



# **PJM Response to Independent Market Monitor Report on 2025/2026 Base Residual Auction**

October 11, 2024

For Public Use

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## 1. Executive Summary

The purpose of this document is to respond to the report released by the Independent Market Monitor for PJM (IMM) on Sept. 20, 2024, entitled *Analysis of the 2025/2026 RPM Base Residual Auction – Part A*.<sup>1</sup>

The IMM's report shares analysis of sensitivities to the 2025/2026 PJM Reliability Pricing Model (RPM, or "capacity market") Base Residual Auction (BRA) results. In general, PJM appreciates efforts to provide additional transparency and analysis to help market participants understand the key drivers of capacity market outcomes. Conducting sensitivity analyses on complex market designs can provide valuable insights. PJM also does not take exception to the results of the simulations the IMM conducted as they are summarized in the report. They are directionally consistent with those that would be expected given the inputs used.

However, the IMM presents an incomplete set of sensitivities, provides insufficient context, and draws several conclusions that either lack support or are incorrect. The IMM also adopts positions in this report that contradict very recent positions the IMM had taken. The absence of clear explanations regarding the change in these positions damages the credibility of the IMM's report.

PJM believes that additional sensitivities, context and explanation are needed for stakeholders to fully understand the issues at hand. This response highlights several key issues with the IMM's report:

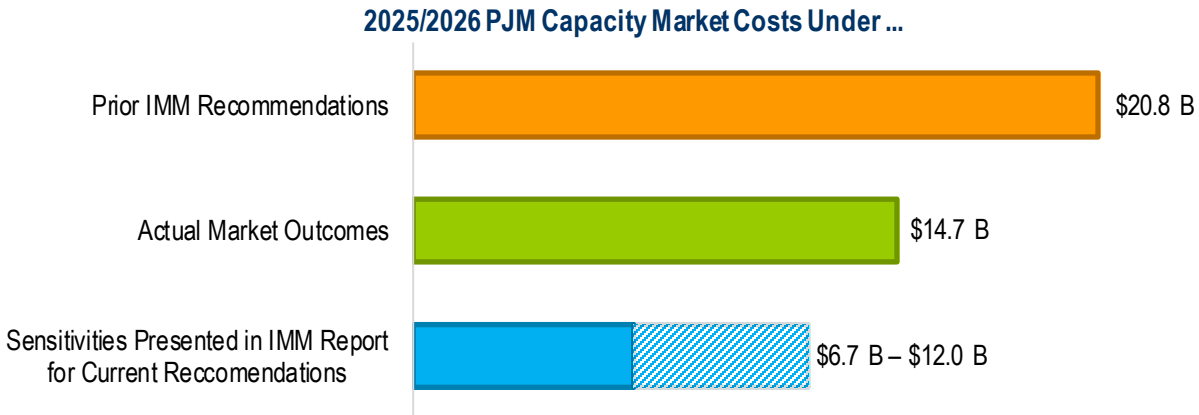
- The IMM's analysis of the impact of Effective Load Carrying Capability (ELCC) implementation fails to differentiate between the effects of the changes in risk modeling framework and the change in accreditation framework. The move to marginal ELCC accreditation is becoming an industry standard approach that aligns capacity valuation with marginal reliability contributions.
- The IMM's allegation of market power exercise through withholding of exempt resources lacks sufficient evidence and analysis. PJM urges the IMM to provide supporting data for this serious claim if it is available.
- While PJM agrees there may be additional winter thermal capacity available, the IMM's analysis of this issue oversimplifies the matter and fails to account for important limitations including deliverability constraints.
- The IMM's recommendation on including Reliability Must Run (RMR) resources in the capacity supply curve is inconsistent with their own recent positions and fails to consider critical issues around RMR agreement obligations. Further, PJM remains concerned that forcing RMR units into the supply stack as a matter of policy could put downward pressure on the capacity price signal at the very time that new capacity is needed.
- PJM's analysis shows that if core capacity market changes the IMM recommended less than a year ago had been implemented instead of the risk modeling and accreditation frameworks that PJM filed and FERC approved, the 2025/2026 BRA would have cleared at the market cap across the RT O. For the IMM to ignore some of its own recent recommendations stemming from its assessment of alleged "core flaws"<sup>2</sup> in the PJM

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<sup>1</sup> Monitoring Analytics (The Independent Market Monitor for PJM), [Analysis of the 2025/2026 RPM Base Residual Auction – Part A](#) (PDF), Sept. 20, 2024 (hereafter, "IMM Report")

<sup>2</sup> Monitoring Analytics (The Independent Market Monitor for PJM), [Analysis of the 2024/2025 RPM Base Residual Auction](#) (PDF), Oct. 30, 2023

market and now claim that market prices should have cleared lower than they did creates a serious credibility challenge to the IMM’s report. This is not a small gap: the 2025/2026 capacity market cost if the IMM’s prior recommendations had been implemented would have been \$20.8 billion. The market cleared at a cost of \$14.7 billion. The IMM now presents sensitivities reflecting different recommendations with total costs ranging from \$6.7 billion to \$12.0 billion.



PJM remains committed to working collaboratively with the IMM and all stakeholders to continue refining and improving the capacity market design. As we look ahead to future auctions, PJM will continue its efforts to increase transparency, refine risk modeling and resource accreditation approaches, and ensure competitive outcomes that support long-term resource adequacy. We welcome continued engagement from the IMM and all stakeholders in this important ongoing work.

## 2. Implementation of Marginal ELCC

The IMM purports to quantify “the impact on market outcomes of: the shift from the EFORD availability metric to the ELCC availability metric,” finding that “holding everything else constant, use of the ELCC approach rather than the prior, EFORD approach, resulted in a 49.1 percent increase in RPM revenues.”<sup>3</sup> Based in part on this analysis, the IMM “concludes that the results of the 2025/2026 RPM Base Residual Auction were significantly affected by flawed market design decisions including PJM’s ELCC approach.”<sup>4</sup>

The way in which the IMM presents their analysis and conclusions is oversimplified. In conducting the sensitivity analysis, the IMM adjusts both supply-side (accreditation) and demand-side (reliability requirement) parameters of the auction based on information provided by PJM. However, in so doing, the IMM sensitivity estimates the combined effect of both the change in accreditation (from EFORD to marginal ELCC) as well as all changes made to the Reserve Requirement Study (RRS) with regard to how risk is modeled (including but not limited to a change to an hourly analysis, the approach to modeling weather-related and correlated drivers of performance, and the time frame of historical data used). The enhancements made to the risk modeling framework, which PJM understands the IMM supports, are separate and distinct from the change to a Marginal ELCC accreditation framework. The IMM does not

<sup>3</sup> IMM Report, pg. 1

<sup>4</sup> IMM Report, pgs. 4–5

estimate sensitivities capable of differentiating the impacts of these distinct market rule changes, but nevertheless attributes the impact to “PJM’s ELCC approach” and “the ELCC availability metric.”

The IMM maybe using shorthand to refer to all changes made pursuant to the recently-accepted market rule changes, including to the risk modeling framework, but the reference to ELCC simplifies and obscures the true drivers of the impacts the IMM assesses in this sensitivity. In fact, essentially all of the impacts on auction clearing outcomes are attributable to the changes in risk modeling and not the accreditation framework. Nearly every resource offered into the 2025/2026 BRA cleared; the same would have been true under an alternative sensitivity where only the accreditation reflected EFORD but the reliability requirement (in units of EFORD-accredited megawatts) reflected the outcomes of the enhanced risk modeling. The risk modeling enhancements resulted in a shift to winter risk and a change in Installed Reserve Margin (IRM) to account for lower resource performance, on average, during newly identified periods of risk. The move to marginal ELCC accreditation from the EFORD approach impacted the relative accreditation of generation resources compared to one another and to the fleet as a whole but did not impact the overall tightness of the markets’ supply-demand balance.

Furthermore, while PJM believes the magnitude of the impact assessed in this sensitivity is accurate (when re-interpreting the sensitivity as the combined impact of the risk modeling changes and adoption of marginal ELCC), it is important to note that combined impact of the FERC-approved Critical Issue Fast Path (CIFP) changes accounted for less than 20% of the decline in excess capacity from the 2024/2025 BRA to the 2025/2026 BRA. Under the tight supply-demand conditions that materialized for the 2025/2026 BRA, even relatively small impacts to the supply-demand balance can have outsized impacts on clearing prices because of the inelasticity of both supply and demand. PJM believes that the nearly 2.7 GW impact of the enhanced risk modeling and concordant accreditation changes were appropriate and necessary to reflect emerging patterns of risk and lower-than-expected generator performance during such risk events. This belief is supported by the fact that the implementation of marginal accreditation is becoming the industry standard, as further described below.

PJM originally implemented ELCC in 2021 (effective with the 2023/2024 Delivery Year) pursuant to a 206 finding by FERC that the then-rule regarding the 10-hour minimum duration run time for a capacity resource was not just and reasonable. At that time, PJM implemented an Average ELCC methodology that was in place until the most recent set of accreditation changes implemented in the 2025/2026 BRA.

More generally, the use of probabilistic models to assess risk patterns and the implementation of accreditation “on the margin” based on the results of those models is quickly becoming the industry standard.<sup>5</sup> FERC has approved filings by both MISO and NYISO to implement a marginal accreditation framework in their respective capacity markets. ISO-NE is also moving toward marginal accreditation in the future as part of a larger set of market reforms. The various ISO/RTO risk modeling approaches differ because the risks perceived to be most impactful to resource adequacy are different for each region. For example, PJM implemented a model that takes into account the effects of

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<sup>5</sup> Marginal accreditation includes both Effective Load Carrying Capability (ELCC) and Marginal Reliability Impact (MRI), which are two methods of approximating the capacity contribution of a resource. The two approaches produce the same result when evaluated under the same reliability metric for small (marginal) capacity contributions. Both have been discussed by other ISOs/RTOs.

correlated outages due to its experiences with the 2014 Polar Vortex and Winter Storm Elliott, while ISO-NE has worked on explicit modeling of the natural gas system in their footprint due to gas availability constraints experienced in the region. While these implementations are slightly different, in both areas the resource adequacy risk modeling problem is growing in complexity, and the methods relied upon by the industry for decades are no longer sufficient given the resource adequacy challenges observed today and anticipated in the future.

To capture the impact of these new risks on capacity accreditation, ISOs/RTOs are moving toward using the outputs from these models to determine resource capacity accreditation using marginal accreditation. There is no known simple alternative approximation method to capture the impacts of supply resource performance, correlations across resources and with load patterns, and other emerging risks to resource adequacy. Average availability metrics like EFORd and those proposed by the IMM are inadequate. These alternatives do not capture the aforementioned interactions of resources or align capacity accreditation with performance during extreme events like the approaches being employed by PJM and other ISOs/RTOs. Therefore, they incentivize performance during average conditions with insufficient accountability for performance during the most extreme risk periods.

The principle of marginal-value compensation is fundamental to the design of efficient wholesale markets. This principle underlies all key market products, including energy (locational marginal prices) and reserves. The core design of the capacity market supply-demand clearing mechanism also embodies marginal pricing, where the price applied to all cleared capacity resources in a specific transmission-constrained area equals the marginal value of the last megawatt of capacity cleared in that area. Marginal accreditation aligns coherently with the established marginal pricing approach prevalent in the capacity market and indeed all PJM wholesale markets. As described by Potomac Economics, the market monitor for ERCOT, ISO-NE, MISO and NYISO, “[i]n competitive markets, the debate between total/average value and marginal value never arises because competitive markets always value products at their marginal value.”<sup>6</sup>

Potomac Economics further summarized the benefits as follows in the FERC proceeding regarding marginal accreditation in NYISO:

*A marginal approach will pay resources based on their expected availability at times when reliability is most threatened. Marginal capacity values will naturally change over time as the resource mix and needs of the system change. This will appropriately align capacity payments with the incremental reliability impact that an investment or retirement decision would have on the system. Marginal capacity payments provide signals to invest in the most efficient mix of clean energy resources, build or maintain additional resources that are needed for reliability, and retire the surplus generators that provide the least reliability benefit.<sup>7</sup>*

To the extent other better solutions are available, PJM is open to discussing them; however, at this time, it is clear that the industry is moving in the direction of more sophisticated, hourly, probabilistic risk modeling approaches and marginal accreditation that reflects assessed resource adequacy contributions based on those models.

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<sup>6</sup> Comments of Potomac Economics, Docket No. ER22-772-000, at 13 (Feb. 11, 2022)

<sup>7</sup> Motion to Intervene and Comments of Potomac Economics, Docket No. ER22-772-000, at 3 (Jan. 26, 2022)



PJM recognizes the complexity of the recently implemented approach and looks forward to working with stakeholders on increasing transparency<sup>8</sup> and continuing to enhance our ELCC construct.<sup>9</sup>

### 3. Withholding of Categorically Exempt Resources

The IMM's report makes a serious allegation that the must-offer obligation exemption that applies to certain resource types led to the "exercise of market power through [...] withholding" and resulted in an "increase the clearing prices above the competitive level."<sup>10</sup> The IMM has not shared evidence with PJM to support this conclusion. To the extent evidence is provided to support the IMM's claim, PJM will act swiftly to make necessary changes. At this time, we have significant concern with such a statement being publicly made without supporting evidence.

To be clear, it is a fact that in the 2025/2026 BRA certain resources with available capacity that could have been offered into the auction but that were not subject to the must-offer obligation did not offer all available capacity. However, the IMM simply assumes that this "withholding" was due to an exercise of market power. The report fails to consider legitimate reasons why exempt resources may not have been offered into the capacity market. PJM has previously provided feedback to the IMM that additional support for this claim was warranted. Specifically, PJM believes that the IMM must assess the portfolio profitability impacts of the purported "withholding" in order to determine whether the action could plausibly be connected to the exertion of market power. Additionally, the IMM should request information from market sellers in cases where the IMM suspects exercise of market power to consider whether there were other factors that explain the market sellers' decisions.

In cases where market sellers declined to offer capacity for which they were qualified and this decision resulted in lower portfolio net profits, this strongly suggests that other factors were at play in the decision not to offer. As a simple example, a market participant with only a single resource that chooses not to offer that resource does not have infra-marginal capacity that would benefit from a higher clearing price. Thus, although the seller may have the ability to raise the market price, they do not have the ability to do so in a manner that that benefits the profitability of their portfolio, and thus they do not have the incentive to do so. Any such "withholding" cannot be ascribed to unilateral market power.

One possible alternative explanation for the unoffered supply is that even competitive market sellers of exempt resources may assess the costs and risks associated with providing capacity and accepting a capacity commitment as higher than what the IMM would consider acceptable. If recent high prices were unforeseen, which is supported by various projections of the 2025/2026 BRA results that were lower than the actual clearing, such a market seller might find it economic to elect not to participate in the capacity auction without being at all motivated by the impacts on the profitability of the remainder of their portfolio. Sellers exempt from the capacity must-offer obligation, if choosing to voluntarily offer capacity, are still required to offer at levels that do not exceed the Market Seller Offer Cap (MSOC). It

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<sup>8</sup> See Capacity Market Enhancements – Data Transparency [Problem Statement](#) (PDF) and [Issue Charge](#) (PDF) presented by LS Power at Sept. 25, 2024 PJM Markets and Reliability Committee.

<sup>9</sup> See Capacity Market Enhancements – ELCC Accreditation Methodology [Problem Statement](#) (PDF) and [Issue Charge](#) (PDF) presented by LS Power at Sept. 25, 2024 PJM Markets and Reliability Committee.

<sup>10</sup> IMM Report, pgs. 5, 3

is only ex-post, when realized auction clearing prices are high, that such a seller might regret not having offered at the levels the IMM would have found acceptable.

The allegation that market power was exercised in the 2025/2026 BRA is a significant one that requires careful consideration, analysis, and support. PJM reiterates its desire for the IMM to share its analysis concluding market power was exerted and urges the IMM to include analysis supporting its conclusion if further claims are made.

## 4. Use of Summer Ratings for Gas Resources

We agree with the IMM that there potentially exists additional thermal capacity available during winter months that is not fully reflected in current resource accreditation. In fact, this recognition was a key driver behind PJM's proposal for a seasonal capacity market. That proposal, which the IMM opposed, would have accredited resources in each season based on their expected seasonal performance, while respecting seasonal generation deliverability limitations. PJM remains committed to addressing the identified issue expeditiously through the stakeholder process. Most recently, a stakeholder brought forth an issue charge that PJM supported to discuss this very issue in addition to several other enhancements regarding PJM's risk modeling and accreditation.<sup>11</sup>

While PJM supports the general direction the IMM's analysis seems to be heading, PJM has concerns with the way the analysis was performed and the magnitude of the results.

First, the IMM's analysis does not account for any winter deliverability limitations that may exist. The IMM assumes that any additional winter capability would be fully deliverable. This is not a realistic assumption. In reality, thermal resources have only been assessed for deliverability up to the level of Capacity Interconnection Rights (CIRs) that they currently hold. While it is likely that some additional winter deliverability would be available, there are likely limitations that, to PJM's knowledge, have not been studied by the IMM. The IMM does not provide evidence of any deliverability analysis conducted to assess these limitations, nor did they note the potential impact of such limitations on their analysis.

Secondly, the IMM claims, without supporting evidence, that "The installed reserve margin (IRM) and reliability requirement would be lower if the higher generation capacity of these resources during the winter months were recognized." This assertion is not accurate and oversimplifies the relationship between resource capacity and reliability requirements. An increase in resource ELCC or Unforced Capacity (UCAP) is fundamentally a supply-side impact. The secondary impact on the demand side (including reserve margin) depends on whether the assumed supply changes tend to shift risk toward lower or higher load hours relative to the base case. To make a conclusive statement regarding how the IRM would change if thermal resources had additional capability requires more analysis and would depend on the outage patterns of the resources to which the additional capability was granted.

If additional winter capability were granted to thermal resources and it resulted in a shift in risk from the winter to the summer, this would increase, not decrease, the reliability requirement. Despite being informed of this concern by

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<sup>11</sup> See Capacity Market Enhancements – ELCC Accreditation Methodology [Problem Statement](#) (PDF) and [Issue Charge](#) (PDF), presented by LS Power at Sept. 25, 2024, PJM Markets and Reliability Committee.



PJM, the IMM only included scenarios with equal or lower reserve margins in their analysis. We believe this substantially overstates the cost impacts of recognizing additional winter capacity.

In summary, while we agree that there is merit in exploring sub-annual (or other interim) approaches to better recognize resources' differentiated seasonal capabilities, the IMM's analysis of this issue is incomplete and very likely overstates the potential here. A more comprehensive analysis that accounts for deliverability constraints, accurately models the impact on reliability requirements, and considers broader market implications is necessary to draw meaningful conclusions and inform policy decisions. PJM remains committed to working with all stakeholders and the IMM to develop a robust and equitable solution to this complex issue.

## 5. Exclusion of RMR Resources From Capacity Supply

The IMM's report recommends including Reliability Must Run (RMR) resources in the capacity supply curve at \$0/MW-day based on their recommendation that these resources be treated "consistently" in the auction and the Capacity Emergency Transfer Objective (CETO) and Capacity Emergency Transfer Limit (CETL) analysis. We believe this recommendation oversimplifies the matter and fails to consider several critical factors.

The IMM's recommendation is inconsistent with their own recent positions on this issue. In the 2024 IMM Annual State of the Market report published in March 2024, the IMM included a recommendation (first reported in Q3 2023) that RMR resources not be included in the calculation of Capacity Emergency Transfer Objective (CETO) **or reliability** in the relevant LDA.<sup>12</sup> As recently as August 2024, the IMM's proposed solution package in the Deactivation Enhancements Senior Task Force (DESTF) included a "status quo" capacity must-offer obligation, and proposed that "RMR units should not be included in PJM's CETO/CETL parameter analysis for capacity auctions," consistent with their exclusion from the capacity supply stack.<sup>13</sup> Further, the IMM "has argued that including RMR units in the capacity market and resource stack suppresses prices that could incentivize new generation."<sup>14</sup> This is in fact the reasoning behind PJM's treatment of RMR units in its capacity auctions. The IMM now appears to emphasize the importance of "consistency": "It would be internally consistent to leave the RMR units out of the CETO/CETL analysis. It would also be internally consistent to include the RMR units in the supply of capacity and in the CETO/CETL analysis."<sup>15</sup> The IMM does not state a preference between the two approaches in its report despite the fact that they yield significantly different market outcomes and investment incentives, one of which is clearly incompatible with their earlier position (and potentially harmful to reliability), and conducts a sensitivity analysis that assesses the impact of that very approach.

PJM believes that consistency between CETO/CETL and capacity supply is a secondary issue, while consistency between capacity supply obligations and RMR agreements is a more central, primary issue. In particular, RMR agreements that were developed and filed by the generators only require the resources to run during limited

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<sup>12</sup> Monitoring Analytics (The Independent Market Monitor for PJM), [2023 State of the Market Report for PJM \(PDF\)](#), pg. 92

<sup>13</sup> Deactivation Enhancements Senior Task Force, [Item 03 – Options and Packages Matrix \(XLS\)](#), Aug. 19, 2024

<sup>14</sup> Devin Leith-Yessian, [PJM Stakeholders Considering Changes to Generation Deactivation Compensation and Timelines](#), RTO Insider, April 22, 2024

<sup>15</sup> IMM Report, pg. 6

operational events. These resources have different obligations and do not necessarily provide the same capacity product as other committed resources. It is not clear that it would be appropriate to count these RMR resources similarly to other capacity resources in the capacity supply stack simply because they "may" be available.

Furthermore, the IMM's recommendation to include RMR resources in the supply curve at \$0/MW-day fails to account for any real, incremental, avoidable going-forward costs associated with capacity commitments (even if these costs are covered under a cost-based RMR agreement, they are costs nonetheless that should be evaluated when determining the efficient set of resources to commit to provide capacity). While these incremental costs might be lower than the clearing price in the last auction, any market design reforms must be robust to a range of different conditions, including far less tight conditions where the RMR resource may well have incremental costs of providing capacity that exceed the incremental value at higher reserve margins.

In summary, we believe the IMM's report oversimplifies the matter and is inconsistent with recent positions taken by the IMM on this same matter.

## 6. The Missing Sensitivity: Discussion Regarding the IMM's "Four Core Flaws" in the PJM Market Design as Expressed in October 2023

Consistent with previous IMM reports, the 2025/2026 BRA Report prepared by the IMM cites "market design flaws" in the capacity market as a driver of the outcome of the market as well as the exertion of market power.<sup>16</sup>

*Based on the data and this review, the MMU concludes that the results of the 2025/2026 RPM Base Residual Auction were significantly affected by **flawed market design decisions including PJM's ELCC approach** and by **the exercise of market power through the withholding of categorically exempt resources and high offers from demand resources**. The BRA prices do not solely reflect supply and demand fundamentals but also reflect, **in significant part, PJM decisions about the definition of supply and demand**. The auction results were not solely the result of the introduction of the ELCC approach and do in part reflect the tightening of supply and demand conditions in the PJM Capacity Market. **PJM's ELCC filing that created many of these issues was approved by FERC.***

As a starting point, PJM does not claim that all rules in the capacity market are perfect. In fact, the capacity market has undergone consistent rule changes, variously driven by PJM, stakeholders, the IMM and FERC since its implementation. It is a market where there is no universal best design despite the many opinions that exist on the various design elements. However, PJM believes its current rules are just and reasonable.

As stated in the previous section, PJM supports the pursuit of rule changes that could make available additional winter capacity from thermal resources. A Problem Statement and Issue Charge related to this issue was recently brought to the Markets and Reliability Committee in September 2024 that PJM supports.<sup>17</sup> Further, PJM supports the continued refinement of market power mitigation rules. These rules must balance the required participation in the

<sup>16</sup> IMM Report, pgs. 4–5

<sup>17</sup> See Capacity Market Enhancements – ELCC Accreditation Methodology [Problem Statement](#) (PDF) and [Issue Charge](#) (PDF), presented by LS Power at Sept. 25, 2024. PJM Markets and Reliability Committee.

market and offer levels with the ability for sellers to appropriately include all relevant costs in their offers. Much like the capacity market, there are no universally correct answers regarding how market power is mitigated. There are a wide range of solutions that have been accepted by FERC as just and reasonable across the ISOs/RTOs in the U.S.

But PJM believes additional information may help stakeholders wishing to contextualize the IMM's conclusions. In particular, the conclusions and recommendations from the 2025/2026 BRA Report differ markedly from those in the IMM's report on the preceding capacity auction, the 2024/2025 BRA, which was issued just 11 months ago. In the report on the previous auction, the IMM states:<sup>18</sup>

*The combined impact of **four core flaws** in the market design and in the definition of capacity was to reduce capacity market revenues by 53.8 percent in the 2024/2025 BRA. The four core flaws are: the shape of the VRR curve; the overstatement of intermittent MW offers<sup>19</sup>; the inclusion of sell offers from DR; and capacity imports.*

This section provides estimates of the impact of the IMM's recommendations to address the "four core flaws" they identify in their 2024/2025 BRA Report. This analysis estimates how the 2025/2026 BRA might have cleared had PJM not pursued the rule changes it did and instead followed the IMM's recommendations in that recent report. PJM requested the IMM provide this analysis but it was not included in their recent report on the 2025/2026 BRA. PJM provides it here to supplement the discussion.

### ***Removing sell offers from demand resources and capacity imports would result in an RTO-wide capacity shortfall and prices at the cap.***

In the 2024/2025 BRA Report, the IMM states that allowing supply-side participation by demand response and capacity imports represents two of the "four core flaws" in the capacity market that reduced generation supply revenues in that auction by 53.8% in that auction. As a benchmark, MISO, NYISO and ISONE, like PJM, all permit demand resources and capacity imports to participate as supply in the capacity market. Those resources, like generation, can be used to meet the resource adequacy needs of their systems. At this time, when resource adequacy in all regions is tightening, none of those ISOs/RTOs are seeking to categorically exclude these types of supply from participation.

To assess the impact of the IMM's supply recommendations, PJM is leveraging a presentation provided to stakeholders at the August 2024 Markets and Reliability Committee (MRC) meeting.<sup>20</sup> In that presentation, PJM

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<sup>18</sup> Monitoring Analytics (The Independent Market Monitor for PJM), [Analysis of the 2024/2025 RPM Base Residual Auction \(PDF\)](#), Oct. 30, 2023

<sup>19</sup> PJM's understanding of the issue regarding the overstatement of the accreditation of intermittent resources originates from the output level to which intermittent resources are limited in the studies that determine their level of accredited capacity. This issue was addressed by stakeholders at the Capacity Interconnection Rights for ELCC Resource<sup>s</sup> stakeholder group. Changes to this modeling were approved by the members in February 2023, filed and accepted by FERC, and implemented in the 2025/2026 BRA. PJM's understanding is that the IMM's concerns here have been addressed as noted in their 2023 State of the Market Report.

<sup>20</sup> PJM, [2025/2026 Base Residual Auction Results \(PDF\)](#), Aug. 21, 2024

provided estimates of how the supply and demand quantities in the 2025/2026 BRA would have looked had the risk modeling and accreditation rule changes pursuant to the CIFP process not been implemented.

The table below is from that presentation and shows a high-level view of the supply, demand and excess capacity beyond the reliability requirement in the 2024/2025 and 2025/2026 BRAs using the same risk analysis and accreditation (EFORd) that were in place prior to the recent market rule changes.

Parameter	2024/2025	2025/2026 (Pre-CIFP Rules)
<b>Peak Load</b>	150,640.3 MW	153,883.0 MW
IRM	14.7%	17.7%
Pool-wide EFORd	5.02%	5.09%
RTO Reliability Requirement (no EE addback)	164,107.6 MW	171,902.7 MW
FRR-Adjusted Reliability Requirement (no EE addback)	132,055.7 MW	158,946.0 MW
ICAP Offered (no FRR or EE)	154,329 MW	169,435 MW
UCAP Offered (no FRR or no EE)	148,096 MW	162,142 MW
<b>Excess UCAP</b>	<b>16,040 MW</b>	<b>3,196 MW</b>

As PJM presented, there were significant changes in the supply and demand in the market (slides 12–18) that occurred regardless of the rules changes made to PJM’s resource adequacy risk analysis or accreditation processes. These changes resulted in a reduction of excess unforced capacity (UCAP) from approximately 16,000 MW in the 2024/2025 BRA to 3,200 MW in the 2025/2026 BRA. To reiterate, this change in supply-demand balance is assessed under the prior rules that used PJM’s prior risk modeling approach and EFORd for accreditation. The implementation of PJM’s new risk modeling and ELCC does not impact these values.

On slides 24 and 25 of the same presentation, PJM performs calculations specifically to estimate the amount of UCAP that would have been available in the 2025/2026 BRA had risk modeling and accreditation been performed under the prior rules. Regarding accreditation, PJM uses the pool-wide EFORd for generation and the Forecast Pool Requirement (FPR) for demand resources.<sup>21</sup> The table below shows that there would have been approximately 153,123 MW of UCAP available from generation (this includes supply from external capacity resources), 8,769 MW from demand resources and 251 MW from aggregated seasonal resources. The total supply was calculated to be 162,142 MW.

<sup>21</sup> Under the pre-CIFP rules, PJM used average ELCC to accredit intermittent resources which would have accredited intermittent generation at a lower level than the pool-wide EFORd used here. The use of pool-wide EFORd in this case is done for simplicity and the net effect is an overstatement of the reliability contribution of intermittent resources, which means the true amount of generation UCAP under the old rules would have likely been lower.

Resource Type	ICAP Offered (MW)	UCAP Offered (MW)
Generation	161,335	153,122
Demand Response	7,849	8,769
Aggregate Resources	251	251
<b>Total</b>	<b>169,435</b>	<b>162,142</b>

Of the 161,335 MW of generation ICAP offered into the auction, 1,485.2 MW were from external capacity resources. Using the pool-wide average EFORD to convert this to UCAP, it can be determined that 1,410 MW out of the 153,122 MW of generation UCAP is from external capacity resources.<sup>22</sup>

Given that, the total amount of UCAP supply the IMM has proposed to remove is 10,179 MW.<sup>23</sup> The table below details a calculation of excess UCAP relative to the reliability requirement but with the amount of supply adjusted to match the IMM's recommendations that would address their supply recommendations in the manner the IMM desires. The net result is a supply shortfall of nearly 7,000 MW.

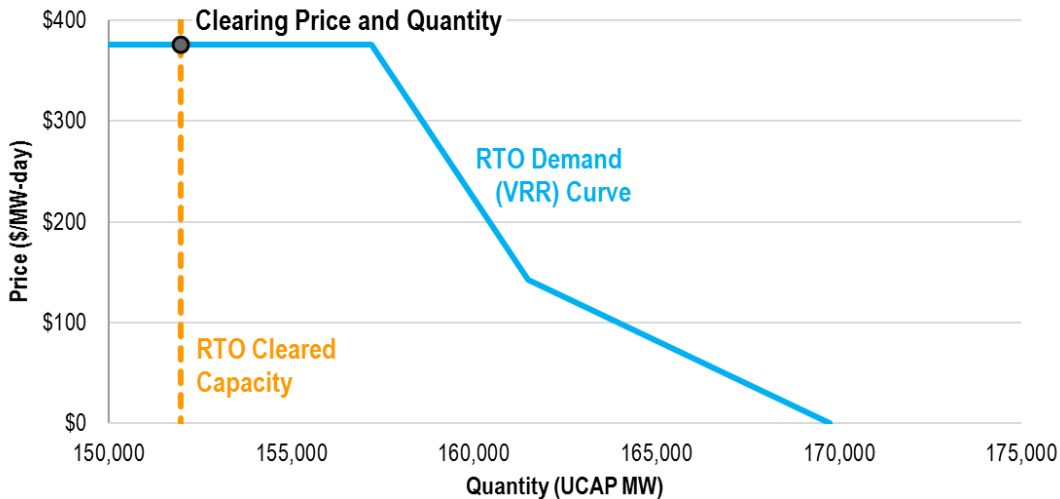
	UCAP (MW)
Total UCAP Available	162,142
Removed DR UCAP	-8,769
Removed External Capacity UCAP	-1,410
Total Remaining Supply	151,963
Reliability Requirement	158,946
<b>Excess UCAP</b>	<b>-6,983</b>

From a market clearing perspective, a supply shortfall of that magnitude would necessarily result in all supply offered at or below the price cap clearing the auction and a clearing price equal to the price cap. This occurs because there is not enough remaining supply to intersect the demand curve, and therefore the clearing price is set as the price on the demand curve corresponding to the amount of cleared supply, in this case, the price cap. Under the prior rule set, the price cap on the demand curve would have been \$375.91/MW-day UCAP.<sup>24</sup>

<sup>22</sup> 1,410 MW = 1,485.2 MW × (1 – 5.09%).

<sup>23</sup> 10,179 MW = 8,769 MW + 1,410 MW.

<sup>24</sup> This is calculated by converting the Gross CONE of \$130,223/MW-year ICAP to units of \$/MW-day UCAP using the pool-wide average EFORD for 2025/2026 of 5.09%. \$375.91/MW-day = \$130,223/MW-year / 365 days / (1 – 5.09%).



Not considering constrained LDAs, clearing all remaining available supply at a \$375.91/MW-day clearing price results in a total billing of approximately \$20.8 billion for the 2024/2025 BRA. This is \$6.1 billion or 42% higher than the actual 2025/2026 BRA result.

Also of note in this scenario and the following is that by excluding this supply, the RTO is unable to meet the reliability requirement by a significant amount, almost 7,000 MW. While difficult to estimate, there is a cost associated with the degraded reliability state resulting from the IMM categorically removing demand response and capacity imports.

***Extending the requirement to offer capacity to all resources does not overcome the capacity shortfall.***

In the 2025/2026 BRA Report, the IMM includes a recommendation to enforce a must-offer requirement on all resources with Capacity Interconnection Rights (CIRs) and without a must-offer exception (this does not include RMR units). The IMM estimates the impact of this to be about \$4.1 billion or a reduction in total billing of 28% from \$14.7 billion to \$10.5 billion. Additionally the IMM highlights that an additional 1,444.3 MW would have cleared had this supply been offered at \$0/MW-day.

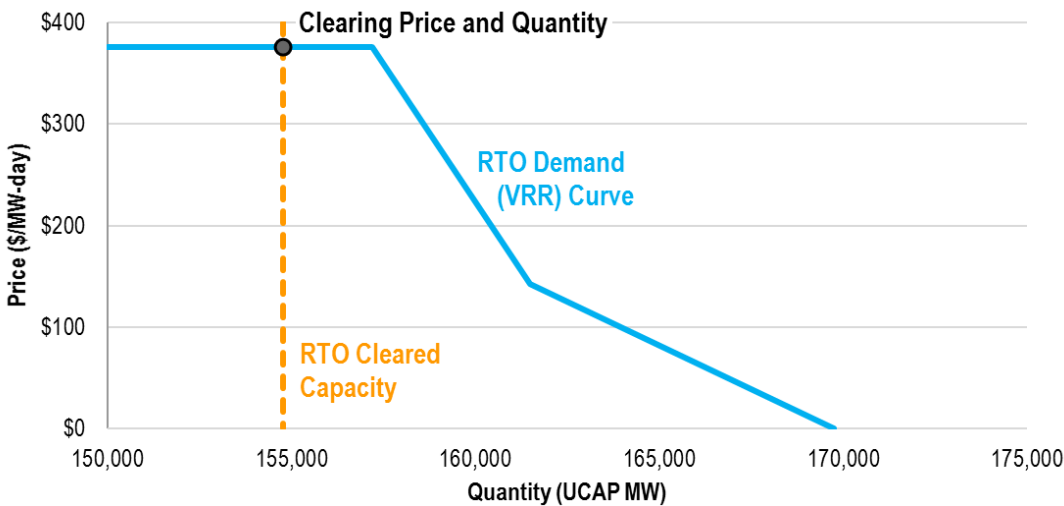
PJM supports stakeholder discussions regarding a must-offer requirement for all resources and is working with the IMM to investigate any concerns with market power prior to 26/27 BRA. PJM is including this proposed rule change as part of its analysis to demonstrate that even if all resources with CIRs and without a must-offer exception were required to offer their full capability into the auction (not including RMR units), it would not overcome the capacity supply deficit created by removing valid forms of supply such as demand response and external capacity imports as the IMM previously recommended.

Using the pre-CIFP method of accreditation using EFORd and average ELCC, PJM estimates about 2,800 MW of UCAP that was not subject to a must offer in the 2025/2026 BRA that did not offer. The table below includes this additional UCAP as part of the overall IMM solution including the removal of demand response and external capacity resource offers. The final outcome is a shortfall of capacity relative to the reliability requirement of 4,183 MW.



	UCAP (MW)
Total UCAP Available	162,142
Removed DR UCAP	-8,769
Removed External Capacity UCAP	-1,410
Unoffered UCAP Now Offered	2,800
Net Change in UCAP Supply	-7,379
Remaining UCAP Available	154,763
Reliability Requirement	158,946
<b>Final Shortfall</b>	<b>-4,183</b>

This auction clearing outcome is depicted below. The total market billing in this case would be \$21.2 billion. This is \$6.3 billion, or 43%, more than the actual 2025/2026 BRA. The RTO as a whole is still 4,183 MW short of meeting its reliability requirement.



***When including the IMM’s supply-side recommendations, the capacity shortfall negates any impact of steepening the demand curve.***

In the 2024/2025 BRA Report, the IMM states that “the MMU recommended that the VRR curve be rotated half way towards the vertical demand curve at the reliability requirement.” This essentially results in a further steepening of the demand curve making it closer vertical. The IMM’s primary justification for this recommendation is, “[t]he shape of the VRR curve directly results in load paying substantially more for capacity than load would pay with a vertical demand curve.” The IMM does not provide analysis that their proposed demand curve reduces costs for consumers in the long run or analysis to support the assertion it can effectively meet PJM’s resource adequacy needs on average.

While the 2024/2025 BRA Report recommends a steepening of the demand curve, the aforementioned categorical exclusion of substantial quantities of supply negates any effect of this change because the supply and demand curves no longer intersect because the RTO is significantly short on capacity. The impact of this recommendation, when considered in conjunction with the others, is zero.

## 7. Conclusion

PJM appreciates the IMM's efforts through its report to provide additional transparency and analysis, however, the report represents an incomplete set of sensitivities, provides insufficient context, and draws several conclusions that either lack support or are incorrect. The positions the IMM adopts in its report also contradict very recent positions the IMM had taken on these same issues. The absence of clear explanations regarding the change in these positions damages the credibility of the IMM's report. PJM reinforces its commitment to working collaboratively with the IMM and all stakeholders to continue refining and improving the capacity market design, and welcomes continued engagement from the IMM and all stakeholders in this important ongoing work.