



Monitoring
Analytics

**Activities of the
Market Monitoring Unit:
2016**

Independent Market Monitor for PJM

July 25, 2017

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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 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: reporting, monitoring and market design.³ These functions are interrelated and overlap. The PJM Market Monitoring Plan establishes these functions, providing 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 actual or potential exercise of market power or violation of the market rules by a market participant; PJM’s implementation of the PJM Market Rules or operation of the PJM markets; and such matters as are necessary to prepare reports.⁴

The MMU performs its reporting function primarily by issuing and filing annual and quarterly state of the market reports, and reports on market issues. The MMU also issues detailed reports on specific topics. The MMU issues reports on RPM auctions. In other reports, the MMU responds to the needs of FERC, state regulators, or other regulatory authorities, in order to assist policy development, decision making in regulatory proceedings, and in support of investigations. The MMU also participates in FERC technical conferences as appropriate.

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 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.⁵ The MMU has direct, confidential access to the FERC.⁶ The MMU may also refer matters to the attention of state commissions.⁷

The MMU monitors market behavior for violations of FERC Market Rules.⁸ The MMU will investigate and refer "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..."⁹ ¹⁰ The MMU also monitors PJM for compliance with the rules, in addition to market participants.¹¹

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 is set to the lower of its price-based or cost-based offer. This prevents the exercise of market power and ensures competitive pricing, provided that the cost-based offer accurately reflects short run marginal costs. Cost-

⁵ OATT Attachment M § IV.

⁶ OATT Attachment M § IV.K.3.

⁷ OATT Attachment M § IV.H.

⁸ OATT Attachment M § II(d)&(q) ("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; 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... "PJM Market Rules" 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.")

⁹ 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.

¹⁰ OATT Attachment M § II(h-1).

¹¹ OATT Attachment M § IV.C.

based offers for the energy market and the regulation market are based on short run marginal costs, also referred to as incremental costs.¹² 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.

In order to perform its role in PJM market design, the MMU evaluates existing and proposed PJM Market Rules as well as the design 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 or working groups 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 also recommends 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 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 Synchronized Reserve Market, the Day-Ahead Scheduling Reserve Market and the Annual, Monthly, Long Term and Balance of Planning Period Auction Markets in Financial Transmission Rights (FTRs). This ongoing market analysis and monitoring forms the basis for all MMU activities.

If the MMU determines that it has sufficient credible information that a participant's market behavior requires investigation it will submit a formal confidential referral of such behavior to the FERC Office of Enforcement.¹⁸ Such referrals typically include

¹² See OATT Attachment M–Appendix § II.A.

¹³ OATT Attachment M § IV.D.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ OATT Attachment M § VI.A.

¹⁸ OATT Attachment M § IV.I.

substantial analysis of the issue referred. After a referral the MMU provides further assistance to FERC staff at their request.

The MMU monitors participant development of inputs to prospective mitigation, 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 Performance resources, including unit specific offer caps and risk premia; fuel costs, cost-based offers and operating parameters in the energy markets, including eligibility for Frequently Mitigated Unit (FMU) adders. 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 applies the FTR forfeiture rule, a retroactive mitigation measure, the results of which are reviewed by PJM prior to billing PJM members. The MMU monitors compliance with the must offer rule in RPM. The MMU monitors compliance with the must offer rule for capacity resources in the Day-Ahead Energy Market. The MMU monitors costs included in black start service rates. The MMU reviews proposed deactivations to identify potential market power issues. The MMU prepares monthly notifications to PJM generation owners regarding the status of Frequently Mitigated Units per Schedule 1, Section 6.4.2 of the PJM Operating Agreement.

Market Participant Discussions

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.”¹⁹ In fulfilling this role in 2016, the MMU monitored participant behavior and discussed relevant matters with FERC staff and with market participants. In addition, the MMU received and investigated confidential complaints. The provision of additional details on these issues is governed by confidentiality rules.

The MMU engaged in extensive discussions with all generating unit owners about their fuel cost policies and requirements for compliance with Market Rules.

In 2016, the MMU received confidential complaints and when appropriate, publicly proposed rule modifications while maintaining market participant confidentiality. A confidential complaint can reveal flaws in existing rules or procedures.

In addition to discussing notices and/or referrals on a confidential basis in 2016, the MMU engaged in numerous discussions with market participants about issues related to participant behavior in the PJM markets.

The MMU was involved, along with PJM staff, in reviewing the generator parameter adjustment requests for Capacity Performance Resources, and in discussing the technical

¹⁹ OATT Attachment M, § IV.J.1.

issues raised by generation owners for the adjustment requests. The MMU provided its input on PJM's criteria for determining the parameter limits for Capacity Performance resources including areas of agreement and disagreement.

The MMU engaged in discussions with generators, generator coalitions, demand side providers, demand side coalitions, industrial customer coalitions, and advocates for customers.

Communications with Regulators

The MMU provides information to regulators, subject to compliance with applicable rules protecting confidentiality. In 2016, the MMU:

- Communicated with FERC staff regarding current issues.
- Provided data to FERC staff.
- Communicated with state public utility commissions regarding current issues.
- Communicated with the Organization of PJM States, Inc. (OPSI) regarding current issues.
- Communicated with state consumer advocates.

Reporting²⁰

Reports and Analyses

The state of the market reports fulfilled both the tariff reporting requirements and the criteria listed in the Commission policy by providing a comprehensive analysis of the markets within PJM and an assessment of the competitiveness of each market.²¹ The reports also provided recommendations regarding retention and enhancement of market rules.

- The 2015 State of the Market Report for PJM (March 12).
- The 2016 Quarterly State of the Market Report for PJM: January through March (May 12).
- The 2016 Quarterly State of the Market Report for PJM: January through June (August 11).
- The 2016 Quarterly State of the Market Report for PJM: January through September (November 12).

The MMU issued the following reports in 2016:

- New Generation in the PJM Capacity Market: MW and Funding Sources for Delivery Years 2007/2008 through 2018/2019 (May 4).

²⁰ Public reports by the MMU are posted at <<http://www.monitoringanalytics.com>>.

²¹ OATT Attachment M § VII.A

- Analysis of the 2018/2019 RPM Base Residual Auction Revised (July 6).
- Activities of the Market Monitoring Unit 2015 (August 1).
- Analysis of the 2019/2020 RPM Base Residual Auction – Revised (August 31).
- IMM Analysis of Replacement Capacity for RPM Commitments: June 01, 2007 to June 01, 2016 (December 27).

The MMU issued the following Market Messages in 2016:

- Catherine Tyler Mooney and John Hyatt Join Monitoring Analytics, LLC (February 19).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2016/2017, 2017/2018 and 2018/2019 Delivery Years (February 26).
- Press Release - 2015 State of the Market Report for PJM (March 10).
- Members Committee Letter – 2015 State of the Market Report for PJM (March 10).
- Black Start Data Submittal to IMM: MIRA System Now Open (April 26).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2017/2018, 2018/2019 and 2019/2020 Delivery Years (May 9).
- Press Release - 2016 Quarterly State of the Market Report for PJM: January through March (May 12).
- Members Committee Letter – 2016 Quarterly State of the Market Report for PJM: January through March (May 12).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2017/2018, 2018/2019 and 2019/2020 Delivery Years (July 7).
- Press Release - 2016 Quarterly State of the Market Report for PJM: January through June (August 11).
- Members Committee Letter – 2016 Quarterly State of the Market Report for PJM: January through June (August 11).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2017/2018, 2018/2019 and 2019/2020 Delivery Years (August 26).
- Press Release - 2016 Quarterly State of the Market Report for PJM: January through September (November 10).
- Members Committee Letter – 2016 Quarterly State of the Market Report for PJM: January through September (November 10).
- Generation Capacity Resources in PJM Region Subject to RPM Must Offer Obligation for 2017/2018, 2018/2019 and 2019/2020 Delivery Years (December 22).

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 2016, the MMU shared the results of its analyses, experience and knowledge regarding competitive markets, market monitoring and market power mitigation at conferences and meetings.

- Participant. FERC Office of Enforcement meetings for market monitors;
- Participant. Meetings with FERC staff, the Organization of PJM States, Inc. (OPSI) and state commission staffs.
- Speaker. EPSA Board Meeting (January 20).
- Speaker. OPSI, Organization of PJM States, Spring Meeting Chicago, IL (April 11-12).
- Speaker. Platts Northeast Power and Gas Conference Midtown NY, NY, (May 24-25).
- Speaker. EBA, Energy Bar Association, Annual Conference Washington, D.C. (June 7-8).
- Speaker. US DOE, Department of Energy, Review Washington, D.C. (June 9-10).
- Speaker. WPTF. Western Power Trading Forum, Washington, D.C. (August 12).
- Speaker. PJM Grid 20/20 (August 18).
- Speaker: PJM Market Summit. Philadelphia, PA (September 7).
- Speaker: HEPG. Harvard Electric Policy Group, Washington, D.C. (October 13).
- Speaker: Platts the Nodal Trader. New York, NY (October 27).
- Speaker. WPTF. Western Power Trading Forum, La Quinta, CA (November 16).

Market Design

Attachment M, Section IV.D provides “if the Market Monitoring Unit detects a design flaw or other problem with the PJM Markets, the Market Monitoring Unit may initiate and propose, through the appropriate stakeholder processes, changes to the design of such market. In support of this function, the Market Monitoring Unit may engage in discussions with stakeholders, State Commissions, PJM Management, or the PJM Board; participate in PJM stakeholder meetings or working groups regarding market design matters; publish proposals, reports or studies on such market design issues; and make filings with the Commission on market design issues.”²² In FERC Order No. 719 and its order on compliance for PJM, the Commission has emphasized this MMU core function.²³

²² OATT Attachment M § IV.D.

²³ See Order No. 719 at P 357 (“[W]e do expect the MMU to advise the Commission, the RTO or ISO, and other interested entities of its views regarding any needed rule and tariff changes. Likewise, in the event an RTO or ISO files for a proposed tariff change with which the MMU disagrees, we expect the RTO or ISO to inform the Commission of that disagreement, although not necessarily to include a written proposal with its filing.”), codified at 18 C.F.R. § 35.28 (g)(3)(ii)(A) (“The Market Monitoring Unit must perform the following core functions: (A) Evaluate existing and proposed market rules, tariff provisions and market design elements and recommend proposed rule and tariff changes to the Commission-Approved independent system operator or regional transmission organizations, to the Commission’s Office of Energy Market Regulation staff and to other interested entities such as state commissions and market participants”). In its order of December 18, 2009, on PJM’s filing in

The MMU made extensive recommendations related to market design in the State of the Market Reports and in the Base Residual Auction Reports.^{24 25}

FERC Proceedings

In 2016, the MMU intervened in the following proceedings at the FERC and filed substantive pleadings, most of which addressed market design issues:

- **Reactive Capability.** The MMU actively participated in numerous settlement and technical conferences with FERC staff in an effort to achieve more accurate compensation for reactive capability within the current FERC approach, including:
 - Reactive Supply Compensation NOPR (AD16-17).
 - Talen Energy Marketing, LLC (EL16-44 et al.).
 - Talen Energy Marketing, LLC (ER16-1456).
 - Constellation Power Source Generation, LLC (EL16-57 et al.).
 - Beaver Dam Energy LLC (EL16-51 et al.).
 - Roundtop Energy LLC (ER16-1004).
 - TransCanada Power Marketing, Ltd. (EL16-32).
 - NRG Power Midwest LP (EL16-72).
 - Midwest Generation, LLC (EL16-66).

compliance with Order No. 719, the Commission required additional changes to ensure that the PJM Market Monitoring Plan fully conforms to Order No. 719's requirements concerning the role of MMUs in market design. 125 FERC ¶61,250 at P 113 (2009) ("PJM's OATT fails to specify the MMU's responsibility for evaluating existing and proposed market rules, tariff provisions and market design elements, and for recommending proposed rule and tariff changes to PJM, the Commission's Office of Energy Market Regulation and to other interested entities (i.e., state commissions and market participants). Attachment M, section IV.C, in this regard, provides only that, if the MMU "detects a design flaw or other problem with the PJM Markets," it may initiate and propose changes to such market design. This language, however, is limited to "design" issues relating to existing provisions and thus does not address the full scope of the core MMU function addressed by the Commission in Order No. 719").

²⁴ The 2015 State of the Market Report for PJM (March 12, 2016). The 2016 Quarterly State of the Market Report for PJM: January through March (May 12, 2016). The 2016 Quarterly State of the Market Report for PJM: January through June (August 11, 2016). The 2016 Quarterly State of the Market Report for PJM: January through September (November 12, 2016). All reports are available at http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2016.shtml.

²⁵ Analysis of the 2018/2019 RPM Base Residual Auction Revised (July 6, 2016). Analysis of the 2019/2020 RPM Base Residual Auction – Revised (August 31, 2016). BRA reports are available at <http://www.monitoringanalytics.com/reports/Reports/2016.shtml>

- Northampton Generating Company, L.P. (EL16-65).
- Lakewood Cogeneration, L.P. (EL16-54).
- Panda Liberty LLC (EL16-90 et al.).
- Panda Patriot LLC (EL16-103 et al.).
- Virginia Electric and Power Company (EL16-89 et al.).
- Elwood Energy LLC (EL16-98 et al.).
- Armstrong Power (EL16-79 et al.).
- Calumet Energy Team, LLC (EL16-80 et al.).
- Northeastern Power Company (EL16-81 et al.).
- Pleasants Energy, LLC (EL16-82 et al.).
- Troy Energy, LLC (EL16-83 et al.).
- Logan Generating Company, L.P. (ER16-2217 et al.).
- FPL Energy MH50, L.P. (EL17-19).
- GenOn Energy Management LLC (EL16-118).
- **CAPS Funding (ER16-561).** Comments of the Independent Market Monitor for PJM (January 8). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (January 29).
- **Capacity Performance (ER15-623).** Response of the Independent Market Monitor for PJM (January 13). Joint Statement of PJM Interconnection, L.L.C. and the Independent Market Monitor for PJM (February 11). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (June 24).
- **Connected Entity NOPR (RM15-23).** Comments of the Independent Market Monitor for PJM (January 27).
- **Offer Flexibility (EL15-73-000 and ER16-372-000).** Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (January 27).
- **UTCs (Docket No. EL14-37).** PJM Interconnection, L.L.C., Docket No. EL14-37-000 Joint PJM/IMM Informational Letter (February 11).
- **CBL Testing (ER16-873).** Comments of the Independent Market Monitor for PJM (February 23). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (March 22).
- **EPSA Complaint (EL16-33 et al.).** Comments of the Independent Market Monitor for PJM (February 23).
- **Investigation of Net Revenues (EL14-94).** Motion for Clarification, or, in the Alternative Request for Rehearing of the Independent Market Monitor for PJM (March 28).
- **Hourly Offers (ER16-372).** Comments of the Independent Market Monitor for PJM (March 28). Motion for Extension of the Independent Market Monitor for PJM (August 16). Protest of the Independent Market Monitor for PJM (September 16). Answer and Motion for Leave to Answer of the Independent Market Monitor for

PJM (October 26). Answer of the Independent Market Monitor for PJM (November 29).

- **FTR/ARR Technical Conference (ER16-121 and EL16-6-001)**. Reply Comments of the Independent Market Monitor for PJM (March 29). Second Reply Comments of the Independent Market Monitor for PJM (April 8). Errata to Second Reply Comments (May 2). Request for Rehearing of the Independent Market Monitor for PJM (October 14). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (December 2).
- **FTR Compliance Filing (EL16-6-003)**. Comments of the Independent Market Monitor for PJM (December 5). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (December 20).
- **Offer Cap NOPR (RM16-5)**. Comments of the Independent Market Monitor for PJM (April 4).
- **Price Formation Technical Conference (AD14-14)**. Comments of the Independent Market Monitor for PJM (April 6).
- **MOPR Complaint (Docket No. EL16-49)**. Comments of the Independent Market Monitor for PJM (April 11). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (April 28). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (June 13).
- **TranSource Complaint v PJM re Studies of ARR Projects (Docket No. EL15-79)**. Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (April 18).
- **Offer Caps (RM16-5)**. Reply Comments of the Independent Market Monitor for PJM (April 19).
- **Ramp Rate Related Excuses for Nonperformance in Capacity Performance (Docket No. ER16-1336)**. Comment of the Independent Market Monitor for PJM (April 22). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (May 11). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (July 14).
- **Barriers to the Participation of Batteries in RTO Markets (Docket No. AD16-20)**. Comments of the Independent Market Monitor for PJM (June 6).
- **Roundtop and Beaver Energy (EL16-51 & ER16-1004, Not Consolidated)**. Reply Comments of the Independent Market Monitor for PJM (July 14).
- **Constellation Power Settlement (EL16-57)**. Response to Offer of Settlement (September 7). Notice of Withdrawal of Opposition of Settlement of the Independent Market Monitor for PJM (October 3).
- **Virginia Electric and Power Company Complaint (EL16-109)**. Motion for Extension of the Independent Market Monitor for PJM (September 9). Comments of the Independent Market Monitor for PJM (September 30). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (October 31).

- **Customer Baseline Load (ER16-2460).** Comments of the Independent Market Monitor for PJM (September 12). IMM Answer and Motion for Leave to Answer (October 7).
- **Data Collection NOPR (Docket No. RM16-17).** Comments of the Independent Market Monitor for PJM (September 19).
- **Competitive Transmission Development (Docket No. AD16-18).** Comments of the Independent Market Monitor for PJM (October 3).
- **AEP Cost-Based Offers (Docket No. EL17-22).** Petition for Order Directing Production of Information (November 22). Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM (December 19).
- **Manual 18 Revisions (Docket No. EL17-23).** Complaint of the Independent Market Monitor for PJM (November 22). Withdrawal of Complaint of the Independent Market Monitor for PJM (December 22).
- **CP Aggregate Rules (Docket No. ER17-367).** Comments of the Independent Market Monitor for PJM (December 8).
- **Market Power Analysis NOI (RM16-21).** Comments of the Independent Market Monitor for PJM (December 12).
- **Batteries NOPR (RM16-23).** Answer of the Independent Market Monitor for PJM (December 16).

FERC Technical Conferences

- **FTR/ARR Technical Conference Comments (ER16-121).** Comments of the Independent Market Monitor for PJM (April 4).
- **Reactive Supply Compensation (AD16-17).** Comments of the Independent Market Monitor for PJM (July 29). Reply Comments of the Independent Market Monitor for PJM (September 20).

Court Proceedings

In 2016, the MMU made the following court filings:

- **Hughes v. PPL EnergyPlus (S. Ct. Case No. 14-614 et al.).** Brief of Amicus Curiae Monitoring Analytics, LLC, Acting in its Capacity as the Independent Market Monitor for PJM, in Support of Respondents (January 19, 2016).
- **Duke Energy v. FERC (D.C. Cir. Case No. 16-1133).** Brief of Intervenors PJM Interconnection, L.L.C. and the Independent Market Monitor for PJM in Support of Respondent (October 18, 2016).
- **ODEC v. FERC (D.C. Cir. Case No. 16-1111).** Reply of the Independent Market Monitor for PJM (May 27); Brief of Intervenor-Movant, Independent Market Monitor for PJM in Support of Respondent (November 4, 2016).
- **AEMA v. FERC (D.C. Cir. Case No. 16-1234).** Brief of Intervenors PJM Interconnection, L.L.C.; Calpine Corporation; CPV Power Holdings, LP; Exelon Corporation; GenOn Energy Management, LLC; LS Power Associates, L.P.;

Independent Market Monitor For PJM; NRG Power Marketing LLC; PJM Power Providers Group; PSEG Energy Resources & Trade LLC; PSEG Power LLC; and Public Service Electric and Gas Company, in Support of Respondent (December 9, 2016).

State Proceedings

In 2016, the MMU addressed the following market topics in proceedings at state public utility commissions, in response to requests from state public utility commissions or at hearings at state legislatures:

FirstEnergy Ohio

- FE Ohio (Ohio P.U.C. No. 14-1297). On February 16 and 26, the Market Monitor submitted a brief and a reply brief arguing that OPUC should not approve FE's proposed fourth electric security plan (ESP IV) because it constitutes noncompetitive subsidies that are inconsistent with PJM's wholesale market design. Post-Hearing Brief of the Independent Market Monitor for PJM (February 12); Post-Hearing Reply Brief of the Independent Market Monitor for PJM (February 26).

AEP Ohio

- Ohio Power Co. (AEP) PPA Rider (Ohio P.U.C. No. 14-1693). Post-Hearing Brief of the Independent Market Monitor for PJM (February 1 and 8). On February 1 and 8, the Market Monitor submitted a brief and reply brief arguing that the Ohio PUC should not approve AEP's request for approval of certain PPAs because they constitute noncompetitive subsidies that are inconsistent with PJM's wholesale market design.

DPL Ohio

- DPL Ohio (Ohio P.U.C. No. 16-0395-EL-SSO). Direct Testimony of Joseph E. Bowring on behalf of the Independent Market Monitor for PJM (November. 21), explaining why approval of the DMR, the Reconciliation Ride and the Clean Energy Rider would constitute a subsidy that is inconsistent with competition in the PJM wholesale power market.

Participation in Stakeholder Process on PJM Market Rules

During 2016, the MMU presented information, analysis and recommendations to PJM Committees.²⁶

DRS

In 2016, the MMU engaged in discussions with PJM and stakeholders concerning changes to the registration process for Demand Resources. The MMU proposed a

²⁶ OATT Attachment M § IV.D.

package allowing registrations to enter and leave during a delivery year while ensuring the resources were adequately tested and measured to ensure deliverability during the entire delivery year.

The MMU contacted all diesel generators participating in the PJM Demand Response program to verify that all were in compliance with the new EPA emissions regulation. Resources that were not compliant with the new EPA regulations were removed from portfolios.

EMUSTF

In 2016, PJM reinstated the Energy Market Uplift Task Force after a nine months hiatus. The MMU reviewed and updated its solution packages for phase 1 (energy uplift credit calculations) and phase 2 (energy uplift charges allocation). The MMU and PJM proposed a joint package including most of the original MMU's recommendations but not including the elimination of the day-ahead operating reserve credit calculation and reforming the allocation of the day-ahead operating reserve charges. The joint proposal included allocation of energy uplift to UTCs and the elimination of IBT netting. The MMU also proposed a phase 3 package for the allowable biddable nodes for decrement bids, incremental offers and up to congestion transactions.

FC

- MA 2015 Financial Results (March 30).
- MA 2015 Financial Statements (March 30).
- MA 2017 Preliminary Budget (August 24).
- MA 2017 Proposed Budget (September 28).

JCM (MISO-PJM Joint and Common Market)

The MMU participated in discussions concerning various PJM/MISO seams issues including cross boarder transmission planning, pseudo ties, interface pricing, revisions to the firm flow entitlement freeze date, coordinated transaction scheduling and the modelling of the Michigan-Ontario PARs.

MC Webinar

- Market Monitor Report for the MC (January 25).
- Market Monitor Report for the MC (February 22).
- Market Monitor Report for the MC – Special SOM Session (March 31).
- Market Monitor Report for the MC (April 25).
- Market Monitor Report for the MC (June 27).
- Market Monitor Report for the MC (September 26).
- Market Monitor Report for the MC (October 24).
- Market Monitor Report for the MC (November 14).

MIC

The MMU presented its recommendation that payments for tier 1 synchronized reserve should only be made for spinning event response to the OC and to the MIC.

The MMU participated in discussions regarding changes to OA Schedule 2 and Manual 15 with respect to fuel cost policies and cost offers beginning in May 2016 through December 2016. The MMU provided analysis of PJM's proposed changes as well as MMU recommendations.

- Manual 15 Changes (June 8).
- New Generation in the PJM Capacity Market: MW and Funding Sources for Delivery Years 2007/2008 through 2018/2019 (July 13).
- Fuel Cost Policy Issue Proposal (August 12).
- Capacity Release Proposal (September 14).
- Operating Parameter Definitions: PJM/IMM joint proposal (October 5).
- Manual 18 Capacity Replacement Rule Revisions: PJM/IMM joint proposal (December 14).

MIC Special Session. Operating Parameter Definitions

- Parameter Definitions (Long Term Proposal) (February 24).

MIC Special Session. Manual 15

- Hourly Offer Order Compliance Filing and Manual 15: Fuel Cost policies and Cost Offers (July 27).
- Schedule 2 – Components of Cost (August 4).
- Attachment M – Appendix (August 4).
- Hourly Offer Order Compliance Filing: Fuel Cost Policies and Cost Offers (August 4).

MIC Special Session. Order 825 Shortage Pricing

- IMM Response to Transmission Constraint Penalty Factors (October 26).

MIC Special Session. Spot Import Transmission

- The MMU participated in discussions regarding the availability of spot import transmission service at the NYISO interface.

MRC

- The MMU raised issues related to changes to OA Schedule 2 and Manual 15 with respect to fuel cost policies and cost offers beginning in August 2016 through November 2016. The MMU provided analysis of PJM's proposed changes as well as its own recommendations.
- The MMU presented proposed revisions to Manual 18: Capacity Market regarding early replacement transactions. The committee endorsed the proposed revisions (December 22).

RMISTF (Regulation Market Issues Task Force)

The RMISTF is a subgroup of the MRC charged with examining and recommending solutions to identified market design issues in the regulation market.

- The MMU worked with PJM to develop a joint proposal (PJM/Market Monitor joint proposal) to correct a number of flaws with PJM's Regulation Market. The proposal included a correct definition of the marginal benefit factor (MBF) function that describes the engineering substitutability between RegA and RegD. The proposal would consistently apply the resulting MBF throughout the market design, from optimization to settlement.
- The MMU and PJM reviewed improvements to regulation market rules with respect to performance scoring and the calculation of lost opportunity costs.
- The MMU and PJM made numerous presentations of various aspects of their proposal on how to define and apply the MBF in order to address issues with the regulation market.
- The final version of the MMU/PJM joint proposal was presented to the Regulation Market Issues Senior Task Force (RMISTF) on October 16, 2016.

SCRSTF (Seasonal Capacity Resources Senior Task Force)

In 2016, the MMU engaged in discussions with PJM and stakeholders concerning options for a seasonal capacity product design.

URMSTF (Underperformance Risk Management Senior Task Force)

- The MMU engaged in discussions with stakeholders and PJM concerning appropriate level of risk faced by Capacity Performance resources. The MMU presented its proposal for rule changes to strengthen incentives for the Capacity Performance product.
- The MMU presented its proposal for rule changes to prevent abuse of the retroactive replacement transaction rules.
- The MMU presented its proposal for the External Capacity Performance Enhancements problem statement and engaged in discussions with stakeholders concerning the modeling and participation of external generation capacity in PJM.

Data Postings

Marginal Fuel Posting

- 201511 Marginal Fuel Postings.csv (January 7).
- 201512 Marginal Fuel Postings.csv (February 5).
- 201601 Marginal Fuel Postings.csv (March 3).
- 201602 Marginal Fuel Postings.csv (April 7).
- 201603 Marginal Fuel Postings.csv (May2).

- 201604 Marginal Fuel Postings.csv (June 1).
- 201605 Marginal Fuel Postings.csv (July1).
- 201606 Marginal Fuel Postings.csv (August 1).
- 201607 Marginal Fuel Postings.csv (September 2).
- 201608 Marginal Fuel Postings.csv (October 3).
- 201609 Marginal Fuel Postings.csv (November 1).
- 201610 Marginal Fuel Postings.csv (December 5).

PJM Load by State

- PJM Load by State – 2016 (October 31).

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.”

In 2016, the MMU attended the OPSI Spring Meeting April 11 – 12th and met with the OPSI Advisory Committee on Wednesday, October 19, 2016.

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 MMUAC succeeded the PJM Market Monitoring Advisory Committee ("MMAC").

The Market Monitor convened a meeting of the MMUAC on December 2, 2016. In addition to requesting comments from stakeholders concerning the MMU's implementation of the PJM Market Monitoring Plan, the MMU discussed transmission penalty factors, the MMU's review of fuel cost policies, participation of storage resources in PJM markets, and the MMU's position on the procurement of reactive services in PJM markets.