PJM Response to the 2022 State of the Market Report

September 2023

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Contents

Introduction

PJM would like to express its appreciation for the comprehensive and thorough analysis of the PJM markets presented by Monitoring Analytics in the 2022 State of the Market Report (SOM). The report serves as a valuable source of information and analysis concerning each of the markets operated by PJM. PJM encourages stakeholders to carefully review the document and utilize the detailed data provided in the report to better understand the different aspects of the PJM markets.

The SOM contains 245 recommendations, which offer the perspective of Monitoring Analytics, the Independent Market Monitor (IMM) or Market Monitoring Unit (MMU) for PJM, on potential changes to the PJM market design, rules and administration. These recommendations aim to enhance the competitiveness, efficiency and durability of PJM's markets. The purpose of this document is to provide a concise representation of PJM's responses on the IMM's new recommendations, including points of agreement or disagreement, and the rationale behind our views. This will help stakeholders better understand a range of perspectives and inform ongoing discussions.

In this response, PJM will specifically review the 12 new recommendations from 2022 report and provide PJM's initial responses concerning the applicability of each recommendation to the current market and any potential next steps for pursuing design enhancements related to the recommendation. Many of the recommendations are related to stakeholder engagements that are currently in process, and such ongoing discussions will also be referenced in the responses below.

Additionally, this response includes a categorization of the SOM recommendations based on their status, as well as an appendix providing a complete list of the recommendations identified by their section in the SOM report.

PJM looks forward to engaging in productive discussions on these topics with members, Monitoring Analytics and other stakeholders, as it remains committed to maintaining forward progress toward more competitive and efficient wholesale electricity markets.

Responses to New Recommendations From the 2022 SOM Report

Energy Market Recommendations

Market Power Mitigation in the Day-Ahead Energy Market

The MMU recommends that PJM modify the process of applying the TPS test in the day-ahead energy market to ensure that all local markets created by binding constraints are tested for market power and to ensure that market sellers with market power are appropriately mitigated to their competitive offers.

PJM Response

PJM acknowledges the IMM's recommendation to modify the process of applying the Three Pivotal Supplier (TPS) test in the PJM Day-Ahead Market to ensure that all local markets created by binding constraints are tested for market power, and that market sellers with market power are appropriately mitigated to their competitive offers. PJM recognizes the importance of robust market power mitigation measures in maintaining a competitive and efficient energy market.

PJM understands the concerns raised by the IMM regarding potential issues with the application of market power mitigation in the Day-Ahead and Real-Time energy markets when market sellers fail the TPS test. In the 2022 SOM, the IMM highlights the absence of explicit rules governing market structure or the exercise of market power in the aggregate energy market and the lack of Tariff or manual language that defines in detail the application of the TPS test and offer capping in the Day-Ahead Market and the Real-Time Market.

More broadly, this recommendation concerns a subset of issues related to a June 17, 2021, FERC Order to Show Cause, in which the Commission found PJM's Open Access Transmission Tariff appeared to allow market sellers to circumvent being subject to parameter-limited offers.[1]

As PJM described in its response to the Federal Energy Regulatory Commission (FERC), PJM's current process is designed to commit and dispatch resources based on their lowest total system production cost. The existing market power mitigation rules include limitations for operating parameters to prevent market power exertion through the submission of inflexible operating parameters.[2] PJM commits generation resources having market power in the Day-Ahead Market using the "market-based offer or cost-based offer which results in the lowest overall system production cost," and commits generation resources having market power in the Real-Time Market using the "market-based or cost-based schedule that results in the lowest dispatch cost," assuming that the generation resources are operating at their minimum economic output level. The goal of picking an offer schedule that results in the lowest total system production cost is to meet expected loads at the lowest cost to consumers.

PJM is open to making changes to its market power mitigation processes in response to stakeholder discussion and consensus on this topic or action by FERC. Market power mitigation generally is done differently in other ISOs/RTOs,

[1] PJM Interconnection, L.L.C., Order to Show Cause, 175 FERC ¶ 61,231, June 17,2021

[2] PJM Interconnection, L.L.C., Answer of PJM Interconnection, L.L.C., Docket No. EL21-78-000, Sept. 15, 2021

and as such, PJM recognizes that there is not one "right" way to view or mitigate market power. Currently, PJM has not been presented with information on the magnitude of the concerns cited by the IMM or an impact analysis of the efficiency that would be gained by making the IMM's proposed changes. Thus, at this time, PJM does not see the need to modify the TPS test application process in the Day-Ahead Market absent FERC direction to the contrary. Nonetheless, PJM remains committed to monitoring the performance of the Day-Ahead Market and working closely with stakeholders and the IMM to address any potential market power issues that may arise in the future.

Gas-Electric Coordination

The MMU recommends that gas generators be required to check with pipelines throughout the operating day to confirm that nominations are accepted beyond the NAESB deadlines, and that gas generators be required to place their units on forced outage until the time that pipelines allow nominations to consume gas at a unit.

The MMU recommends: that gas generators be required to confirm, regularly during the operating day, that they can obtain gas if requested to operate at their economic maximum level; that gas generators provide that information to PJM during the operating day; and that gas generators be required to be on forced outage if they cannot obtain gas during the operating day to meet their must offer requirement as a result of pipeline restrictions, and they do not have backup fuel. As part of this, the MMU recommends that PJM collect data on each individual generator's fuel supply arrangements at least annually or when such arrangements change, and analyze the associated locational and regional risks to reliability.

PJM Response

PJM agrees with these recommendations. Effective gas-electric coordination is of increasing importance in ensuring reliable and efficient operation of the grid, particularly as the resource mix continues to evolve with a growing reliance on natural gas-fired generation. Enhancing the coordination between gas generators, pipeline operators, and the electricity system and market operators can help to minimize operational risks, optimize resource utilization and reduce overall system costs. In light of recent events during Winter Storm Elliott in 2022, PJM has identified multiple opportunities to improve the joint gas-electric scheduling and operational processes, which could ultimately benefit all stakeholders and contribute to a more resilient and efficient power system.[3] PJM will seek to work with stakeholders and the IMM in the appropriate stakeholder processes to address these recommendations.

[3] Winter Storm Elliott Event Analysis and Recommendation Report, PJM Interconnection, July 17, 2023

Treatment and Modeling of Generator Soak Time

The MMU recommends that soak costs, soak time and the MWh produced during soaking be modeled separately. This will ensure that the time required for units to reach a dispatchable level is known and used in the unit commitment process instead of only being communicated verbally between dispatchers and generators. Separating soak costs from start costs and modeling the MWh produced during soaking allows for a better representation of the costs because it eliminates the need to simply assume the price paid for those MWh.

PJM Response

Generator "soak time" and "soaking" refers to a minimum number of hours a unit must run, in real-time operations, from the time after generator breaker closure (megawatts greater than zero) to the time the unit is dispatchable.[4] PJM recognizes the potential benefits of a more detailed representation of these factors in the unit commitment process, which could lead to a better understanding of the costs associated with starting and ramping up generation resources. This, in turn, may contribute to a more efficient unit commitment and dispatch process. However, implementing these changes would require updates to both the market software and the communication protocols between dispatchers and generators.

In May 2020, members voted down a package to more explicitly model the soak time of generation resources. Given other competing priorities, PJM does not anticipate pursuing changes in this area at this time. PJM further notes that efforts continue to enhance modeling capabilities with respect to multiple configuration resources to include combined cycle units.

Availability Reporting

The MMU recommends that PJM integrate all the outage reporting tools in order to enforce the ICAP must offer requirement, ensure that outages are reported correctly and eliminate reporting inconsistencies. Generators currently submit availability in three different tools that are not integrated, Markets Gateway, eDART and eGADS.

PJM Response

PJM agrees, in principle, that aligning and integrating these tools could lead to more effective outage management and improved overall system reliability. It is also important to recognize that integrating these tools involves overcoming several implementation challenges, which include the complexities of the existing systems, potential costs, and the need to ensure minimal disruption to market participants and PJM operations. As a result, the process of integrating the outage reporting tools would require a thorough assessment of the technical and operational implications as well as the development of a comprehensive implementation plan.

PJM is open to engaging with stakeholders to evaluate the feasibility of integrating the outage reporting tools and to address the identified challenges. This collaborative process would involve exploring potential solutions and determining the most effective approach to streamline outage reporting while maintaining system reliability and

[4] Soak Time Implementation, PJM Modeling Generation Senior Task Force, Feb. 11, 2020

minimizing the impact on market participants. Undertaking such a comprehensive effort would need to be prioritized along with all of the other issues currently confronting PJM and its stakeholder community.

Capacity Market Recommendations

PJM and stakeholders have considered a wide range of reforms and enhancements to its capacity market and overall resource adequacy framework through the Critical Issue Fast Path – Resource Adequacy (CIFP-RA). The PJM Board of Managers initiated the CIFP-RA stakeholder process by letter on Feb. 24, 2023, to address resource adequacy challenges in the PJM Reliability Pricing Model (RPM) or capacity market. The Board requested stakeholder participation in the CIFP to inform a Board filing with FERC by Oct. 1, 2023.[5] The Board noted the work of the Resource Adequacy Senior Task Force (RASTF) as it set forth the scope for this activity and directed stakeholders to focus on areas of: (1) enhanced risk modeling; (2) evaluation of potential modifications to the Capacity Performance construct and alignment of permitted offers to the risk taken by suppliers; (3) improved accreditation; and (4) synchronization between the RPM and Fixed Resource Requirement (FRR) rules.

Many of the IMM capacity market-related recommendations are related to discussions in the CIFP-RA that occurred after the IMM recommendations were made. The CIFP-RA is anticipated to result in a filing to FERC in October 2023.

Capacity Resource Testing

The MMU recommends that PJM require actual seasonal tests as part of the Summer/Winter Capability Testing rules, that the number of tests be limited, and that the ambient conditions under which the tests are performed be defined.

The MMU recommends that PJM select the time and day that a unit undergoes Net Capability Verification Testing, not the unit owner, and that this information not be communicated in advance to the unit owner.

PJM Response

PJM agrees that the recommended changes could provide several benefits to the PJM markets and enhance overall system reliability. As such, PJM has already included enhancements that it believes would address these recommendations in its proposal.

First, requiring actual tests during both summer and winter seasons (rather than allowing weather-adjusted summer output to be used to satisfy the winter testing requirement) would help to ensure that generation resources are accurately assessed for their ability to meet capacity obligations during periods of high demand, providing a more accurate representation of their real-world performance. This would help maintain resource adequacy and system reliability during seasonal peak conditions, which is increasing in importance as winter risks grow with the evolving resource mix and load patterns.

[5] Board Letter Regarding Initiation of the Critical Issue Fast Path Process To Address Resource Adequacy Issues, PJM Interconnection, Feb. 24, 2023

Second, allowing PJM to select the time and day for Net Capability Verification Testing without advance notice could also be beneficial. By having PJM determine the testing schedule, unannounced testing would better reflect the real-world conditions that generation resources may experience during actual system events, thereby providing a more accurate assessment of their true capabilities.

Capacity Performance Construct

> *The MMU recommends elimination of the key remaining components of the Capacity Performance model because they interfere with competitive outcomes in the capacity market and create unnecessary complexity and risk.*

PJM Response

This recommendation concerns a central design element of the current PJM capacity market construct, and PJM remains committed to discussing enhancements to all elements within the CIFP scope. However, PJM disagrees with the IMM assessment that the Capacity Performance (CP) construct is fundamentally flawed.

In the current market, the CP construct is a two-settlement mechanism designed to uphold the integrity and reliability of our power system by creating incentives for performance and delivery of committed capacity resources. Resources sell capacity in forward auctions for delivery in a future year, with their performance then assessed during this period based on the level of commitment they've made. In the event of a Performance Assessment Interval, market sellers can expect to be held accountable for their commitments, encouraging more predictable and reliable performance. It is PJM's perspective that performance incentives in the operating time frame, such as those conveyed by Capacity Performance, are vital for maintaining reliability and also create a market environment conducive to efficient behavior, thus improving both efficiency and reliability. PJM acknowledges that this construct is not sufficient in isolation and does not support removing it without making corresponding changes to performance incentives in other areas of the market.

Demand Response Recommendations

Energy Efficiency Participation in the Capacity Market

> *The MMU recommends that, if energy efficiency resources remain in the capacity market, PJM codify eligibility requirements to claim the capacity rights to energy efficiency installations in the tariff and that PJM institute a registration system to track claims to capacity rights to energy efficiency installations and document installation periods of energy efficiency installations.*

PJM Response

PJM appreciates the IMM raising this recommendation. PJM is currently reviewing the rules regarding the participation of Energy Efficiency in the capacity market and will coordinate with the IMM on the review and any forthcoming stakeholder engagement, such as a Problem Statement and Issue Charge, that it may result in.

Nodal Modeling of DER Participation

> *The MMU recommends that PJM use a nodal approach for DER participation in PJM markets.*

PJM Response

This issue was considered as part of the stakeholder process culminating in PJM's Order No. 2222 compliance filing on Feb. 1, 2022, regarding the participation of distributed energy resource (DER) aggregators in PJM's Energy, capacity and ancillary services markets.[6] In compliance with this order, PJM proposed full nodal modeling of DER aggregation resources.

In March 2023, FERC provided a compliance directive for PJM to either: (1) provide additional technical explanation to demonstrate that it is not technically feasible to all DER to aggregate more broadly; or (2) propose an alternate locational requirement that is as geographically broad as technically feasible. PJM has discussed this issue with other ISOs/RTOs that also must comply with Order 2222 and stakeholders at the DER and Inverter-Based Resources Subcommittee (DIRS). PJM continues to believe that the proposed approach provides the highest value to market participants and customers in the footprint but recognizes FERC's concerns regarding nodal modeling creating entry barriers for DER. As recently as September 2023, PJM has submitted compliance filings in response to the aforementioned requests. Ultimately, PJM's approach for DER participation in the wholesale markets will reflect FERC's ruling on the matter.

Ancillary Services Recommendations

The MMU recommends that the ramp rate limited desired MW output be used in the regulation uplift calculation, to reflect the physical limits of the unit's ability to ramp and eliminate overpayment for opportunity costs when the payment uses an unachievable MW.

PJM Response

PJM acknowledges the MMU's recommendation to use ramp rate limited desired megawatt output in the regulation uplift calculation in order to better reflect the physical limits of a unit's ability to ramp and eliminate potential overpayment for opportunity costs when the payment is based on an unachievable megawatt. Ensuring that the regulation uplift calculation reflects the true capability of resources to ramp would lead to a more efficient and equitable allocation of compensation for providing regulation services, better reflecting the true marginal costs of providing that regulation, ultimately promoting a reliable and cost-effective grid operation. Incorporating ramp rate limited desired megawatt output in the calculation could help prevent overpayment for opportunity costs, which could arise when the assumed megawatt value is not achievable due to a unit's physical ramp rate limitations.

This topic, among others, is under discussion at the Regulation Market Re-Design Senior Task Force (RMDSTF), where PJM is proposing to use a tracking calculation of ramp-rate limited desired resource output. This approach captures both the physical limitation of the resource and expected output tracked over time as dictated by locational marginal price.[7]

[6] Order No. 2222 Compliance Filing of PJM Interconnection, L.L.C., Docket No. ER22-962-000, Feb. 1, 2022

[7] RegLOC – Enhanced Calculation of the Desired MW at LMP Ramp Rate Limited, PJM Regulation Market Design Senior Task Force, Feb. 22, 2023

Financial Transmission Rights and Auction Revenue Rights Recommendations

The MMU recommends that bilateral transactions be eliminated and that all FTR transactions occur in the PJM market.

PJM Response

PJM stakeholders considered this recommendation as part of Financial Transmission Rights (FTR) bilateral transaction reform packages discussed throughout 2022 at the Risk Management Committee. The result of the process was stakeholder endorsement of reforms to enhance the information reporting and timing requirements for submitting FTR bilateral transactions as opposed to their elimination.

In taking this action, PJM and stakeholders recognized that FTR bilateral transactions play a role in the market by offering participants flexibility and promoting diverse risk management strategies.

Advantages of enabling and maintaining bilateral transactions include:

- Flexibility: Bilateral transactions allow market participants to negotiate customized terms, such as contract length, volume and pricing, to better suit their individual needs and risk appetites. This flexibility can encourage more market participation and better meet the varying requirements of different market players.
- Liquidity: Bilateral transactions contribute to overall market liquidity by allowing parties to enter into agreements outside of the centralized market. This can lead to increased market depth and better price discovery, benefiting all participants.
- Risk Management: Market participants can use bilateral transactions to hedge risks associated with fluctuating prices, volume and other factors. This helps to stabilize markets and reduce overall risk exposure.
- Innovation: Bilateral transactions encourage innovation by allowing market participants to develop and test new products or services tailored to their specific needs. This can lead to the introduction of novel solutions that may not be possible within the constraints of a centralized market.

PJM Categorization of Recommendations From the 2022 SOM Report

This section categorizes the recommendations contained within the 2022 State of the Market Report (2022 SOM). In 2022, the IMM introduced **12** new recommendations. Many of the IMM recommendations are repeated from past annual and quarterly SOM reports. PJM has conducted a review of all **239** recommendations and concluded the following:

- **Adopted Recommendations:** **12** recommendations are considered by the IMM and PJM as adopted. Therefore, PJM believes these recommendations could be removed from future SOM reports.
- **Active Recommendations:** **96** recommendations are considered by PJM to be active. These are recommendations that are categorized as actionable, assessment or archived.

Actionable – PJM considers these recommendations to be the highest priority. PJM plans to take action to address these recommendations in the coming year. This includes topics under stakeholder discussion.	**Assessment** – PJM believes that these recommendations are of medium importance but need further investigation and analysis prior to determining if they are actionable.	**Archived** – PJM believes that these recommendations are low in priority and are therefore currently archived.

- **Inactive Recommendations:** **137** recommendations are considered by PJM to be inactive. PJM does not plan to take any further action (in the near future) on these recommendations due to one or more of the following reasons: the recommendation has not gained stakeholder consensus, the recommendation is rejected by FERC, the recommendation is addressed or the recommendation is out of PJM's purview (recommendation is raised to other regulatory bodies such as NERC, state PUC, etc.).

In an attempt to be concise and focused, PJM will limit its response to the adopted and active recommendations. The following table provides summary statistics for active recommendations.

ADOPTED & ACTIVE RECOMMENDATIONS

Section	ADOPTED	ACTIONABLE	ASSESSMENT	ARCHIVED	Section Percentage
Ancillary Services	9	3	4	9	23%
Capacity Market		1	17	8	24%
Demand Response			3	3	6%
Energy Market	1	4	7	19	29%
Energy Uplift	1	2		3	6%
Environmental		1			1%
FTRs & ARRs		2			2%
Interchange Transactions	1	2		3	6%
Net Revenue		1			1%
Planning		1	3		4%
Total Recommendations	**12**	**17**	**34**	**45**	**108**
Status Percentage	11%	42%	16%	31%	

Appendix – Complete List of Adopted and Active Recommendations

ADOPTED				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
Ancillary Services	The MMU recommends that the $7.50 margin be eliminated from the definition of the cost of tier 2 synchronized reserve because it is a markup and not a cost.	Medium	2018	Adopted Oct. 1, 2022
	The MMU recommends that the variable operating and maintenance cost be eliminated from the definition of the cost of tier 2 synchronized reserve and that the calculation of synchronized reserve variable operations and maintenance costs be removed from Manual 15.	Medium	2019	Adopted Oct. 1, 2022
	The MMU recommends that the rule requiring that tier 1 synchronized reserve resources be paid the tier 2 price when the nonsynchronized reserve price is above zero be eliminated immediately and that, under the current rule, tier 1 synchronized reserve resources not be paid the tier 2 price when they do not respond.	High	2013	Adopted Oct. 1, 2022
	The MMU recommends that the tier 2 synchronized reserve must offer requirement be enforced on a daily and hourly basis. The MMU recommends that PJM define a set of acceptable reasons why a unit can be made unavailable daily or hourly and require unit owners to select a reason in Markets Gateway whenever making a unit unavailable either daily or hourly or setting the offer MW to 0 MW.	Medium	2013	Adopted Oct. 1, 2022
	The MMU recommends that PJM eliminate the use of Degree of Generator Performance (DGP) in the synchronized reserve market solution and improve the actual tier 1 estimate. If PJM continues to use DGP, DGP should be documented in PJM's manuals.	Medium	2018	Adopted Oct. 1, 2022
	The MMU recommends that the VRSA be terminated and, if necessary, replaced by a reserve sharing agreement between PJM and VACAR South, similar to agreements between PJM and other bordering areas.	Medium	2020	Adopted Oct. 1, 2022
	The MMU recommends that a reason code be attached to every hour in which PJM market operations adds additional DASR MW.	Medium	2015	Adopted Oct. 1, 2022
	The MMU recommends that PJM modify the DASR Market to ensure that all resources cleared incur a real-time performance obligation.	Low	2013	Adopted Oct. 1, 2022
	The MMU recommends that, in order to mitigate market power, offers in the DASR Market be based on opportunity cost only.	Low	2018	Adopted Oct. 1, 2022
Energy Market	The MMU recommends the removal of all labor costs from the Cost Development Guidelines.	Medium	2016	Adopted, 2022
Energy Uplift	The MMU recommends that PJM eliminate the exemption for CTs and diesels from the requirement to follow dispatch in order to receive uplift. The performance of these resources should be evaluated in a manner consistent with all other resources.	Medium	2018	Adopted, 2022

Interchange Transactions	The MMU recommends that PJM end the practice of maintaining outdated definitions of interface pricing points, eliminate the NIPSCO, Southeast and Southwest interface pricing points from the day-ahead and real-time energy markets and, with VACAR, assign the transactions created under the reserve sharing agreement to the South interface pricing point.	High	2013	Adopted, 2022

ACTIONABLE

Section	2022 Recommendation	Priority	Year Reported	IMM Status 2022
Energy Market	The MMU recommends that Manual 15 (Cost Development Guidelines) be replaced or updated with a straightforward description of the components of cost-based offers and the mathematically correct calculation of cost-based offers.	Medium	2016	Partially Adopted, Q1 2022
	The MMU recommends explicitly accounting for soak costs and changing the definition of the start heat input for combined cycles to include only the amount of fuel used from first fire to the first breaker close in the Cost Development Guidelines.	Medium	2016	Partially Adopted
	The MMU recommends that PJM model generators' operating transitions, including modeling soak time for units with a steam turbine and configuration transitions for combined cycles, and peak operating modes.	Medium	2019	Not Adopted
	The MMU recommends that PJM clearly document the calculation of shortage prices and implementation of reserve price caps in the PJM Manuals, including defining all the components of reserve prices and all the constraints whose shadow prices are included in reserve prices.	High	2021	Not Adopted
Energy Uplift	The MMU recommends that PJM not pay uplift to units not following dispatch, including uplift related to fast-start pricing, and require refunds where it has made such payments. This includes units whose offers are flagged for fixed generation in Markets Gateway because such units are not dispatchable.	Medium	2018	Not Adopted
	The MMU recommends that PJM pay uplift based on the offer at the lower of the actual unit output or the dispatch signal MW.	Medium	2018	Not Adopted
Capacity Market	The MMU recommends the use of a forward looking energy and ancillary services (E&AS) net revenue offset rather than the backward looking E&AS net revenue offset currently in the tariff. Forward prices for energy prices and fuel costs are a better guide to market expectations of net revenues than an average of the actual net revenues for the last three years.	High	2017	Not Adopted
Net Revenue	The MMU recommends that the net revenue calculation used by PJM to calculate the net Cost of New Entry (CONE) and net ACR be based on a forward looking calculation of expected energy and	Medium	2019	Not Adopted

ACTIONABLE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	ancillary services net revenues using forward prices for energy and fuel.			
Environmental	The MMU recommends that renewable energy credit markets based on state renewable portfolio standards be brought into PJM markets, as they are an increasingly important component of the wholesale energy market. The MMU recommends that there be a single PJM-operated forward market for RECs for a single product based on a common set of state definitions of renewable technologies, with a single clearing price, trued up to real-time delivery.	High	2021	Not Adopted
Interchange Transactions	The MMU recommends that PJM monitor, and adjust as necessary, the weights applied to the components of the interfaces to ensure that the interface prices reflect ongoing changes in system conditions. The MMU also recommends that PJM review the mappings of external balancing authorities to individual interface pricing points to reflect changes to the impact of the external power source on PJM tie lines as a result of system topology changes. The MMU recommends that this review occur at least annually.	Low	2009	Not Adopted
	The MMU recommends modifications to the FFE calculation to ensure that FEE calculations reflect the current capability of the transmission system as it evolves. The MMU recommends that the Commission set a deadline for PJM and MISO to resolve the FEE freeze date and related issues.	Medium	2019	Not Adopted
Ancillary Services	The MMU recommends that the regulation market be modified to incorporate a consistent application of the marginal benefit factor (MBF) throughout the optimization, assignment and settlement process. The MBF should be defined as the Marginal Rate of Technical Substitution (MRTS) between RegA and RegD.	High	2012	Not Adopted, FERC Rejected
	The MMU recommends that the lost opportunity cost in the ancillary services markets be calculated using the schedule on which the unit was scheduled to run in the energy market.	High	2010	Not Adopted, FERC Rejected
	The MMU recommends that the ramp rate limited desired MW output be used in the regulation uplift calculation, to reflect the physical limits of the unit's ability to ramp and to eliminate overpayment for opportunity costs when the payment uses an unachievable MW.	Medium	2022	Not Adopted
Planning	The MMU recommends that, if the market efficiency process is retained, PJM modify the rules governing cost/benefit analysis; the evaluation process for selecting among competing market efficiency projects; and cost allocation for economic projects in order to ensure that all costs, including increased congestion costs and the risk of project cost increases, in all zones are included in order to ensure that the correct metrics are used for defining benefits.	Medium	2018	Not Adopted

ACTIONABLE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
FTRs & ARRs	The MMU recommends a requirement that the details of all bilateral FTR transactions be reported to PJM.	High	2020	Not Adopted
	The MMU recommends that PJM continue to evaluate the bilateral indemnification rules and any asymmetries they may create.	Low	2018	Not Adopted

ASSESMENT				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
Energy Market	The MMU recommends that PJM modify the process of applying the TPS test in the day-ahead energy market to ensure that all local markets created by binding constraints are tested for market power and to ensure that market sellers with market power are appropriately mitigated to their competitive offers.	High	2022	Not Adopted
	The MMU recommends, in order to ensure effective market power mitigation and to ensure that capacity resources meet their obligation to be flexible, that capacity resources be required to use flexible parameters in all offers at all times.	High	2021	Not Adopted
	The MMU recommends, if the preferred recommendation is not implemented, that in order to ensure effective power mitigation, PJM always enforce parameter-limited values when the TPS test is failed and during high load conditions such as cold and hot weather alerts and emergency conditions.	High	2015	Not Adopted
	The MMU recommends that PJM integrate all the outage reporting tools in order to enforce the ICAP must offer requirement, ensure that outages are reported correctly and eliminate reporting inconsistencies. Generators currently submit availability in three different tools that are not integrated, Markets Gateway, eDART and eGADS.	Medium	2022	Not Adopted
	The MMU recommends that gas generators be required to check with pipelines throughout the operating day to confirm that nominations are accepted beyond the NAESB deadlines, and that gas generators be required to place their units on forced outage until the time that pipelines allow nominations to consume gas at a unit.	Medium	2022	Not Adopted
	The MMU recommends that resources not be paid the daily capacity payment when unable to operate to their unit specific parameter limits.	Medium	2018	Not Adopted

ASSESMENT				
Section	2022 Recommendation	Priority	Year Reported	IMM Status 2022
	The MMU recommends: that gas generators be required to confirm, regularly during the operating day, that they can obtain gas if requested to operate at their economic maximum level; that gas generators provide that information to PJM during the operating day; and that gas generators be required to be on forced outage if they cannot obtain gas during the operating day to meet their must offer requirement as a result of pipeline restrictions, and they do not have backup fuel. As part of this, the MMU recommends that PJM collect data on each individual generator's fuel supply arrangements at least annually or when such arrangements change, and analyze the associated locational and regional risks to reliability.	Medium	2022	Not Adopted
Energy Uplift	The MMU recommends that PJM initiate an analysis of the reasons why a significant number of combustion turbines and diesels scheduled in the Day-Ahead Energy Market are not called in real time when they are economic.	Medium	2012	Partially Adopted, 2019
Energy Uplift	The MMU recommends modifications to the calculation of lost opportunity cost credits paid to wind units. The lost opportunity cost credits paid to wind units should be based on the lesser of the desired output, the estimated output based on actual wind conditions and the capacity interconnection rights (CIRs). The MMU recommends that PJM allow wind units to request CIRs that reflect the maximum output wind units want to inject into the transmission system at any time.	Low	2012	Not Adopted
Capacity Market	The MMU recommends elimination of the key remaining components of the CP model because they interfere with competitive outcomes in the capacity market and create unnecessary complexity and risk.	High	2022	Not Adopted
Capacity Market	The MMU recommends the enforcement of a consistent definition of capacity resource. The MMU recommends that the requirement to be a physical resource be enforced and enhanced. The requirement to be a physical resource should apply at the time of auctions and should also constitute a commitment to be physical in the relevant delivery year. The requirement to be a physical resource should be applied to all resource types, including planned generation, demand resources and imports.	High	2013	Not Adopted
Capacity Market	The MMU recommends that energy efficiency resources (EE) not be included in the capacity market because PJM's load forecasts now account for future EE, unlike the situation when EE was first added to the capacity market.	Medium	2016	Not Adopted

ASSESMENT				
Section	2022 Recommendation	Priority	Year Reported	IMM Status 2022
	The MMU recommends that intermittent resources, including storage, not be permitted to offer capacity MW based on energy delivery that exceeds their defined deliverability rights (CIRs). Only energy output for such resources below the designated CIR/deliverability level should be recognized in the definition of derated capacity (e.g. ELCC). Correctly defined derating factors will be lower than the CIRs required to meet those derating factors.	High	2021	Not Adopted
	The MMU recommends that PJM require all market participants to meet their deliverability requirements under the same rules. PJM should end the practice of giving away winter CIRs that appear to exist because other resources paid for the supporting network upgrades.	High	2017	Not Adopted
	The MMU recommends that the must offer rule in the capacity market apply to all capacity resources. There is no reason to exempt intermittent and capacity storage resources, including hydro, and demand resources and energy efficiency resources from the must offer requirement. The same rules should apply to all units.	High	2021	Not Adopted
	The MMU recommends using the lower of the cost or price-based energy market offer to calculate energy costs in the calculation of the historical net revenues which are an offset to gross ACR in the calculation of unit specific capacity resource offer caps based on net ACR.	Medium	2021	Not Adopted
	The MMU recommends use of the Sustainable Market Rule (SMR) in order to protect competition in the capacity market from nonmarket revenues.	High	2016	Not Adopted
	The MMU recommends that, as part of the MOPR unit specific standard of review, all projects be required to use the same basic modeling assumptions. That is the only way to ensure that projects compete on the basis of actual costs rather than on the basis of modeling assumptions.	High	2013	Not Adopted
	The MMU recommends that modifications to existing resources be subject to market power related offer caps or MOPR offer floors and not be treated as new resources and therefore exempt.	Low	2012	Not Adopted
	The MMU recommends that any combined seasonal resources be required to be in the same LDA and preferably at the same location, in order for the energy market and capacity market to remain synchronized and reliability metrics correctly calculated.	Medium	2021	Not Adopted

ASSESMENT				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that the definition of avoidable costs in the tariff be corrected to be consistent with the economic definition. Avoidable costs are costs that are neither short run marginal costs, like fuel or consumables, nor fixed costs like depreciation and rate of return. Avoidable costs are the annual marginal costs of capacity and therefore the competitive offer level for capacity resources and therefore the market seller offer cap. Avoidable costs are the annual marginal costs of capacity whether a new resource or an existing resource.	Medium	2021	Not Adopted
	The MMU recommends that relatively small proposed increases in the capability of a Generation Capacity Resource be treated as an existing resource and subject to the corresponding market power mitigation rules and no longer be treated as planned and exempt from offer capping.	Medium	2012	Not Adopted
	The MMU recommends that Capacity Performance resources be required to perform without excuses. Resources that do not perform should not be paid regardless of the reason for nonperformance.	High	2019	Not Adopted
	The MMU recommends that the market data posting rules be modified to allow the disclosure of expected performance, actual performance, shortfall and bonus MW during a PAI by area without the requirement that more than three market participants' data be aggregated for posting.	Low	2019	Not Adopted
	The MMU recommends that PJM require actual seasonal tests as part of the Summer/Winter Capability Testing rules, that the number of tests be limited, and that the ambient conditions under which the tests are performed be defined.	Medium	2022	Not Adopted
	The MMU recommends that PJM select the time and day that a unit undergoes Net Capability Verification Testing, not the unit owner, and that this information not be communicated in advance to the unit owner.	Medium	2022	Not Adopted
	The MMU recommends that units recover all and only the incremental costs, including incremental investment costs, required by the Part V reliability service (RMR service) that the unit owner would not have incurred if the unit owner had deactivated its unit as it proposed. Customers should bear no responsibility for paying previously incurred costs, including a return on or of prior investments.	Low	2010	Not Adopted

ASSESMENT				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends elimination of the cost of service recovery rate in OATT Section 119, that Part V reliability service (RMR) service should be provided under the deactivation avoidable cost rate in Part V, and that the revenue cap under the avoidable cost rate option be eliminated. The MMU also recommends specific improvements to the DACR provisions.	Medium	2017	Not Adopted
Demand Response	The MMU recommends that energy efficiency resources not be included in the capacity market and that PJM should ensure that the impact of EE measures on the load forecast is incorporated immediately rather than with the existing lag.	Medium	2018	Partially Adopted
Demand Response	The MMU recommends that, if energy efficiency resources remain in the capacity market, PJM codify eligibility requirements to claim the capacity rights to energy efficiency installations in the tariff and that PJM institute a registration system to track claims to capacity rights to energy efficiency installations and document installation periods of energy efficiency installations.	Medium	2022	Not Adopted
Demand Response	The MMU recommends that PJM use a nodal approach for DER participation in PJM markets.	Medium	2022	Partially Adopted
Ancillary Services	The MMU recommends that all resources, new and existing, have a requirement to include and maintain equipment for primary frequency response capability as a condition of interconnection service. The PJM capacity and energy markets already compensate resources for frequency response capability and any marginal costs.	Medium	2018	Not Adopted
Ancillary Services	The MMU recommends that new CRF rates for black start units, incorporating current tax code changes, be implemented immediately. The new CRF rates should apply to all black start units. The black start units should be required to commit to providing black start service for the life of the unit.	High	2020	Not Adopted
Ancillary Services	The MMU recommends that, if payments for reactive are continued, fleet wide cost of service rates used to compensate resources for reactive capability be eliminated and replaced with compensation based on unit specific costs.	Low	2019	Partially Adopted
Ancillary Services	The MMU recommends that Schedule 2 to OATT be revised to state explicitly that only generators that provide reactive capability to the transmission system that PJM operates and has responsibility for are eligible for reactive capability compensation. Specifically, such eligibility should be determined based on whether a generation facility's point of interconnection is on a transmission line that is a Monitored Transmission Facility as defined by PJM and is on a Reportable Transmission Facility as defined by PJM.	Medium	2020	Not Adopted

ASSESMENT				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
Planning	The MMU recommends that PJM modify the project proposal templates to include data necessary to perform a detailed project lifetime financial analysis. The required data includes, but is not limited to: capital expenditure; capital structure; return on equity; cost of debt; tax assumptions; ongoing capital expenditures; ongoing maintenance; and expected life.	Medium	2020	Not Adopted
	The MMU recommends that storage resources not be includable as transmission assets for any reason.	High	2020	Not Adopted
	The MMU recommends a comprehensive review of the ways in which the solution-based dfax is implemented. The goal for such a process would be to ensure that the most rational and efficient approach to implementing the solution-based dfax method is used in PJM. Such an approach should allocate costs consistent with benefits and appropriately calibrate the incentives for investment in new transmission capability. No replacement approach should be approved until all potential alternatives, including the status quo, are thoroughly reviewed.	Medium	2020	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
Energy Market	The MMU recommends that the market rules should explicitly require that offers in the energy market be competitive, where competitive is defined to be the short-run marginal cost of the units. The short-run marginal cost should reflect opportunity cost when and where appropriate. The MMU recommends that the level of incremental costs includable in cost-based offers not exceed the short-run marginal cost of the unit.	Medium	2009	Not Adopted
	The MMU recommends that PJM require that all fuel cost policies be algorithmic, verifiable and systematic, and accurately reflect short-run marginal costs.	Medium	2016	Not Adopted
	The MMU recommends that the temporary cost method be removed, and that all units that submit nonzero cost-based offers be required to have an approved fuel cost policy.	Low	2020	Not Adopted
	The MMU recommends that the penalty exemption provision be removed, and that all units that submit nonzero cost-based offers be required to follow their approved fuel cost policy.	Medium	2020	Not Adopted
	The MMU recommends removal of all use of FERC System of Accounts in the Cost Development Guidelines.	Medium	2016	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends the removal of all use of cyclic starting and peaking factors from the Cost Development Guidelines.	Medium	2016	Not Adopted
	The MMU recommends the removal of all maintenance costs from the Cost Development Guidelines.	Medium	2019	Not Adopted
	The MMU recommends that soak costs, soak time and the MWh produced during soaking be modeled separately. This will ensure that the time required for units to reach a dispatchable level is known and used in the unit commitment process instead of only being communicated verbally between dispatchers and generators. Separating soak costs from start costs and modeling the MWh produced during soaking allows for a better representation of the costs because it eliminates the need to simply assume the price paid for those MWh.	Medium	2022	Not Adopted
	The MMU recommends that the rules governing the application of the TPS test be clarified and documented. The TPS test application in the Day-Ahead Energy Market is not documented.	High	2015	Partially Adopted
	The MMU recommends that PJM require every Market Participant to make available at least one cost schedule based on the same hourly fuel type(s) and parameters at least as flexible as their offered price schedule.	Medium	2015	Not Adopted
	The MMU recommends that PJM retain the $1,000 per MWh offer cap in the PJM Energy Market except when cost-based offers exceed $1,000 per MWh, and retain other existing rules that limit incentives to exercise market power.	High	1999	Partially Adopted, 2017
	The MMU recommends that capacity resources not be allowed to offer any portion of their capacity market obligation as maximum emergency energy.	Medium	2012	Not Adopted
	The MMU recommends that capacity performance resources be held to the OEM operating parameters of the capacity market CONE reference resource for performance assessment and energy uplift payments, and that this standard be applied to all technologies on a uniform basis.	Medium	2015	Not Adopted
	The MMU recommends that the parameters which determine nonperformance charges and the amounts of uplift payments should reflect the flexibility goals of the capacity performance construct. The operational parameters used by generation owners to indicate to PJM operators what a unit is capable of during the operating day should not determine capacity performance assessment or uplift payments.	Medium	2015	Partially Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that PJM update the Tariff to clarify that all generation resources are subject to unit-specific parameter limits on their cost-based offers using the same standard and process as capacity performance capacity resources.	Medium	2018	Not Adopted
	The MMU recommends that PJM explicitly state its policy on the use of transmission penalty factors including: the level of the penalty factors; the triggers for the use of the penalty factors; the appropriate line ratings to trigger the use of penalty factors; the allowed duration of the violation; the use of constraint relaxation logic; and when the transmission penalty factors will be used to set the shadow price. The MMU recommends that PJM end the practice of discretionary reductions in transmission line ratings modeled in the market clearing and included in LMP.	Medium	2015	Partially Adopted, 2020
	The MMU recommends that PJM routinely review all transmission facility ratings and any changes to those ratings to ensure that the normal, emergency and load dump ratings used in modeling the transmission system are accurate and reflect standard ratings practice.	Low	2013	Partially Adopted
	The MMU recommends that PJM not use closed-loop interface constraints or surrogate constraints to artificially override nodal prices based on fundamental LMP logic in order to: accommodate rather than resolve the inadequacies of the demand-side resource capacity product; address the inability of the power-flow model to incorporate the need for reactive power; accommodate rather than resolve the flaws in PJM's approach to scarcity pricing; or for any other reason.	Medium	2013	Not Adopted
	The MMU recommends that PJM include in the Tariff or appropriate manual an explanation of the initial creation of hubs, the process for modifying hub definitions and a description of how hub definitions have changed.	Low	2013	Not Adopted
	The MMU recommends that all buses with a net withdrawal be treated as load for purposes of calculating load and load-weighted LMP, even if the MW are settled to the generator. The MMU recommends that during hours when a load bus shows a net injection, the energy injection be treated as generation, not negative load, for purposes of calculating generation and load-weighted LMP, even if the injection MW are settled to the Load Serving Entity.	Low	2013	Not Adopted
	The MMU recommends that PJM identify and collect data on available behind-the-meter generation resources, including nodal location information and relevant operating parameters.	Low	2013	Partially Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that PJM document how LMPs are calculated when demand response is marginal.	Low	2014	Not Adopted
	The MMU recommends that PJM not allow nuclear generators that do not respond to prices or that only respond to manual instructions from the operator to set the LMPs in the Real-Time Market.	Low	2016	Not Adopted
	The MMU recommends that PJM increase the coordination of outage and operational restrictions data submitted by Market Participants via eDART/eGADs and offer data submitted via Markets Gateway.	Low	2017	Not Adopted
	The MMU recommends that PJM stop capping the system marginal price in RT SCED and instead limit the sum of violated reserve constraint shadow prices used in LPC to $1,700 per MWh.	Medium	2021	Not Adopted
	The MMU recommends that PJM allow generators to report fuel type on an hourly basis in their offer schedules and to designate schedule availability on an hourly basis.	Medium	2015	Partially Adopted
Energy Uplift	The MMU recommends the elimination of the day-ahead uplift to ensure that units receive an energy uplift payment based on their real-time output and not their day-ahead scheduled output.	Medium	2013	Not Adopted
	The MMU recommends that units not be paid lost opportunity cost uplift when PJM directs a unit to reduce output based on a transmission constraint or other reliability issue. There is no lost opportunity because the unit is required to reduce for the reliability of the unit and the system.	High	2021	Not Adopted
	The MMU recommends reincorporating the use of net regulation revenues as an offset in the calculation of balancing operating reserve credits.	Medium	2009	Not Adopted
	The MMU recommends that self-scheduled units not be paid energy uplift for their startup cost when the units are scheduled by PJM to start before the self-scheduled hours.	Low	2013	Not Adopted
	The MMU recommends calculating LOC based on 24-hour daily periods for combustion turbines and diesels scheduled in the Day-Ahead Energy Market but not committed in real time.	Medium	2014	Not Adopted
	The MMU recommends that units scheduled in the Day-Ahead Energy Market and not committed in real time should be compensated for LOC based on their real-time desired and achievable output, not their scheduled day-ahead output.	Medium	2015	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that only flexible fast-start units (startup plus notification times of 10 minutes or less) and units with short minimum run times (one hour or less) be eligible by default for the LOC compensation to the units scheduled in the Day-Ahead Energy Market and not committed in real time. Other units should be eligible for LOC compensation only if PJM explicitly cancels their day-ahead commitment.	Medium	2015	Not Adopted
	The MMU recommends that up-to congestion (UTC) transactions be required to pay energy uplift charges for both the injection and the withdrawal sides of the UTC.	High	2011	Partially Adopted
	The MMU recommends allocating the energy uplift payments to units scheduled as must run in the Day-Ahead Energy Market for reasons other than voltage/reactive or black start services as a reliability charge to real-time load, real-time exports and real-time wheels.	Medium	2014	Not Adopted, Stakeholder Process
	The MMU recommends including real-time exports and real-time wheels in the allocation of the cost of providing reactive support to the 500 kV system or above, in addition to real-time load.	Low	2013	Not Adopted
	The MMU recommends modifications to the calculation of lost opportunity costs credits paid to wind units. The lost opportunity cost credits paid to wind units should be based on the lesser of the desired output, the estimated output based on actual wind conditions and the capacity interconnection rights (CIRs). The MMU recommends that PJM allow wind units to request CIRs that reflect the maximum output wind units want to inject into the transmission system at any time.	Low	2012	Not Adopted
	The MMU recommends that PJM clearly identify and classify all reasons for incurring operating reserves in the Day-Ahead and the Real-Time energy markets and the associated uplift charges in order to make all Market Participants aware of the reasons for these costs and to help ensure a long-term solution to the issue of how to allocate the costs of uplift.	Medium	2011	Partially Adopted
	The MMU recommends that PJM revise the current uplift (operating reserve) confidentiality rules in order to allow the disclosure of complete information about the level of uplift (operating reserve charges) by unit and the detailed reasons for the level of uplift credits by unit in the PJM region.	High	2013	Partially Adopted
Capacity Market	The MMU recommends that DR providers be required to have a signed contract with specific customers for specific facilities for specific levels of DR at least six months prior to any capacity auction in which the DR is offered.	High	2016	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that the test for determining modeled Locational Deliverability Areas (LDAs) in RPM be redefined. A detailed reliability analysis of all at risk units should be included in the redefined model.	Medium	2013	Not Adopted
	The MMU recommends that PJM clear the capacity market based on nodal capacity resource locations and the characteristics of the transmission system consistent with the actual electrical facts of the grid. Absent a fully nodal capacity market clearing process, the MMU recommends that PJM use a non-nested model with all LDAs modeled including VRR curves for all LDAs. Each LDA requirement should be met with the capacity resources located within the LDA and exchanges from neighboring LDAs up to the transmission limit. LDAs should be allowed to price separate if that is the result of the LDA supply curves and the transmission constraints between LDAs.	Medium	2017	Not Adopted
	The MMU recommends that PJM reduce the number of incremental auctions to a single incremental auction held three-months prior to the start of the delivery year and reevaluate the triggers for holding conditional incremental auctions.	Medium	2013	Not Adopted
	The MMU recommends that PJM not sell back any capacity in any IA, at much lower prices, procured in a BRA. If PJM continues to sell back capacity, the MMU recommends that PJM offer to sell back capacity in incremental auctions only at the BRA clearing price for the relevant delivery year.	Medium	2017	Not Adopted
	The MMU recommends changing the RPM solution method to explicitly incorporate the cost of uplift (make whole) payments in the objective function.	Medium	2014	Not Adopted
	The MMU recommends that the Fixed Resource Requirement (FRR) rules, including obligations and performance requirements, be revised and updated to ensure that the rules reflect current market realities and that FRR entities do not unfairly take advantage of those customers paying for capacity in the PJM capacity market.	Medium	2019	Not Adopted
	The MMU recommends that PJM improve the clarity and transparency of its CETL calculations. The MMU also recommends that CETL for capacity imports into PJM be based on the ability to import capacity only where PJM capacity exists and where that capacity has a must-offer requirement in the PJM capacity market.	Medium	2021	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that the RPM market power mitigation rule be modified to apply offer caps in all cases when the three pivotal supplier test is failed and the sell offer is greater than the offer cap. This will ensure that market power does not result in an increase in uplift (make whole) payments for seasonal resources.	Medium	2017	Not Adopted
	The MMU recommends that any unit that is not capable of supplying energy equal to its day-ahead must offer requirement (ICAP) be required to reflect an appropriate outage.	Medium	2009	Not Adopted
	The MMU recommends that retroactive replacement transactions associated with a failure to perform during a PAI not be allowed and that, more generally, retroactive replacement capacity transactions not be permitted.	Medium	2016	Not Adopted
	The MMU recommends that there be an explicit requirement that capacity resource offers in the Day-Ahead Energy Market be competitive, where competitive is defined to be the short-run marginal cost of the units, including flexible operating parameters.	Low	2013	Not Adopted
	The MMU recommends that all capacity imports be required to be deliverable to PJM load in an identified LDA, zonal or smaller, or explicit combinations of specific zones, e.g. MAAC, prior to the relevant delivery year to ensure that they are full substitutes for internal, physical capacity resources. Pseudo ties alone are not adequate to ensure deliverability to PJM load.	High	2016	Not Adopted
	The MMU recommends that all costs incurred as a result of a pseudo-tied unit be borne by the unit itself and included as appropriate in unit offers in the capacity market.	High	2016	Not Adopted
	The MMU recommends that the notification requirement for deactivations be extended from 90 days prior to the date of deactivation to 12 months prior to the date of deactivation and that PJM and the MMU be provided 60 days rather than 30 days to complete their reliability and market power analyses.	Low	2012	Not Adopted
Demand Response	The MMU recommends that, as a preferred alternative to including demand resources as supply in the capacity market, demand resources be on the demand side of the markets, that customers be able to avoid capacity and energy charges by not using capacity and energy at their discretion, that customer payments be determined only be metered load, and that PJM forecasts immediately incorporate the impacts of demand side behavior.	High	2014	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that the option to specify a minimum dispatch price (strike price) for demand resources be eliminated, and that participating resources receive the hourly real-time LMP less any generation component of their retail rate.	Medium	2010	Not Adopted
	The MMU recommends that the maximum offer for demand resources be the same as the maximum offer for generation resources.	Medium	2013	Not Adopted
	The MMU recommends that the demand resources be treated as economic resources, responding to economic price signals like other capacity resources. The MMU recommends that demand resources not be treated as emergency resources, not trigger a PJM emergency and not trigger a Performance Assessment Interval. The MMU recommends that demand resources be available for every hour of the year.	High	2012	Not Adopted
	The MMU recommends that the Emergency Program Energy Only option be eliminated, because the opportunity to receive the appropriate energy market incentive is already provided in the economic program.	Low	2010	Not Adopted
	The MMU recommends that, if demand resources remain in the capacity market, a daily energy market must-offer requirement apply to demand resources, comparable to the rule applicable to generation capacity resources.	High	2013	Not Adopted
	The MMU recommends that demand resources be required to provide their nodal location, comparable to generation resources.	High	2011	Not Adopted
	The MMU recommends that PJM require nodal dispatch of demand resources with no advance notice required or, if nodal location is not required, subzonal dispatch of demand resources with no advance notice required. The MMU recommends that, if PJM continues to use subzones for any purpose, PJM clearly define the role of subzones in the dispatch of demand response.	High	2015	Not Adopted
	The MMU recommends that PJM not remove any defined subzones and maintain a public record of all created and removed subzones.	Low	2016	Not Adopted
	The MMU recommends that PJM eliminate the measurement of compliance across zones within a compliance aggregation area (CAA). The multiple zone approach is less locational than the zonal and subzonal approach and creates larger mismatches between the locational need for the resources and the actual response.	High	2015	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that measurement and verification methods for demand resources be modified to reflect compliance more accurately.	Medium	2009	Not Adopted
	The MMU recommends that compliance rules be revised to include submittal of all necessary hourly load data, and that negative values be included when calculating event compliance across hours and registrations.	Medium	2012	Not Adopted
	The MMU recommends that PJM adopt the ISO-NE five-minute metering requirements in order to ensure that operators have the necessary information for reliability, and that market payments to demand resources be calculated based on interval meter data at the site of the demand reductions.	Medium	2013	Not Adopted
	The MMU recommends demand response event compliance be calculated on a five-minute basis for all capacity performance resources, and that the penalty structure reflect five-minute compliance.	Medium	2013	Partially Adopted
	The MMU recommends that load management testing be initiated by PJM with limited warning to CSPs in order to more accurately represent the conditions of an emergency event.	Low	2012	Not Adopted
	The MMU recommends that shutdown cost be defined as the cost to curtail for a given period that does not vary with the measured reduction or, for behind the meter generators, be the start-cost defined in Manual 15 for generators.	Low	2012	Not Adopted
	The MMU recommends that the Net Benefits Test be eliminated, and that demand response resources be paid LMP less any generation component of the applicable retail rate.	Low	2015	Not Adopted
	The MMU recommends that the Tariff rules for demand response clarify that a resource and its CSP, if any, must notify PJM of material changes affecting the capability of the resource to perform as registered and must terminate or modify registrations that are no longer capable of responding to PJM dispatch directives at defined levels because load has been reduced or eliminated, as in the case of bankrupt and/or out-of-service facilities.	Medium	2015	Not Adopted
	The MMU recommends that there only be one demand response product in the capacity market, with an obligation to respond when called for any hour of the delivery year.	High	2011	Partially Adopted
	The MMU recommends that the lead times for demand resources be shortened to 30 minutes with a one minimum dispatch for all resources.	Medium	2013	Partially Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends setting the baseline for measuring capacity compliance under winter compliance at the customers' PLC, similar to GLD, to avoid double counting.	High	2010	Partially Adopted
	The MMU recommends the Relative Root Mean Squared Test be required for all demand resources with a CBL.	Low	2017	Partially Adopted
	The MMU recommends that the limits imposed on the pre-emergency and emergency demand response share of the Synchronized Reserve Market be eliminated.	Medium	2018	Not Adopted
	The MMU recommends that all demand resources register as Pre-Emergency Load Response and that the Emergency Load Response Program be eliminated.	High	2020	Not Adopted
	The MMU recommends that EDCs not be allowed to participate in markets as DER aggregators in addition to their EDC role.	High	2021	Not Adopted
Environmental	The MMU recommends that PJM provide a full analysis of the impact of carbon pricing on PJM generating units and carbon pricing revenues to the PJM states in order to permit the states to consider a potential agreement on the development of a multistate framework for carbon pricing and the distribution of carbon revenues.	High	2018	Not Adopted
Environmental	The MMU recommends that jurisdictions with a renewable portfolio standard make the price and quantity data on supply and demand more transparent.	Low	2018	Not Adopted
Environmental	The MMU recommends that the Commission reconsider its disclaimer of jurisdiction over RECs markets because, given market changes since that decision, it is clear that RECs materially affect jurisdictional rates.	Low	2018	Not Adopted
Environmental	The MMU recommends that load and generation located at separate nodes be treated as separate resources in order to ensure that load and generation face consistent incentives throughout the markets.	High	2019	Not Adopted
Environmental	The MMU recommends that emergency stationary RICE be prohibited from participation as DR either when registered individually or as part of a portfolio if it cannot meet the capacity market requirements to be DR as a result of emission standards that impose environmental run-hour limitations.	Medium	2019	Not Adopted
Interchange Transactions	The MMU recommends that PJM implement rules to prevent sham scheduling. The MMU recommends that PJM apply after-the-fact market settlement adjustments to identified sham scheduling segments to ensure that Market Participants cannot benefit from sham scheduling.	High	2012	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that PJM implement a validation method for submitted transactions that would prohibit Market Participants from breaking transactions into smaller segments to defeat the interface pricing rule by concealing the true source or sink of the transaction.	Medium	2013	Not Adopted
	The MMU recommends that PJM implement a validation method for submitted transactions that would require Market Participants to submit transactions on paths that reflect the expected actual power flow in order to reduce unscheduled loop flows.	Medium	2013	Not Adopted
	The MMU recommends that PJM eliminate the IMO interface pricing point and assign the transactions that originate or sink in the IESO balancing authority to the MISO interface pricing point.	Medium	2013	Not Adopted
	The MMU recommends that, in order to permit a complete analysis of loop flow, FERC and NERC ensure that the identified data are made available to market monitors as well as other industry entities determined appropriate by FERC.	Medium	2003	Not Adopted
	The MMU recommends that PJM permit unlimited spot market imports as well as unlimited non-firm point-to-point willing to pay congestion imports and exports at all PJM interfaces in order to improve the efficiency of the market.	Medium	2012	Not Adopted
	The MMU recommends that the submission deadline for real-time dispatchable transactions be modified from 1800 on the day prior, to three-hours prior to the requested start time, and that the minimum duration be modified from one hour to 15 minutes. These changes would give PJM a more flexible product that could be used to meet load in the most economic manner.	Medium	2014	Partially Adopted, 2015
	The MMU recommends clear, explicit and detailed rules that define the conditions under which PJM will and will not recall energy from PJM capacity resources and prohibit new energy exports from PJM capacity resources. The MMU recommends that those rules define the conditions under which PJM will purchase emergency energy while at the same time not recalling energy exports from PJM capacity resources. The MMU recommends clear rules governing when PJM may recall capacity backed exports.	Medium	2010	Partially Adopted
Ancillary Services	The MMU recommends that all data necessary to perform the Regulation Market three pivotal supplier test be saved by PJM, so that the test can be replicated.	Medium	2016	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends enhanced documentation of the implementation of the Regulation Market design.	Medium	2010	Not Adopted, FERC Rejected
	The MMU recommends that PJM be required to save data elements necessary for verifying the performance of the Regulation Market.	Medium	2010	Not Adopted
	The MMU recommends that PJM replace the static MidAtlantic/Dominion Reserve Subzone with a reserve zone structure consistent with the actual deliverability of reserves based on current transmission constraints.	High	2019	Partially Adopted Oct. 1, 2022
	The MMU recommends that the details of VACAR Reserve Sharing Agreement (VRSA) be made public, including any responsibilities assigned to PJM and including the amount of reserves that Dominion commits to meet its obligations under the VRSA.	Medium	2020	Not Adopted
	The MMU recommends that separate cost of service payments for reactive capability be eliminated and the cost of reactive capability be recovered in the capacity market.	Medium	2016	Not Adopted
Planning	The MMU recommends that the question of whether Capacity Injection Rights (CIRs) should persist after the retirement of a unit be addressed. The rules need to ensure that incumbents cannot exploit control of CIRs to block or postpone entry of competitors.	Low	2013	Partially Adopted
Planning	The MMU recommends that barriers to entry be addressed in a timely manner in order to help ensure that the capacity market will result in the entry of new capacity to meet the needs of PJM Market Participants and reflect the uncertainty and resultant risks in the cost of new entry used to establish the capacity market demand curve in RPM.	Low	2012	Not Adopted
Planning	The MMU recommends improvements in queue management, including that PJM establish a review process to ensure that projects are removed from the queue if they are not viable, as well as a process to allow commercially viable projects to advance in the queue ahead of projects that have failed to make progress, subject to rules to prevent gaming.	Medium	2013	Partially Adopted
Planning	The MMU recommends continuing analysis of the study phase of PJM's transmission planning to reduce the need for postponements of study results, to decrease study completion times, and to improve the likelihood that a project at a given phase in the study process will successfully go into service.	Medium	2014	Partially Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends outsourcing interconnection studies to an independent party to avoid potential conflicts of interest. Currently, these studies are performed by incumbent transmission owners under PJM's direction. This creates potential conflicts of interest, particularly when transmission owners are vertically integrated and the owner of transmission also owns generation.	Low	2013	Not Adopted
	The MMU recommends that the market efficiency process be eliminated, because it is not consistent with a competitive market design.	Medium	2019	Not Adopted
	The MMU recommends, to increase the role of competition, that the exemption of supplemental projects from the Order No. 1000 competitive process be terminated, and that the basis for all such exemptions be reviewed and modified to ensure that the supplemental project designation is not used to exempt transmission projects from a transparent, robust and clearly defined mechanism to permit competition to build such projects or to effectively replace the RTEP process.	Medium	2017	Not Adopted, FERC Rejected
	The MMU recommends, to increase the role of competition, that the exemption of end-of-life projects from the Order No. 1000 competitive process be terminated, and that end-of-life transmission projects should be included in the RTEP process and should be subject to a transparent, robust and clearly defined mechanism to permit competition to build such projects.	Medium	2019	Not Adopted, FERC Rejected
	The MMU recommends that PJM enhance the transparency and queue management process for nonincumbent transmission investment. Issues related to data access and complete explanations of cost impacts should be addressed. The goal should be to remove barriers to competition from nonincumbent transmission providers.	Medium	2015	Not Adopted
	The MMU recommends that PJM continue to incorporate the principle that the goal of transmission planning should be the incorporation of transmission investment decisions into market-driven processes as much as possible.	Low	2001	Not Adopted
	The MMU recommends the creation of a mechanism to permit a direct comparison, or competition, between transmission and generation alternatives, including which alternative is less costly and who bears the risks associated with each alternative.	Low	2013	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that PJM establish fair terms of access to rights of way and property, such as at substations, in order to remove any barriers to entry and permit competition between incumbent transmission providers and nonincumbent transmission providers in the RTEP.	Medium	2014	Not Adopted
	The MMU recommends that rules be implemented to permit competition to provide financing for transmission projects. This competition could reduce the cost of capital for transmission projects and significantly reduce total costs to customers.	Low	2013	Not Adopted
	The MMU recommends consideration of changing the minimum distribution factor in the allocation from 0.01 to 0.00 and adding a threshold minimum usage impact on the line.	Medium	2015	Not Adopted
	The MMU recommends that all PJM transmission owners use the same methods to define line ratings and that all PJM transmission owners implement dynamic line ratings (DLR), subject to NERC standards and guidelines, subject to review by NERC, PJM and the MMU, and approval by FERC.	Medium	2019	Not Adopted
	The MMU recommends that PJM reevaluate all transmission outage tickets as on time or late as if they were new requests when an outage is rescheduled and apply the standard rules for late submissions to any such outages.	Low	2014	Not Adopted
	The MMU recommends that PJM draft a clear definition of the congestion analysis required for transmission outage requests to include in Manual 3 after appropriate review.	Low	2015	Not Adopted
	The MMU recommends that PJM modify the rules to reduce or eliminate the approval of late outage requests submitted or rescheduled after the FTR auction bidding opening date.	Low	2015	Not Adopted
	The MMU recommends that PJM not permit transmission owners to divide long-duration outages into smaller segments to avoid complying with the requirements for long-duration outages.	Low	2015	Not Adopted
FTRs & ARRs	The MMU recommends that the current ARR/FTR design be replaced with defined congestion revenue rights (CRRs). A CRR is the right to actual congestion that is paid by physical load at a specific bus, zone or aggregate.	High	2015	Not Adopted
	The MMU recommends that the ARR/FTR design be modified to ensure that the rights to all congestion revenues are assigned to load.	High	2015	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that all historical generation to load paths be eliminated as a basis for assigning ARRs. The MMU recommends that the current design be replaced with a design in which the rights to actual congestion paid are assigned directly to the load that paid that congestion by node.	High	2015	Partially Adopted
	The MMU recommends that, under the current FTR design, the rights to all congestion revenue be allocated as ARRs prior to sale as FTRs. Reductions for outages and increased system capability should be reserved for ARRs rather than sold in the long-term FTR auction.	High	2017	Not Adopted
	The MMU recommends that IARRs be eliminated from PJM's Tariff, but that if IARRs are not eliminated, IARRs should be subject to the same proration rules that apply to all other ARR rights.	Low	2018	Not Adopted
	The MMU recommends that FTR funding be based on total congestion, including day-ahead and balancing congestion.	High	2017	Not Adopted
	The MMU recommends that bilateral transactions be eliminated and that all FTR transactions occur in the PJM market.	High	2022	Not Adopted
	The MMU recommends that PJM reduce FTR sales on paths with persistent over allocation of FTRs, including a clear definition of persistent over allocation and how the reduction will be applied.	High	2013	Partially Adopted
	The MMU recommends that PJM eliminate generation to generation paths and all other paths that do not represent the delivery of power to load.	High	2018	Not Adopted
	The MMU recommends that the long-term FTR product be eliminated. If the long-term FTR product is not eliminated, the long-term FTR Market should be modified so that the supply of prevailing flow FTRs in the long-term FTR Market is based solely on counter-flow offers in the long-term FTR Market.	High	2017	Not Adopted
	The MMU recommends that PJM improve transmission outage modeling in the FTR auction models, including the use of probabilistic outage modeling.	Low	2013	Not Adopted
	The MMU recommends that all FTR auction revenue be distributed to ARR holders monthly, regardless of FTR funding levels.	High	2015	Not Adopted
	The MMU recommends that, under current FTR design, all congestion revenue in excess of FTR target allocations be distributed to ARR holders on a monthly basis.	High	2018	Not Adopted

INACTIVE				
Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that FTR auction revenues not be used by PJM to buy counter-flow FTRs for the purpose of improving FTR payout ratios.	High	2015	Not Adopted
	The MMU recommends that PJM eliminate portfolio netting to eliminate cross subsidies among FTR Market Participants.	High	2012	Not Adopted, FERC Rejected
	The MMU recommends that PJM eliminate subsidies to counter flow FTRs by applying the payout ratio to counter flow FTRs in the same way the payout ratio is applied to prevailing flow FTRs.	High	2012	Not Adopted
	The MMU recommends that PJM eliminate geographic cross subsidies.	High	2013	Not Adopted
	The MMU recommends that PJM examine the mechanism by which self-scheduled FTRs are allocated when load switching among LSEs occurs throughout the planning period.	Low	2011	Not Adopted
	The MMU recommends that the FTR portfolio of a defaulted member be canceled rather than liquidated or allowed to settle as a default cost on the membership.	High	2018	Not Adopted
	The MMU recommends the use of a 99 percent confidence interval when calculating initial margin requirements for FTR market participants, in order to assign the cost of managing risk to the FTR holders who benefit or lose from their FTR positions.	High	2021	Not Adopted

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Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
Energy Market	The MMU recommends that Market Participants be required to document the amount and cost of consumables used when operating in order to verify that the total operating cost is consistent with the total quantity used and the unit characteristics.	Medium	2020	Not Adopted
	The MMU recommends, given that maintenance costs are currently allowed in cost-based offers, that Market Participants be permitted to include only variable maintenance costs, linked to verifiable operational events, and that can be supported by clear and unambiguous documentation of the operational data (e.g., run hours, MWh, MMBtu) that support the maintenance cycle of the equipment being serviced/replaced.	Medium	2020	Not Adopted

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Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends the removal of nuclear fuel and nonfuel operations and maintenance costs that are not short-run marginal costs from the Cost Development Guidelines.	Medium	2016	Not Adopted
	The MMU recommends revising the pumped hydro fuel cost calculation to include day-ahead and real-time power purchases.	Low	2016	Not Adopted
	The MMU recommends, in order to ensure effective market power mitigation when the TPS test is failed, that markup be constantly positive or negative across the full MWh range of price and cost-based offers.	High	2015	Not Adopted
	The MMU recommends, in order to ensure effective market power mitigation when the TPS test is failed, that offer capping be applied to units that fail the TPS test in the Real-Time Market that were not offer capped at the time of commitment in the Day-Ahead Market or at a prior time in the Real-Time Market.	High	2020	Not Adopted
	The MMU recommends the elimination of FMU and AU adders. FMU and AU adders no longer serve the purpose for which they were created and interfere with the efficient operation of PJM markets.	Medium	2012	Partially Adopted, 2014
	The MMU recommends that resources are not allowed to violate the ICAP must-offer requirement. The MMU recommends that PJM enforce the ICAP must-offer requirement by assigning a forced outage to any unit that is derated in the energy market below its committed ICAP without an outage that reflects the derate.	Medium	2020	Not Adopted
	The MMU recommends that storage and intermittent resources be subject to an ICAP must-offer rule that reflects the limitations of these resources.	Medium	2020	Not Adopted
	The MMU recommends, if the capacity market seller offer cap were to be calculated using the historical average balancing ratio, that PJM not include the balancing ratios calculated for localized Performance Assessment Intervals (PAIs), and only include those events that trigger emergencies at a defined zonal or higher level.	Medium	2018	Not Adopted
	The MMU recommends that PJM clearly define the business rules that apply to the unit-specific parameter adjustment process, including PJM's implementation of the Tariff rules in the PJM manuals to ensure market sellers know the requirements for their resources.	Low	2018	Not Adopted
	The MMU recommends that PJM not approve temporary exceptions that are based on pipeline Tariff terms that are not routinely enforced at the time or are and based on inferior transportation service procured by the generator.	Medium	2019	Not Adopted

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Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that PJM update the outage impact studies, the reliability analyses used in RPM for capacity deliverability, and the reliability analyses used in the RTEP for transmission upgrades to be consistent with the more conservative emergency operations (post-contingency load dump limit exceedance analysis) in the energy market that were implemented in June 2013.	Low	2013	Not Adopted
	The MMU recommends that PJM require generators that violate their approved turn down ratio (by either using the fixed gen option or increasing their economic minimum) to use the temporary parameter exception process that requires market sellers to demonstrate that the request is based on a physical and actual constraint.	Medium	2021	Not Adopted
	The MMU recommends that PJM clarify, modify, and document its process for dispatching reserves and energy when SCED indicates that supply is less than total demand including forecasted load and reserve requirements. The modifications should define: a SCED process to economically convert reserves to energy; a process for the recall of energy from capacity resources; and the minimum level of synchronized reserves that would trigger load shedding.	Medium	2020	Not Adopted
	The MMU recommends that PJM adjust the ORDCs during spin events to reduce the reserve requirement for synchronized and primary reserves by the amount of the reserves deployed.	Medium	2021	Not Adopted
	The MMU recommends that PJM define clear criteria for operator approval of RT SCED cases, including shortage cases that are used to send dispatch signals to resources and for pricing, to minimize discretion.	High	2018	Partially Adopted
	The MMU recommends eliminating up to congestion (UTC) bidding at pricing nodes that aggregate only small sections of transmission zones with few physical assets.	Medium	2020	Not Adopted
	The MMU recommends eliminating INC, DEC and UTC bidding at pricing nodes that allow Market Participants to profit from modeling issues.	Medium	2020	Not Adopted
Energy Uplift	The MMU recommends that uplift be paid only based on operating parameters that reflect the flexibility of the benchmark new entrant unit (CONE unit) in the PJM capacity market.	High	2018	Not Adopted
Energy Uplift	The MMU recommends eliminating intraday segments from the calculation of uplift payments and returning to calculating the need for uplift based on the entire 24-hour operating day.	High	2018	Not Adopted

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Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that the total cost of providing reactive support be categorized and allocated as reactive services. Reactive services credits should be calculated consistent with the balancing operating reserve credit calculation.	Medium	2012	Not Adopted, Stakeholder Process
Capacity Market	The MMU recommends that PJM reevaluate the shape of the VRR curve. The shape of the VRR curve directly results in load paying substantially more for capacity than load would pay with a vertical demand curve. More specifically, the MMU recommends that the VRR curve be rotated half way towards the vertical demand curve at the reliability requirement for the current Quadrennial Review.	High	2021	Not Adopted
	The MMU recommends that the maximum price on the VRR curve be defined as net CONE.	Medium	2019	Not Adopted
	The MMU recommends that the value of CTRs should be defined by the total MW cleared in the capacity market, the internal MW cleared and the imported MW cleared, and not redefined later prior to the delivery year.	Medium	2021	Not Adopted
	The MMU recommends that the market clearing results be used in settlements rather than the reallocation process currently used, or that the process of modifying the obligations to pay for capacity be reviewed.	Medium	2021	Not Adopted
	The MMU recommends that the value of CTRs be defined by the total MW cleared in the capacity market, the internal MW cleared and the imported MW cleared, and not redefined later prior to the delivery year. Capacity Transfer Rights (CTRs) are used to return capacity market congestion revenues to load, but the CTRs that result from market clearing prices and quantities are not included in final settlements for individual LDAs. MMU also recommends that the market clearing results be used in settlements rather than the reallocation process currently used or that the process of modifying the obligations to pay for capacity be reviewed.	High	2022	Not Adopted
	The MMU recommends that capacity market sellers be required to explicitly request and support the use of minimum MW quantities (inflexible sell offer segments) and that the requests only be permitted for defined physical reasons.	Medium	2018	Not Adopted
Demand Response	The MMU recommends that 30-minute pre-emergency and emergency demand response be considered to be 30-minute reserves.	Medium	2018	Not Adopted
	The MMU recommends that demand reductions based entirely on behind-the-meter generation be capped at the lower of economic maximum or actual generation output.	High	2019	Not Adopted

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Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that PJM include a 5.0 MW maximum size cap on DER aggregations.	Medium	2021	Not Adopted
Interchange Transactions	The MMU recommends that transactions sourcing in the Western Interconnection be priced at either the MISO interface pricing point or the SOUTH interface pricing point based on the locational price impact of flows between the DC tie line point of connection with the Eastern Interconnection and PJM.	High	2020	Not Adopted
	The MMU recommends that PJM explore an interchange optimization solution with its neighboring balancing authorities that would remove the need for Market Participants to schedule physical transactions across seams. Such a solution would include an optimized, but limited, joint dispatch approach that uses supply curves and treats seams between balancing authorities as constraints, similar to other constraints within an LMP market.	Medium	2014	Not Adopted
	The MMU recommends that the emergency interchange cap be replaced with a market-based solution.	Low	2015	Not Adopted
Ancillary Services	The MMU recommends that the total regulation (TReg) signal sent on a fleet-wide basis be eliminated and replaced with individual regulation signals for each unit.	Low	2019	Not Adopted
	The MMU recommends that the ability to make dual offers (to make offers as both a RegA and a RegD resource in the same market hour) be removed from the Regulation Market.	High	2019	Not Adopted
	The MMU recommends that the lost opportunity cost in the ancillary services markets be calculated using the schedule on which the unit was scheduled to run in the energy market.	High	2010	Not Adopted, FERC Rejected
	The MMU recommends that, to prevent gaming, there be a penalty enforced in the regulation market as a reduction in performance score and/or a forfeiture of revenues when resource owners elect to deassign assigned regulation resources within the hour.	Medium	2016	Not Adopted, FERC Rejected
	The MMU recommends that the $12.00 margin adder be eliminated from the definition of the cost based regulation offer because it is a markup and not a cost.	Medium	2021	Not Adopted
	The MMU recommends that the components of the cost-based offers from providing regulation and synchronous condensing be defined in Schedule 2 of the Operating Agreement.	Low	2019	Not Adopted

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Section	**2022 Recommendation**	**Priority**	**Year Reported**	**IMM Status 2022**
	The MMU recommends that, for calculating the penalty for a synchronized reserve resource failing to meet its scheduled obligation during a spinning event, the penalty should be based on the actual time since the last spinning event of 10 minutes or longer during which the resource performed because performance is only measured for events 10 minutes or longer and that the tier 2 shortfall penalty should include LOC payments as well as SRMCP and MW of shortfall.	Medium	2018	Not Adopted
	The MMU recommends that aggregation not be permitted to offset unit-specific penalties for failure to respond to a synchronized reserve event.	Medium	2018	Not Adopted
	The MMU recommends that payments for reactive capability, if continued, be based on the 0.95 power factor included in the voltage schedule in Interconnection Service Agreements.	Medium	2018	Not Adopted