PJM (October 18, 2024).
- **EE Resources in the Capacity Market (Docket No. ER24-2995).** Comment of the Independent Market Monitor for PJM (September 27, 2024). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (October 14, 2024).
- **CPower EE Complaint (Docket No. EL24-128).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (August 20, 2024).
- **IMM Complaint EE Suppliers (Docket No. EL24-113).** Complaint of the Independent Market Monitor for PJM. (May 31, 2024). Answer of the Independent Market Monitor for PJM (June 14, 2024). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (August 6, 2024).
- **CEG Complaint (Docket No. EL25-20).** Answer and motion for Leave to Answer of the Independent Market Monitor for PJM. (December 20, 2024).

FERC Technical Conferences

- **Large Loads Co-Located at Generating Facilities (Docket No. AD24-11).** Testimony of Joseph E. Bowring (November 1, 2024).

Settlement Proceedings

In 2024, 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 2024, the MMU participated in settlement proceedings in numerous dockets for reactive capability rates.

- **Skipjack Solar Reactive (Docket No. ER22-2048-004).** Comments in Opposition to Offer of Settlement of the Independent Market Monitor for PJM. (January 9, 2024).
- **Big Plain Solar Reactive (Docket Nos. EL23-78 and ER23-1736).** Comments in Opposition to Offer of Settlement of the Independent Market Monitor for PJM. (January 29, 2024). Motion for Rejection of the Independent Market Monitor for PJM (January 29, 2024).
- **Flemington Solar Reactive (Docket Nos. EL23-32, et al).** Direct Testimony and Exhibits of the Independent Market Monitor for PJM. (February 14, 2024).
- **CRF (Docket Nos. EL21-91-003, -ER21-1635-005).** Comments in Opposition to Offer of Settlement of the Independent Market Monitor for PJM. (February 20, 2024). Comments in Opposition to Offer of Settlement of the Independent Market Monitor for PJM. (February 20, 2024). Motion for Interlocutory Appeal of the Independent Market Monitor for PJM. (March 28, 2024). Motion to Permit Interlocutory Appeal of the Independent Market Monitor for PJM. (April 1, 2024). Comments in Opposition to Second Offer of Settlement (September 3, 2024). IMM Offer of Settlement (November 10, 2024). Motion for Reconsideration (November 15, 2024).
- **Guernsey Power Reactive (Docket No. ER23-1760-000, -002).** Comments in Opposition to Offer of Settlement. (March 8, 2024).
- **NRG IR4 (Docket Nos. ER22-1539-0002 and ER23-2688-002).** Comments in Opposition to Offer of Settlement (April 22, 2024).
- **Stony Creek (EL23-98-000).** Comments in Opposition to Stony Creek Reactive Settlement (May 9, 2024).
- **Newark Energy Center Settlement (ER15-1706-005; EL23-76-001).** Comments in Opposition to Offer of Settlement (May 22, 2024).
- **EE Post-Installation M&V Complaint (EL24-113).** Offer of Partial Settlement to State Entities (September 30, 2024). Reply Comments re Partial Settlement (October 30, 2024).

State Proceedings

In 2024, the MMU addressed market topics in proceedings at state public utility commissions and state legislatures:

Pennsylvania House Environmental Resources and Energy Committee

- PJM: Emerging Electricity Demand. (October 16, 2024).

Pennsylvania Public Utility Commission

- Technical Conference on Resource Adequacy in Pennsylvania. (November 24, 2024).

Maryland Public Utility Commission

- Senate Bill 1 Co-location Study. Docket PC 61. (September 24, 2024).

Court Proceedings

In 2024, the MMU filed an appeal of the FERC decision denying its complaint regarding the refusal to enforce the MMU's ability to attend committee meetings, including Liaison Committee meetings.

United States Court of Appeals for the District of the Columbia

- Liaison Committee Appeal (USCA D.C. Cir. No. 24-1164). Petition for Review of Denial of IMM's Liaison Committee Complaint, USCA D.C. Cir. (May 29, 2024). IMM Initial Brief with Addendum (December 16, 2024).

Participation in Stakeholder Process

During 2024, 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)

- Schedule Selection (June 27, 2024).
- IMM EE Package Proposal (July 24, 2024).

Members Committee/MC Webinar (MC)

- Market Monitor Report (January 22, 2024).
- Market Monitor Report (February 20, 2024).
- Market Monitor Report (March 18, 2024).
- Market Monitor Report (May 20, 2024).
- Market Monitor Report (June 17, 2024).
- Market Monitor Report (July 22, 2024).
- Market Monitor Report (September 23, 2024).
- Market Monitor Report (October 28, 2024).
- Market Monitor Report (November 19, 2024).

²⁶ OATT Attachment M § IV.D.

- RRI and Surplus Interconnection Process (November 21, 2024).
- Proposed Capacity Market Adjustments and Alignment of Capacity Market Rules to Effectuate the Removal of Reactive Service Revenues (November 21, 2024).
- Market Monitor Report (December 16, 2024).

Members Committee Special Session – Informational MC

- 2023 State of the Market Report for PJM (April 30, 2024).

Market Implementation Committee (MIC)

- EE Education (January 10, 2024).
- EE Education (February 7, 2024).
- EE Addback Education (April 3, 2024).
- EE Education (May 1, 2024).
- EE Education (June 19, 2024).
- Tracking Ramp Limited Calculation (June 10, 2024).
- IMM EE Package Proposal (July 10, 2024).
- Demand Response Availability Window IMM Education (August 7, 2024).
- Demand Response Availability Window IMM Education (September 11, 2024).
- Black Start Base Formula Rate (December 4, 2024).
- Capacity Import Education (December 4, 2024).
- FERC Order No. 940 (December 4, 2024).

MIC Special Session – Evaluation of Energy Efficiency Resources

- EE Education (May 16, 2024).

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

- Tracking Ramp Limited Desired Recap (May 13, 2024).
- Tracking Ramp Limited Desired Calculations (June 10, 2024).
- Tracking Ramp Limited Desired Calculation Example (September 10, 2024).
- Generation Deviation Changes (October 11, 2024).
- Flexible Resources BOR Treatment (November 15, 2024).
- Operating Reserve Clarification Issue - PJM/IMM Proposal (December 9, 2024).

Operating Committee (OC)

- July 8, 2024 Synchronized Reserve Performance Inquiry Results (October 10, 2024).

Planning Committee – PC

- CIR Transfer Efficiency - IMM Package (July 16, 2024).
- CIR Transfer Efficiency IMM Package (September 12, 2024).

- CIR Transfer Efficiency IMM Package v2 (October 8, 2024).
- CIR Transfer Efficiency IMM Package (October 8, 2024).

Finance Committee (FC)

- Monitoring Analytics (MA) Audited Financials for 2023 (March 27, 2024).
- IMM Preliminary Budget for 2025 (August 22, 2024).
- IMM Proposed Budget for 2025 (September 16, 2024).

Deactivation Enhancements Senior Task Force (DESTF)

- RMR History. (February 15, 2024).
- Part V (RMR) Compensation (April 15, 2024).
- Part V (RMR) CETO Impacts (August 19, 2024).

Reserve Certainty Senior Task Force (RCSTF)

- Outage and Derate Reporting (January 17, 2024).
- IMM Proposal: Reserve Deployment and Compensation (March 13, 2024).
- IMM Proposal: Reserve Deployment (April 17, 2024).
- 30 Minute Reserve Requirement (June 12, 2024).
- July 8, 2024, Synchronized Reserve Performance Inquiry Results (October 16, 2024).

PJM-MISO Joint Initiative

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

DER and Inverter Based Resources Subcommittee (DIRS)

The MMU participated in discussions concerning public distribution microgrids, solar/battery hybrid resources, and FERC Order 2222 concerning the integration of distributed energy resources in the PJM markets.

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 21, 2024. 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 6, 2024. The MMU requested comments from stakeholders concerning the MMU’s implementation of the PJM Market Monitoring Plan. The MMU discussed: the Commission’s ANOPR: Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection (Docket RM21-17); Stage 1A ARR allocation issues and concerns with PJM’s ARR/FTR proposal; principles related to operating reserve demand curves and circuit breakers; the effect of fast start pricing on the PJM energy market for the period from September through November 2021; and the calculation of capacity Market Seller Offer Caps and associated issues.