

December 20, 2024

The Honorable Debbie-Anne A. Reese  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E., Room 1A  
Washington, D.C. 20426

Re: *PJM Interconnection, L.L.C.*, Docket No. ER25-785-000  
Extending the Capacity Must-Offer Requirement to All Generation Capacity  
Resources

Dear Secretary Reese:

PJM Interconnection, L.L.C. (“PJM”), pursuant to section 205 of the Federal Power Act (“FPA”),<sup>1</sup> proposes revisions to the PJM Open Access Transmission Tariff (“Tariff”) to recognize that the current and expected resource mix includes significant amounts of Intermittent Resources, Capacity Storage Resources, and Hybrid Resources that should be reflected in the capacity market supply curve.<sup>2</sup> These additional new resources will continue to be a welcome addition to the PJM system because they will contribute to the reliability of the PJM Region. However, once such resources become in-service, they should be reflected as supply in PJM’s Reliability Pricing Model (“RPM”) to account for capacity that is available to the PJM system like all other Existing Generation Capacity Resources. To that end, PJM proposes to update its market power mitigation rules and extend the capacity must-offer requirement to *all* available Existing Generation Capacity Resources. By doing so, RPM Auction outcomes will more accurately reflect the actual

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<sup>1</sup> 16 U.S.C. § 824d.

<sup>2</sup> For the purpose of this filing, capitalized terms not defined herein shall have the meaning as contained in PJM’s Tariff, Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., or the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region.

quantity of Existing Generation Capacity Resources, while continuing to safeguard against the potential exercise of market power that may be exerted by the withholding of such resources.

Accordingly, PJM proposes to sunset the categorical exemption from the capacity must-offer requirement applicable to Intermittent Resources, Capacity Storage Resources, and Hybrid Resources beginning with the Base Residual Auction for the 2026/2027 Delivery Year. Correspondingly, PJM also proposes to update the Market Seller Offer Cap rules so that Sell Offers of Capacity Resources, including those of Intermittent Resources, Capacity Storage Resources, and Hybrid Resources, can better reflect the full cost of such resources receiving a capacity obligation. As explained below and in the affidavit of Dr. Walter Graf, PJM's Chief Economist, this proposed package of changes will enhance price formation in PJM's capacity auctions by producing clearing prices that better reflect the PJM Region's existing supply and demand fundamentals, i.e., by requiring *all* Existing Generation Capacity Resources to be offered into the RPM Auctions at a level that allows Capacity Market Sellers to recover at least the economic costs associated with receiving a capacity obligation, including their avoidable going-forward costs and incremental risk of Non-Performance Charges during Performance Assessment Intervals ("PAIs").

The PJM Board of Managers ("PJM Board") exercised its independent authority in directing PJM to submit these revisions. PJM thus submits this filing pursuant to its independent authority to modify its Tariff under FPA section 205 pursuant to Tariff, section 9.2(a) and the Consolidated Transmission Owners Agreement, section 7.5.1(i), following the requisite consultation specified under Tariff, section 9.2(b) and the Consolidated Transmission Owners Agreement, section 7.5.1(ii).

Given the limited time remaining before the first pre-auction activities for the 2026/2027 Base Residual Auction that are affected by this filing, the Commission should accept this filing on or before February 21, 2025 to avoid further delay of the already-delayed capacity auction.<sup>3</sup> Specifically, relevant to the proposal to extend the must-offer requirement, the February 24, 2025 deadline for Capacity Market Sellers to request to remove a resource from Capacity Resource status looms large.<sup>4</sup> As a result, PJM urges the Commission to act on this filing by the requested February 21, 2025 effective date, so as to give sellers adequate time to evaluate and prepare any such requests. In the event the Commission issues a deficiency notice on this filing, PJM's present intent in such a situation would be to amend the requested effective date to a later date and implement these proposed revisions beginning with the Base Residual Auction for the 2027/2028 Delivery Year to avoid further delay of the 2026/2027 Base Residual Auction.

To help facilitate the Commission's acceptance of this filing without delay, PJM provides notice that it consents to the Commission's exercise of authority to modify the proposed Tariff language to the extent necessary and permitted under section 205 of the FPA and *NRG Power Marketing, LLC v. FERC*,<sup>5</sup> where such modification is consistent

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<sup>3</sup> See *PJM Interconnection, L.L.C.*, 189 FERC ¶ 61,105 (2024) (approving PJM waiver request to delay 2026/2027 Base Residual Auction to June 2025, with some pre-auction activities to be conducted on a compressed schedule).

<sup>4</sup> *RPM Auction Schedule*, PJM Interconnection, L.L.C., Tab 2 (26-27 BRA Post) (Feb. 18, 2022), <https://www.pjm.com/-/media/DotCom/markets-ops/rpm/rpm-auction-info/rpm-auction-schedule.xlsx> (the 26/27 Base Residual Auction activity dates based on Docket Nos. ER23-1609-000 and ER25-118 approved by the FERC).

<sup>5</sup> *NRG Power Mktg., LLC v. FERC*, 862 F.3d 108 (D.C. Cir. 2017). As the Commission has repeatedly stated, "[t]he United States Court of Appeals for the District of Columbia Circuit has held that, in certain circumstances, the Commission has 'authority to propose modifications to a utility's [FPA section 205] proposal if the utility consents to the modifications.'" *N.Y. Indep. Sys. Operator, Inc.*, 188 FERC ¶ 61,051, at P 22 n.36 (2024) (citing *NRG Power Mktg.*, 862 F.3d at 114-15); see *Midcontinent Indep. Sys. Operator*,

with PJM’s overarching objectives in this filing, including: (1) removing the capacity must-offer exemption for Intermittent Resources, Capacity Storage Resources, and Hybrid Resources consisting exclusively of components that in isolation would be Intermittent Resources or Capacity Storage Resources; (2) allowing Capacity Market Sellers to utilize a Market Seller Offer Cap based on the greater of the resource’s specific net Avoidable Cost Rate (“ACR”) or its specific Capacity Performance Quantifiable Risk (“CPQR”); and (3) allowing Capacity Market Sellers to request resource-specific segmented offer caps. To the extent the Commission exercises its authority, pursuant to section 205 of the FPA and *NRG Power Marketing*, to modify the proposed Tariff language herein, PJM’s submittal of any compliance filing implementing such modifications will constitute PJM’s consent and acceptance of the Commission’s modifications.<sup>6</sup>

## I. INTRODUCTION AND SUMMARY

In recent years, PJM has been forewarning of an impending convergence of supply and demand. PJM published a number of reports on the evolving resource mix and its impacts on the supply/demand balance.<sup>7</sup> Through these reports, PJM alerted stakeholders that “[t]he changes occurring in the electric industry and evolving resource mix have the

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*Inc.*, 180 FERC ¶ 61,141, at P 26 n.29 (2022) (same), *order on reh’g*, 182 FERC ¶ 61,096 (2023); *ISO New England Inc.*, 175 FERC ¶ 61,172, at P 16 n.20 (2021) (same).

<sup>6</sup> PJM has the authority to consent to modifications to PJM’s proposal by the Commission, pursuant to section 205 of the FPA and *NRG Power Marketing*, 862 F.3d 108, given that this filing was authorized by the PJM Board and was not the result of a stakeholder-endorsed proposal.

<sup>7</sup> See, e.g., *Energy Transition in PJM: Resource Retirements, Replacements & Risks*, PJM Interconnection, L.L.C., 2 (Feb. 24, 2023), <https://www.pjm.com/-/media/library/reports-notice/special-reports/2023/energy-transition-in-pjm-resource-retirements-replacements-and-risks.ashx> (“Resource Retirements, Replacements & Risks Report”).

potential to significantly impact the provision of adequate supply and reliability in PJM,”<sup>8</sup> and that “the current pace of new entry would be insufficient to keep up with expected retirements and demand growth by 2030.”<sup>9</sup>

However, the convergence has occurred even faster than previously anticipated. In July’s 2025/2026 Base Residual Auction, only 514 megawatts (“MWs”) of the annual UCAP that was offered did not clear.<sup>10</sup> The auction revealed capacity shortfalls in two Locational Deliverability Areas (“LDAs”), with the Baltimore Gas and Electric and Dominion Virginia Electric Power LDAs having cleared at the price cap due to being short of their respective LDA Reliability Requirements.<sup>11</sup>

PJM expects that the 2025 load forecast will show an even larger than previously expected increase in demand for 2026 and going forward, as shown in the preliminary 2025 load forecast recently shared with stakeholders.<sup>12</sup> Thus, the PJM Board concluded that “the PJM system could see a capacity shortage as soon as the 2026/2027 Delivery Year.”<sup>13</sup>

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<sup>8</sup> *Reliability in PJM: Today and Tomorrow*, PJM Interconnection, L.L.C., 12 (Mar. 11, 2021), <https://www.pjm.com/-/media/library/reports-notice/special-reports/2021/20210311-reliability-in-pjm-today-and-tomorrow.ashx>.

<sup>9</sup> Resource Retirements, Replacements & Risks Report at 2.

<sup>10</sup> Tim Horger & Adam Keech, *2025/2026 Base Residual Auction Results*, PJM Interconnection, L.L.C., 30 (Aug. 21, 2024), <https://pjm.com/-/media/committees-groups/committees/mrc/2024/20240821/20240821-item-08---2025-2026-base-residual-auction---presentation.ashx>.

<sup>11</sup> See *2025/2026 Base Residual Auction Report*, PJM Interconnection, L.L.C. (July 30, 2024), <https://pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2025-2026/2025-2026-base-residual-auction-report.ashx>.

<sup>12</sup> See Molly Mooney, *2025 Preliminary PJM Load Forecast*, PJM Interconnection, L.L.C., 40, 48 (Dec. 9, 2024), <http://pjm.com/-/media/committees-groups/subcommittees/las/2024/20241209/20241209-item-03---2025-preliminary-pjm-load-forecast.ashx> (showing summer load growth expectations as compared to earlier forecasts and winter forecasts, respectively).

<sup>13</sup> Mark Takahashi, *Letter Outlining Support for Upcoming Interconnection and Capacity Market Filings*, PJM Interconnection, L.L.C., 1 (Dec. 9, 2024), <https://www.pjm.com/-/media/DotCom/about-pjm/who-we-are/public-disclosures/2024/20241209-board-letter-outlining-action-on-capacity-market-adjustments-rri-and-sis.pdf>.

In other words, the PJM Region could be short of capacity in two years, and the auction clearing prices for the upcoming 2026/2027 Base Residual Auction could hit the price cap for the RTO Region.

Recognizing the need to avoid a capacity shortfall and the potential reliability issues that could ensue from such an outcome, PJM reviewed its interconnection and capacity market rules and commenced a multi-prong approach designed to: (1) facilitate the development of additional resources needed to rapidly address PJM's near-term reliability challenge through PJM's interconnection queue;<sup>14</sup> (2) streamline the ability for new generation resources to expeditiously access surplus interconnection;<sup>15</sup> and (3) produce capacity auction clearing price signals that accurately reflect current supply and demand fundamentals.<sup>16</sup>

Through this filing, PJM proposes targeted capacity market reforms to better reflect the PJM Region's existing supply and demand fundamentals in the RPM Auctions. Specifically, PJM's proposal recognizes the evolving resource mix by requiring all Existing Generation Capacity Resources to be offered in the RPM Auctions, and to allow Capacity Market Sellers of such resources to submit Sell Offers at a level that reflects the economic cost of providing capacity and risks associated with taking on a capacity obligation. As Dr. Graf testifies, requiring all Generation Capacity Resources to be offered in RPM Auctions, through offers that allow them to reflect their true economic cost, will

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<sup>14</sup> *PJM Interconnection, L.L.C.*, Tariff Revisions for Reliability Resource Initiative of PJM Interconnection, L.L.C., Docket No. ER25-712-000 (Dec. 13, 2024).

<sup>15</sup> *PJM Interconnection, L.L.C.*, Proposed Tariff Amendments for Surplus Interconnection Service of PJM Interconnection, L.L.C., Docket No. ER25-778-000 (Dec. 20, 2024).

<sup>16</sup> *PJM Interconnection, L.L.C.*, Revisions to Reliability Pricing Model of PJM Interconnection, L.L.C., Docket No. ER25-682-000 (Dec. 9, 2024).

“lead to more efficient price formation.”<sup>17</sup> As such, the changes proposed in this filing will allow capacity auction clearing prices to properly reflect existing supply and demand fundamentals.

As further detailed below, the time has come to remove the exemption that categorically allow Capacity Market Sellers to decide whether to offer Intermittent Resources (e.g., wind and solar), Capacity Storage Resources (e.g., battery and pumped hydro), and Hybrid Resources (e.g., combination of wind/solar and battery) into RPM Auctions. This exemption currently applies unconditionally, and thus there is *no* requirement for these resource types to be offered into RPM Auctions and contribute their capacity capability toward meeting the PJM Region’s reliability needs. As a result, approximately 1,600 MW (or approximately 15% of all categorically exempt Existing Generation Capacity Resources) were not offered in the Base Residual Auction associated with the 2025/2026 Delivery Year.<sup>18</sup> Those 1,600 MW of UCAP have Capacity Interconnection Rights (“CIRs”)<sup>19</sup> that load pays to maintain, through necessary transmission upgrades, in order to support the continued availability of such CIRs. Moreover, megawatts supported by CIRs that are not offered in the capacity market can lead to an overbuilt transmission system and/or obstruct competitors from building new Generation Capacity Resources in the area.

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<sup>17</sup> Affidavit of Dr. Walter Graf on Behalf of PJM Interconnection, L.L.C. (Attachment C) ¶ 6 (“Graf Aff.”).

<sup>18</sup> Graf Aff. ¶ 23.

<sup>19</sup> The Tariff defines “Capacity Interconnection Rights” as “the rights to input generation as a Generation Capacity Resource into the Transmission System at the Point of Interconnection where the generating facilities connect to the Transmission System.” Tariff, Definitions C-D.

When this categorical exemption was adopted in 2015, the penetration of these resource types in PJM was relatively small, and the Commission found that “they do not raise the same physical withholding concerns as do existing generation resources because their ownership is not concentrated.”<sup>20</sup> This is no longer the case. Dr. Graf analyzed Capacity Market Sellers with large portfolios containing significant quantities of Intermittent Resources and Capacity Storage Resources and concluded that some sellers today “have sufficiently large generation portfolios (including exempt and non-exempt resources) such that they could profit from withholding certain of their resources that today are categorically exempt [because] they have both the ability and incentive to exercise market power.”<sup>21</sup> In other words, certain Capacity Market Sellers in PJM have developed large portfolios of categorically exempt resources, including sellers with large portfolios of traditional generation resources, that could profitably exercise market power. Such ownership concentrations provide the incentive for such sellers to exercise market power. Moreover, Intermittent Resources and Capacity Storage Resources are now driving the evolution of the resource mix in PJM, comprising *over 97%* of PJM’s interconnection queue.<sup>22</sup> With the maturation of the industry and the barriers to entry falling, it is reasonable to expect further concentration of ownership portfolios consisting of categorically exempt Generation Capacity Resources that may become susceptible to the

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<sup>20</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 355 (2015), *order on reh’g & compliance*, 155 FERC ¶ 61,157 (2016), *aff’d sub nom. Advanced Energy Mgmt. All. v. FERC*, 860 F.3d 656 (D.C. Cir. 2017).

<sup>21</sup> Graf Aff. ¶ 21.

<sup>22</sup> Adam Keech, *Consultation with Members: Capacity Market Must Offer and Market Seller Offer Cap Changes*, PJM Interconnection, L.L.C., 12 (Dec. 13, 2024), <https://www.pjm.com/-/media/DotCom/committees-groups/committees/mc/2024/20241213-special/item-01---1-consultation-with-members-capacity-market-must-offer-and-market-seller-offer-cap-changes---presentation.pdf>.

exercise of market power. As a result, to proactively maintain the just and reasonableness of the capacity market rules, PJM proposes to remove the categorical must-offer exemption so that all Existing Generation Capacity Resources will be required to be offered into the RPM Auctions beginning with the 2026/2027 Delivery Year.

Extending the capacity must-offer to Intermittent Resources, Capacity Storage Resources, and Hybrid Resources also requires updating the Market Seller Offer Cap rules to better recognize performance risks that are particularly acute given the attributes of these resource types. These resource types present unique challenges as they generally have net energy and ancillary services (“EAS”) revenues that are greater than their relatively low going-forward costs, which results in a net ACR of \$0/MW-day, and relatively high performance risk during extended PAI events as they do not control their fuel source (e.g., wind/solar) or fuel limitations (battery). Thus, in order for the must-offer requirement to extend to Intermittent Resources, Capacity Storage Resources, and Hybrid Resources without unreasonably imposing the cost associated with the risk of taking on a capacity obligation on the seller, Capacity Market Sellers must be able to submit Sell Offers that reflect the cost associated with potential performance risk. Accordingly, PJM is proposing to provide Capacity Market Sellers with the option of a resource-specific Market Seller Offer Cap that is based on the greater of the resource’s net ACR as calculated in accordance with the Tariff or its “standalone” CPQR that is submitted for review by the Independent Market Monitor for PJM (“Market Monitor”) and ultimately approved by PJM after considering input from the Market Monitor. This alternative would allow a resource that would otherwise be subject to a zero dollar offer cap due to a high EAS offset to instead have its offer cap be based on its approved CPQR amount. PJM is also proposing to allow

differing resource-specific offer cap determinations for different segments of a Sell Offer to allow offers to better reflect the incremental costs of risk associated with higher committed levels of capacity.

PJM proposes to apply these two limited Market Seller Offer Cap enhancements to all Existing Generation Capacity Resources to avoid undue discrimination given that the underlying rationale applies to all resource types.

More particularly, while the impact of these changes will benefit Intermittent Resources, Capacity Storage Resources, and certain Hybrid Resources that would likely otherwise face a \$0/MW-day bid cap given their high EAS offset and low going forward costs, extension of this rule to all Generation Capacity Resources is just and reasonable for the same reason. Any Capacity Market Seller, regardless of the technology they bring to the market, should be permitted to submit an offer that is at least equal to their verified performance risk of taking on a capacity commitment. The Commission previously opined that it would be reasonable to permit sellers without “missing money” and who do not require additional incentives of a capacity payment to obtain a resource-specific offer cap above zero.<sup>23</sup> The Commission reasoned that such a resource “would still incur the incremental risks, which are borne as costs, from taking on a capacity commitment, including, for example, costs to mitigate a risk of Non-Performance Charges[.]”<sup>24</sup> Thus, failure to permit the seller to price such risk makes it uneconomic and irrational to take on a commitment when that risk exceeds \$0/MW-day.

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<sup>23</sup> See *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 39, *reh’g denied*, 187 FERC ¶ 62,016 (2024).

<sup>24</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 39.

PJM’s proposal to couple extending the must-offer requirement with updated Market Seller Offer Cap rules is consistent with the Commission’s acceptance in the Capacity Performance proceeding of the must-offer requirement for Capacity Performance Resources in conjunction with the addition of the CPQR component of the ACR.<sup>25</sup> There, the Commission “[found] that applying the must-offer requirement coupled with the revised ACR formula . . . will allow Capacity Performance Resources a reasonable opportunity to recover appropriate associated costs and will not constitute a taking.”<sup>26</sup>

## **II. TARIFF CHANGES TO EXTEND THE CAPACITY MUST-OFFER REQUIREMENT TO ALL GENERATION CAPACITY RESOURCES**

### **A. PJM Proposes to Extend the Capacity Must-Offer Requirement to All Existing Generation Capacity Resources and Remove the Categorical Exemption Applicable to Intermittent, Storage, and Hybrid Resources.**

#### *1. The Capacity Must-Offer Requirement is Designed to Prevent Physical Withholding of Existing Generation Capacity Resources.*

PJM’s capacity market rules include a requirement that Existing Generation Capacity Resources “must-offer” into RPM Auctions to protect against physical withholding.<sup>27</sup> By comparison, Planned Generation Capacity Resources, which are resources that have yet to reach commercial operation or clear an RPM Auction, are not subject to the must-offer requirement unless and until such resources become Existing Generation Capacity Resources and either go in-service or clear an auction.<sup>28</sup> This

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<sup>25</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 354.

<sup>26</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 354.

<sup>27</sup> Tariff, Attachment DD, section 6.6A(a).

<sup>28</sup> As a rule, Planned Generation Capacity Resources are not subject to the must-offer requirement. These are resources that have yet to reach commercial operation or clear an RPM Auction. Once a resource is in-service or clears an auction, the resource becomes an Existing Generation Capacity Resource that is subject to the must-offer requirement. Tariff, Reliability Assurance Agreement, Article 1 (defining Existing Generation Capacity Resource and Planned Generation Capacity Resource).

dichotomy is appropriate given that Planned Generation Capacity Resources are not yet in-service and should not be required to be offered into the capacity auction as a developer may not be confident that the resource will be in-service by the start of the relevant Delivery Year. By contrast, physical withholding of Existing Generation Capacity Resources can be a potentially profitable strategy for exercising market power in the aggregate or in local single clearing price markets. As a result, only Existing Generation Capacity Resources are subject to the capacity must-offer requirement and PJM does not propose to require any Planned Generation Capacity Resources to be offered in the RPM Auctions.<sup>29</sup> Rather, PJM is proposing to require all Existing Generation Capacity Resources to be offered into the RPM Auctions beginning with the Base Residual Auction for the 2026/2027 Delivery Year.

The Commission has supported PJM's proactive measures to address concerns about potential withholding of Existing Generation Capacity Resources and the exercise of market power. According to the Commission, "[t]he use of a must-offer requirement is both consistent with established capacity market practice and necessary to safeguard against manipulation in the PJM capacity market."<sup>30</sup> Combined with the mitigation of uneconomic withholding through the Market Seller Offer Cap, the RPM must-offer requirement protects against the potential exercise of market power.

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<sup>29</sup> See Tariff, Attachment DD, section 6.6(a) ("all of the installed capacity of all Existing Generation Capacity Resources located in the PJM Region shall be offered by the Capacity Market Seller that owns or controls all or part of such resource"). As part of this filing, PJM also proposes to clarify, consistent with the existing language in Tariff, Attachment DD, section 6.6(a), that this must-offer requirement applies only to *Existing* Generation Capacity Resources in Tariff, Attachment DD, section 6.6A(a).

<sup>30</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 354.

The Commission has also expressly disagreed with arguments that “PJM’s concerns about the physical withholding are overblown and unsupported by evidence.”<sup>31</sup> PJM’s proposed revisions to the RPM must-offer requirement need not provide specific evidence of the exercise of market power, according to the Commission, because “[t]he underlying purpose of the must-offer requirement is to *ensure* that sellers do not withhold capacity resources from RPM auctions and *potentially* exert market power.”<sup>32</sup> The must-offer requirement’s purpose is proactively “*preventing* sellers from physically withholding capacity.”<sup>33</sup>

The Commission has approved resource-specific exceptions and categorical exemptions to the must-offer requirement when they are “reasonable and sufficiently narrow to prevent withholding.”<sup>34</sup> Unit-specific exceptions from the must-offer requirement are allowed if a resource will not be available for the relevant Delivery Year; for example, if it will retire or will be committed to a firm sale outside the PJM Region.<sup>35</sup> The exception process requires review by the Market Monitor and approval of the requested exception by PJM after consideration of the input of the Market Monitor.<sup>36</sup> If a resource does not obtain an exception or is not categorically exempt from the capacity must-offer requirement and fails to submit an offer, it faces various sanctions, including a ban on submitting offers in subsequent auctions for the same Delivery Year (or otherwise

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<sup>31</sup> *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,155, at PP 18, 41 (2019).

<sup>32</sup> *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,155, at P 41 (emphasis added).

<sup>33</sup> *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,155, at P 41 (emphasis added).

<sup>34</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 355.

<sup>35</sup> See Tariff, Attachment DD, section 6.6(g).

<sup>36</sup> See Tariff, Attachment DD, section 6.6(g).

receiving RPM compensation for that resource for that Delivery Year), and could be subject to other remedies pursued by PJM or the Market Monitor.<sup>37</sup>

The current Tariff provides a categorical exemption from the must-offer requirement for Intermittent Resources, Capacity Storage Resources, Hybrid Resources,<sup>38</sup> and Demand Resources.<sup>39</sup> The Commission accepted PJM’s proposal to exempt these resources from the must-offer requirement in 2015, as part of PJM’s Capacity Performance proceeding. There, the Commission accepted the exemption “on the grounds that [these resource types] do not raise the same physical withholding concerns as do [other] existing generation resources because their ownership is not concentrated,”<sup>40</sup> and therefore, these resources did not raise the same physical withholding concerns as existing generation resources.

2. *Since 2015, the Amount of Solar, Wind, Battery, and Hybrid Resources Has Grown Considerably and More is Coming, as They Comprise Over 97% of PJM’s Interconnection Queue.*

Since the categorical exemption was adopted in 2015, the resource mix in the PJM Region has evolved significantly. The energy transition, i.e., the retirement of dispatchable resources and the development of renewable energy sources (e.g., wind and solar), has spurred these changes, and is driving further changes through the interconnection queue. Dr. Graf observes that “while the aggregate accredited capacity across all must offer

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<sup>37</sup> See Tariff, Attachment DD, sections 6.6(h) & (i).

<sup>38</sup> See Tariff, Attachment DD, section 6.6A(a). This exemption applies only to Hybrid Resources that “consist[] exclusively of components that in isolation would be Intermittent Resources or Capacity Storage Resources, Demand Resources, and Energy Efficiency Resources.” Tariff, Attachment DD, section 6.6A(c).

<sup>39</sup> See Tariff, Attachment DD, section 6.6A(c). The current-effective Tariff also exempts Energy Efficiency Resources, which are no longer eligible to participate in the capacity market beginning with the Base Residual Auction for the 2026/2027 Delivery Year. See *PJM Interconnection, L.L.C.*, 189 FERC ¶ 61,095 (2024).

<sup>40</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 355.

exempt resource types is nearly the same, the capacity of wind and solar resources has grown substantially, tripling in UCAP MW terms” between the 2018/2019 and 2025/2026 Delivery Years.<sup>41</sup> Indeed, collectively solar and wind resources have seen their UCAP levels grow from about 1,300 MW UCAP available to be offered into the 2018/2019 Base Residual Auction to about 3,860 MW UCAP available to be offered into the 2025/2026 Base Residual Auction.<sup>42</sup>

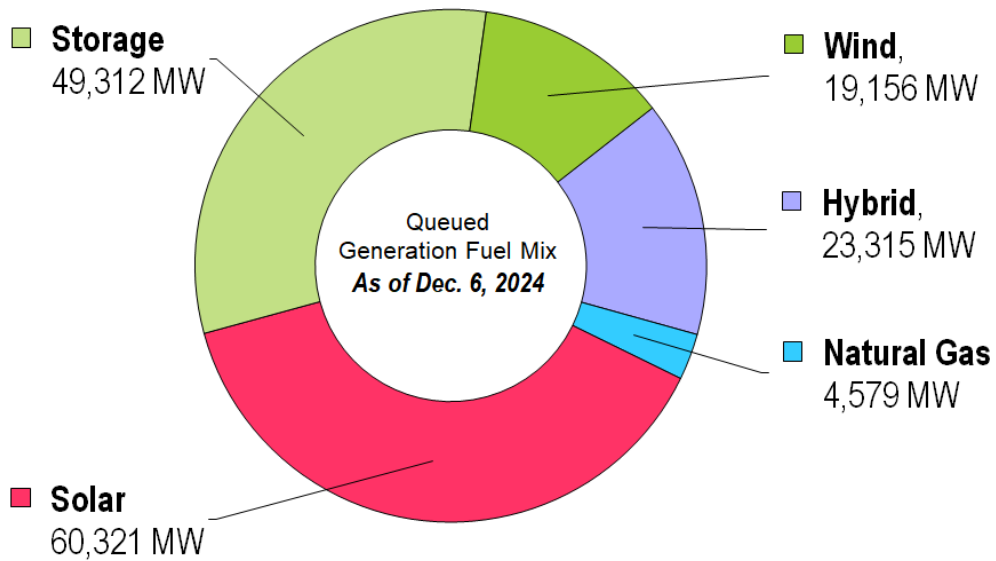
As such, wind and solar resource types are becoming a larger part of the region’s resource mix. And the role of Intermittent Resources, Capacity Storage Resources, and Hybrid Resources will only grow as the energy transition continues. Based on the projects in the current interconnection queue, solar, wind, storage, and hybrid resources will represent a majority of new capacity that will be built and brought online. As shown in Figure 1 below, these resource types comprise about 97% of PJM’s interconnection queue. That is, as the queue currently exists, *almost every new megawatt* to be added to the PJM Region will be from one of these resources.

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<sup>41</sup> Graf Aff. ¶ 12.

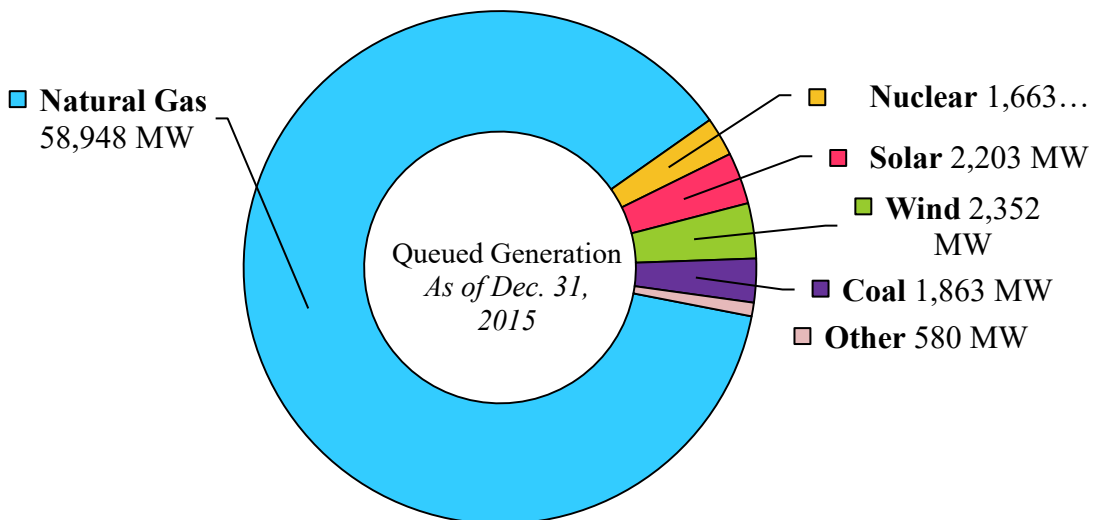
<sup>42</sup> See Graf Aff. ¶ 12 (Tables 1.A and 1.B). While the wind and solar resource industries have matured over the past ten years, the other resource type that qualifies as an Intermittent Resource—run of river hydro—has seen a decrease in its installed capacity and UCAP. Given that this resource type has long been well-established and is geographically limited, its relative lack of growth is understandable.

**Figure 1: Composition of 2024 PJM Interconnection Queue**



By contrast, less than ten years ago, the PJM queue was primarily comprised of natural gas resources with Intermittent Resources and Capacity Storage Resources making up only a small fraction of the queue. Figure 2 below shows PJM's interconnection queue in 2015 when the categorical exemptions were adopted.

**Figure 2: Composition of 2015 PJM Interconnection Queue**



Given this dramatic shift in resource types in the PJM queue, the PJM region can reasonably expect thousands more megawatts of Intermittent Resources, Capacity Storage Resources, and Hybrid Resources to be installed in the near future. By extension, it is also reasonable to expect that further concentration of ownership portfolios consisting of categorically exempt Generation Capacity Resources may make additional Capacity Market Sellers susceptible to the exercise of market power. As a result, the Commission's rationale that the exemption is "sufficiently narrow to prevent withholding"<sup>43</sup> no longer applies. This is especially true now because "[a]s system margins tighten due to load growth or resource retirements," the impact of this unoffered capacity becomes magnified, leading to potential reliability shortfalls and unnecessarily high prices.<sup>44</sup> Thus, circumstances have certainly changed since the Commission accepted the categorical must-offer exemption for these resource types.

3. *The Change in Ownership Concentration Since 2015 Takes Away the Reasoning Underpinning the Exemption.*

Dr. Graf explains that while "many Capacity Market Sellers possess market power in the PJM capacity market . . . possessing market power is not the same as the ability to *profitably exercise* market power."<sup>45</sup> This is because withholding a resource from the market would require a Capacity Market Seller to forego revenues that it otherwise could have received. As noted, physical withholding, i.e., not offering an Existing Generation Capacity Resource, can be a potentially profitable strategy for exercising market power by

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<sup>43</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 355.

<sup>44</sup> Graf Aff. ¶ 11.

<sup>45</sup> Graf Aff. ¶¶ 15-16.

sellers with large portfolios of resources. That is, to the extent a seller has sufficient quantities of capacity spread across multiple resources in its portfolio, that seller can profitably forego capacity revenues from one or more of those resources in exchange for higher revenues earned by its remaining resources clearing the capacity market. The resources with capacity commitments would earn higher revenues because, by withholding some resources from the market, the seller is reducing the supply stack such that the marginal unit is more expensive than it otherwise would be or the market is short and clears at the price cap. Thus, given the current and expected future concentration in the capacity market, requiring all Existing Generation Capacity Resources to be offered into the RPM Auctions is a reasonable solution to proactively mitigate against the physical withholding of resources, which could otherwise be used as a tactic to exert market power.<sup>46</sup>

As Dr. Graf explains, “[a] rational market seller would only attempt to withhold and exercise market power if doing so was expected to be profitable, that is, better than not doing so. This requires the cost of withholding—the foregone revenues net of costs for withheld MW—to be lower than the expected benefit of withholding—the increase in infra-marginal revenues effectuated by the higher price enjoyed on every MW that is sold and not withheld.”<sup>47</sup> The Commission understands this economic theory and allowed for categorical exemptions from the must-offer rule in 2015, because, at that time, ownership

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<sup>46</sup> See *N.Y. Indep. Sys. Operator, Inc.*, 122 FERC ¶ 61,211, at P 50, *order on reh’g*, 124 FERC ¶ 61,301, at P 51 (2008), *order on reh’g*, 131 FERC ¶ 61,170 (2010), *order on reh’g*, 150 FERC ¶ 61,208 (2015); *Cal. Indep. Sys. Operator Corp.*, Opinion No. 492, 117 FERC ¶ 61,348, at P 110 (2006), *order on reh’g*, 121 FERC ¶ 61,193 (2007), *petition for review denied sub nom. City of Anaheim v. FERC*, 2013 U.S. App. LEXIS 22510 (D.C. Cir. Nov. 5, 2013) (per curiam); *PJM Interconnection, L.L.C.*, 115 FERC ¶ 61,079, at P 115, *order approving settlement*, 117 FERC ¶ 61,331, at P 33 (2006), *order on reh’g and clarification*, 119 FERC ¶ 61,318 (2007), *petition for review denied sub nom. Pub. Serv. Elec. & Gas Co. v. FERC*, 324 Fed. Appx. 1 (Mar. 17, 2009).

<sup>47</sup> Graf Aff. ¶ 18.

of solar, wind, battery, and hybrid resources was not sufficiently concentrated to raise physical withholding concerns.<sup>48</sup>

However, Dr. Graf “analyzed Capacity Market Sellers’ abilities to profitably exercise market power through physical withholding of Existing Generation Capacity Resources that are exempt from the capacity must-offer requirement and found the potential for market power to be exercised based on current portfolios.”<sup>49</sup> Notably, based on ownership portfolios from the 2025/2026 Base Residual Auction, Dr. Graf concluded that “nearly half of exempt generation capacity—representing over 5,000 MW UCAP—is held in portfolios of Capacity Market Sellers that have the incentive and ability to exercise unilateral market power and profitably withhold capacity for generation portfolio benefits as assessed at the parent company.”<sup>50</sup> These entities therefore currently have the incentive and ability to profitably withhold capacity for portfolio benefits as assessed at the parent company.<sup>51</sup> Additionally, Dr. Graf “believe[s] that this risk could grow in the coming Delivery Years given the penetration of additional Intermittent Resources and Capacity Storage Resources in the interconnection queue.”<sup>52</sup> Given that the reason that underpinned the original categorical exemption has been eroded and that “all Capacity Market Sellers fail the current market structure test,”<sup>53</sup> it is now appropriate to proactively mitigate against

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<sup>48</sup> See *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 355.

<sup>49</sup> Graf Aff. ¶ 15.

<sup>50</sup> Graf Aff. ¶ 15.

<sup>51</sup> See Graf Aff. ¶ 15.

<sup>52</sup> Graf Aff. ¶ 21.

<sup>53</sup> Graf Aff. ¶ 21. The market structure test is set forth in Tariff, Attachment DD, section 6.3(b), which provides: “A constrained LDA or the PJM Region shall fail the Market Structure Test, and mitigation shall be applied to all jointly pivotal suppliers (including all Affiliates of such suppliers, and all third-party supply in the relevant LDA controlled by such suppliers by contract), if, as to the Sell Offers that comprise the incremental supply determined pursuant to section 6.3(c) below that are based on Generation Capacity

the potential exercise of market power by requiring all Existing Generation Capacity Resources to offer in all RPM Auctions.

As previously noted, there is no need to wait until an actual exercise of market power has occurred before the categorical exemption to the must-offer requirement for all Existing Generation Capacity Resources should be removed.<sup>54</sup> Doing so unnecessarily risks harm to consumers when evidence supports that the *potential* exists now and can be eliminated proactively. The issue addressed by PJM’s proposal is not whether market power has already been exercised, but rather whether expanding the must-offer requirement to include all Existing Generation Capacity Resources would appropriately impose mitigation and promote competitive market outcomes.<sup>55</sup> As the Commission has previously held, PJM “need not show that market power has been exercised in order to demonstrate” that the potential to exercise market power exists and should therefore be mitigated.<sup>56</sup>

4. *Changes in PJM Capacity Market Rules Since 2015 Have Mitigated the Risk of Non-Performance.*

While the Commission’s acceptance of the existing categorical exemption from the must-offer requirement for Intermittent Resources, Capacity Storage Resources, and

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Resources, there are not more than three jointly pivotal suppliers. The Office of the Interconnection shall apply the Market Structure Test. The Office of the Interconnection shall confirm the results of the Market Structure Test with the Market Monitoring Unit.”

<sup>54</sup> *E.g., Indep. Mkt. Monitor for PJM v. PJM Interconnection, LLC*, 174 FERC ¶ 61,212, at P 67 (“reject[ing] as immaterial PJM’s argument that the Market Monitor has not demonstrated that market power has been exercised”), *aff’d*, 176 FERC ¶ 61,137 (2021), *order on reh’g*, 178 FERC ¶ 61,121 (2022), *review denied sub nom. Vistra Corp. v. FERC*, 80 F.4th 302 (2023), *cert. denied sub nom. Elec. Power Supply Ass’n v. FERC*, 144 S. Ct. 2578 (2024).

<sup>55</sup> *Indep. Mkt. Monitor for PJM*, 174 FERC ¶ 61,212, at P 67.

<sup>56</sup> *Indep. Mkt. Monitor for PJM*, 174 FERC ¶ 61,212, at P 67.

Hybrid Resources rested “on the grounds that [these resource types] do not raise the same physical withholding concerns as do [other] existing generation resources because their ownership is not concentrated,”<sup>57</sup> PJM also suggested at the time that the categorical exemption made sense because the potential for Non-Performance Charges could pose an “unreasonable risk” for these resource types.<sup>58</sup> Dr. Graf explains that several changes to the capacity market rules since 2015 have acted to mitigate the severity of such risks.

Importantly, PJM has narrowed the definition of “Emergency Actions,” which trigger when resources may incur Non-Performance Charges for underperformance during PAIs. Under the narrowed definition, PAIs are now declared “only when performance failures are most impactful to the system and reflect a true capacity emergency.”<sup>59</sup> More specifically, PAIs are now triggered when there are certain emergency conditions that are coupled with a shortage of the Primary Reserve Requirement across the entire Reserve Zone or a Reserve Sub-zone or when PJM “issues a load shed directive, Manual Load Dump Action, Voltage Reduction Action, or deploy all resources action for an entire Reserve Zone or Reserve Sub-zone.”<sup>60</sup> For example, during Winter Storm Elliott in 2022, approximately 23 hours of PAIs were assessed under the previous PAI rules.<sup>61</sup> By contrast, under the revised rules, only about six hours of PAIs would have been assessed during the

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<sup>57</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 355.

<sup>58</sup> *PJM Interconnection, L.L.C.*, Reforms to the Reliability Pricing Market (“RPM”) and Related Rules in the PJM Open Access Transmission Tariff (“Tariff”) and Reliability Assurance Agreement Among Load Serving Entities (“RAA”) of PJM Interconnection, L.L.C., Docket No. ER15-623-000, at 61 (Dec. 12, 2014).

<sup>59</sup> Graf Aff. ¶ 26.

<sup>60</sup> See Tariff, Definitions - E - F (Definition of Emergency Action).

<sup>61</sup> Graf Aff. ¶ 26.

same extreme weather event.<sup>62</sup> As such, there are now expected to be fewer instances in which resources are exposed to Non-Performance Charges compared with when Capacity Performance was first implemented.

In addition, PJM's adoption of the Effective Load Carrying Capability ("ELCC") capacity accreditation approach reduces Non-Performance Charge risk for many resources by properly accrediting a resource based on its "historical performance data or output profile[]" during periods of highest risk to "provide[] a more accurate reflection of [the] resource[']s] capability."<sup>63</sup> Dr. Graf concludes that "ELCC incrementally reduces the probability of a resource under-performing its capacity obligation during a PAI, thus mitigating exposure to Non-Performance Charges associated with capacity commitments for many intermittent and storage resources."<sup>64</sup> Indeed, solar and pumped hydro resources now have significantly lower Accredited UCAP values due to relatively low ELCC class ratings for these classes of resources. The lower Accredited UCAP values limit the available megawatts that can be offered by such resources, which in turn reduces the risk exposure to potential Non-Performance Charges.

Finally, a Capacity Resource's maximum exposure to Non-Performance Charges was reduced when the Commission accepted PJM's proposal to change the calculation of the annual "stop-loss," i.e., the annual cap on Non-Performance Charges a resource may be assessed, from 150% of the Net CONE used to determine the Variable Resource Requirement Curve to 150% of the Base Residual Auction clearing price for the LDA in

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<sup>62</sup> Graf Aff. ¶ 26.

<sup>63</sup> Graf Aff. ¶ 27; *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,080, *modified*, 189 FERC ¶ 61,043 (2024).

<sup>64</sup> Graf Aff. ¶ 27.

which the resource is located.<sup>65</sup> Dr. Graf explains that this “changed the risk-reward calculus of capacity market participation for many participants.”<sup>66</sup>

Taken together, these changes have significantly diminished the risk of taking on a capacity commitment for all Existing Generation Capacity Resources and undermine the argument that the 2015 categorical exemption should remain in place for Intermittent Resources, Capacity Storage Resources, and Hybrid Resources.<sup>67</sup>

5. *Maintaining the Must-Offer Exemption for Existing Generation Capacity Resources that Hold Capacity Interconnection Rights Prevents Load from Receiving the Full Value of Their Investment in Upgrades to the Transmission System.*

All Generation Capacity Resources must hold CIRs to ensure firm deliverability of their capacity. Once CIRs are granted to a resource owner, PJM assumes the responsibility to plan the transmission system to maintain those CIRs. PJM does so through baseline transmission upgrades that are paid for by load. In other words, load pays for upgrades necessary to maintain generators’ ability to provide capacity, because load obtains the benefits of such capacity through resource adequacy. But when load pays to maintain the transmission system from resources with CIRs that *do not offer* to provide capacity, load is harmed by having to pay for system upgrades, when necessary, to maintain existing CIRs that may not actually be used to support resources offering as capacity. In this way the categorical exemption from the must-offer requirement for Intermittent Resources, Capacity Storage Resources, and Hybrid Resources prevents load from obtaining the full

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<sup>65</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,080, at P 234.

<sup>66</sup> Graf Aff. ¶ 28.

<sup>67</sup> PJM proposes to maintain the existing categorical exemption for Demand Resources to be offered into the capacity market. *See infra* Part II.A.7.

benefit of the transmission upgrades they fund to support the CIRs of these resources. Requiring these categorically exempt resources holding CIRs to offer into the capacity market enables load to receive the value proposition of CIRs.

According to Dr. Graf, “efficient use of transmission system capacity warrants mandating capacity market participation by all resources for whom transmission headroom and deliverability is being reserved.”<sup>68</sup> Requiring load to pay for upgrades to support CIRs for resources that do not offer into the capacity markets “creates a significant disconnect between these transmission investments and the actual provision of capacity.”<sup>69</sup> That is because “load serving entities are paying to maintain the deliverability of resources that are not contributing to system resource adequacy, effectively underutilizing the very infrastructure they are funding.”<sup>70</sup> Put another way, as the Market Monitor recently observed, “[t]he purpose of the RPM must[-]offer requirement is also to ensure equal access to the transmission system through [CIRs]. If a resource has CIRs but fails to use them by not offering in the capacity market, the resource is withholding.”<sup>71</sup> In addition, Existing Generation Capacity Resources with CIRs that are not offered in the capacity market can obstruct competitors from building new Generation Capacity Resources by requiring additional transmission upgrades to support new CIRs, which can lead to an overbuilt transmission system.

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<sup>68</sup> Graf Aff. ¶ 24.

<sup>69</sup> Graf Aff. ¶ 23.

<sup>70</sup> Graf Aff. ¶ 23.

<sup>71</sup> The Independent Market Monitor for PJM, *Analysis of the 2025/2026 RPM Base Residual Auction, Part A*, Monitoring Analytics, at 5 (Sept. 20, 2024), [https://www.monitoringanalytics.com/reports/Reports/2024/IMM\\_Analysis\\_of\\_the\\_20252026\\_RPM\\_Base\\_Residual\\_Auction\\_Part\\_A\\_20240920.pdf](https://www.monitoringanalytics.com/reports/Reports/2024/IMM_Analysis_of_the_20252026_RPM_Base_Residual_Auction_Part_A_20240920.pdf).

The Commission has also already weighed in on this issue, “agree[ing] with PJM that sellers that are neither meeting nor attempting to meet the Capacity Performance Resource requirements should not be able to retain capacity resource status and CIRs indefinitely through must-offer exceptions.”<sup>72</sup> If, as the Commission has held, Capacity Market Sellers that are *not* subject to the capacity must-offer requirement are generally *not* permitted to continue holding CIRs, the contrapositive is likewise true. Namely, resources holding CIRs should be subject to the capacity must-offer requirement.

Indeed, in upholding PJM’s previous efforts to “prevent hoarding of CIRs by resources that are not performing as a capacity resource[,]” the Commission noted the many market power concerns associated with must-offer exceptions raised by PJM and the Market Monitor.<sup>73</sup> The Commission also “disagree[d] with . . . arguments that PJM exaggerates its market power concerns associated with must-offer exceptions.”<sup>74</sup> As PJM has stated, allowing Capacity Market Sellers of Existing Generation Capacity Resources to withhold CIRs could also “lead to an overbuilt transmission system or deter new capacity resources from being built.”<sup>75</sup> New entrants, according to the Market Monitor, could be “force[d] . . . to spend millions on transmission upgrades that would not be necessary otherwise.”<sup>76</sup> In sum, for the most efficient and cost-effective outcomes, Existing Generation Capacity Resources with CIRs must be offered into the capacity market.

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<sup>72</sup> *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,155, at P 40.

<sup>73</sup> *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,155, at PP 40-41.

<sup>74</sup> *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,155, at P 41.

<sup>75</sup> *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,155, at P 13.

<sup>76</sup> *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,155, at P 31.

To the extent Market Participants do not wish to offer Existing Generation Capacity Resources in the capacity market even if they are able to reflect their costs through a resource-specific offer cap, Market Participants are free to do so by requesting the removal of Capacity Resource status on such resources in accordance with Tariff, Attachment DD, section 6.6(g). This option allows any Existing Generation Capacity Resources to be converted to Energy Resources.<sup>77</sup> Market Participants that do not wish to offer Intermittent Resources, Capacity Storage Resources, or Hybrid Resources in the capacity market would similarly be able to invoke this provision and convert such Capacity Resources to Energy Resources, which would no longer subject such resources to the capacity must-offer requirement. By doing so, the CIRs of the resources would be removed after one year of such removal consistent with Tariff, section 230.3.3. This removal of CIRs would help to facilitate potential new Generation Capacity Resources interconnection in a given area and/or allow load to avoid paying for potential transmission upgrades that would otherwise maintain such CIRs when the resources are not being offered as capacity.

Arguments that this proposal would push Existing Generation Capacity Resources to become Energy Resources and undermine the reliability of the PJM Region are unavailing. First, in the 2025/2026 Base Residual Auction, less than 15% of all categorically exempt Generation Capacity Resources did not actually offer into the auction.<sup>78</sup> As a result, the pool of resources that might elect to request removal of Capacity Resource status is small. Second, categorically exempt resources that are not offered into

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<sup>77</sup> Requests to remove Capacity Resource status are subject to a review of potential market power by the Market Monitor consistent with Tariff, Attachment DD, section 6.6(g).

<sup>78</sup> See Graf Aff. ¶ 23.

the capacity auctions are effectively the same as Energy Resources with no energy market must-offer requirement and no performance obligations during capacity emergencies. In other words, PJM already cannot depend on these resources to provide resource adequacy even if they maintain their Capacity Resource status instead of converting to Energy Resources. Therefore, the reliability of the PJM Region will not be adversely impacted if owners of resources that would not be offered into the capacity market elect to request removal of their Capacity Resource status.

6. *To Provide Just and Reasonable Capacity Auction Outcomes, PJM is Proposing to Sunset the Categorical Must-Offer Exemption for Intermittent, Storage, and Hybrid Resources.*

It is now appropriate to amend the categorical exemption pursuant to this FPA section 205 filing and require all Existing Generation Capacity Resources to participate in the RPM Auctions beginning with the RPM Auctions for the 2026/2027 Delivery Year given: (1) the growing number of Intermittent Resources, Capacity Storage Resources, and Hybrid Resources in the interconnection queue; (2) Dr. Graf's analysis that concludes there are currently Capacity Market Sellers with large portfolios containing categorically exempt resources that have the ability and incentive to exercise market power; and (3) the significant reduction in Capacity Performance risk since the categorical exemption was first introduced. Existing Intermittent Resources, Capacity Storage Resources, and Hybrid Resources already comprise a significant portion of the resource mix and play too critical a role in meeting the region's resource adequacy needs to be allowed to simply elect to not offer into the market, especially when considering that the current interconnection queue almost entirely consists of such resources. The capacity market clearing price is designed to signal the relative need for more capacity to enter the market, and it cannot do that

properly when significant categories of Existing Generation Capacity Resources are not required to be offered into the RPM Auctions.

In short, the must-offer requirement is “necessary to safeguard against manipulation in the PJM capacity market,”<sup>79</sup> and should be applied equally to all Existing Generation Capacity Resource types. The exemption for Intermittent Resources, Capacity Storage Resources, and Hybrid Resources is no longer “sufficiently narrow to prevent withholding.”<sup>80</sup> Thus, to ensure just and reasonable capacity market outcomes, PJM proposes to revise Tariff, Attachment DD, section 6.6A, and sunset the categorical exemption from the capacity must-offer requirement applicable to Intermittent Resources, Capacity Storage Resources, and Hybrid Resources with the 2025/2026 Delivery Year, while clarifying that, beginning with the 2026/2027 Delivery Year, only Demand Resources will be categorically exempt from the capacity must-offer requirement.<sup>81</sup>

To be clear, under this proposal all Existing Generation Capacity Resources that are offered into the RPM Auction would be required to offer the full annual Accredited UCAP of the resource. In other words, Intermittent Resources cannot satisfy the must-offer requirement simply by being offered as a Summer-Period Capacity Resource or Winter-Period Capacity Resource. Consistent treatment by requiring all Existing Generation Capacity Resources to be offered as an annual resource is appropriate under the annual Capacity Performance construct. Any resources that request and receive Winter

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<sup>79</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 354.

<sup>80</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 355.

<sup>81</sup> See proposed Tariff, Attachment DD, section 6.6A(c). PJM is also taking this opportunity to make ministerial edits to Tariff, Attachment DD, section 6.6A(a) to remove the start dates for certain language.

CIRs above their annual Accredited UCAP would have a must-offer requirement on the annual UCAP portion of the resource with any additional available UCAP stemming from any requested winter CIRs would be required to be offered as a Winter-Period Capacity Performance Resource, which could be aggregated with Summer-Period Capacity Resources from Demand Resources.

7. *PJM is Not Proposing Changes to the Categorical Must-Offer Exemption for Demand Resources.*

As noted, PJM is *not* proposing any change with respect to the categorical exemption for Demand Resources from the must-offer requirement. Accordingly, any change with respect to Demand Resources is beyond the scope of this FPA section 205 filing as PJM is retaining the exemption for Demand Resources for a number of reasons.

Demand Resources are fundamentally unlike Generation Capacity Resources in several key respects and therefore the two resource groups are not similarly situated. The primary distinction is the manner in which they provide capacity – through a reduction in energy consumption, as opposed to injection of energy into the transmission system. Extending the must-offer requirement to Demand Resources “would essentially force consumers to commit to reducing their consumption [or face financial Non-Performance Charges], even if market conditions or their individual preferences change.”<sup>82</sup>

With these reasons in mind, Dr. Graf notes his skepticism as to whether a must-offer requirement can be extended to Demand Resources “in a way that is enforceable and binding.”<sup>83</sup> Specifically, unlike generators, Demand Resources do not involve similar

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<sup>82</sup> Graf Aff. ¶ 31.

<sup>83</sup> Graf Aff. ¶ 33.

substantial capital expenditures and investment resulting in a static source from which the resource may provide capacity. Rather, Demand Resources generally consist of a large number of disparate end-use customers within a specific geographic area aggregated by a Curtailment Service Provider to provide capacity. As a result, it would be challenging to enforce a must-offer requirement for end-use customers that are included in Demand Resource registrations given that they are also much more mobile than traditional Generation Capacity Resources. Further, while the PJM Region has enjoyed significant Demand Resource participation in its capacity market, with over 6,000 MW clearing in the 2025/2026 BRA, Demand Resources do not present the same level of concern with respect to physical withholding as do Generation Capacity Resources.<sup>84</sup>

8. *PJM Agrees to Amend Language Proposed in Docket No. ER25-682 if Deemed Appropriate by the Commission.*

Acceptance of this filing and PJM's filing in Docket No. ER25-682 would result in two changes to Tariff, Attachment DD, section 6.6A(c). In this docket, PJM is sunsetting the categorical exemption for all resources except Demand Resources. In Docket No. ER25-682, PJM is proposing an explicit statement that a categorical exemption does not provide a defense to claims of withholding, market manipulation, or the exercise of market power.<sup>85</sup> While PJM believes that the two proposed changes to Tariff, Attachment DD, section 6.6A(c) are in concert, PJM consents to "clean up" the language proposed in Docket No. ER25-682 so as to limit the clarification that a categorical exemption does not provide a defense to claims of withholding to Demand Resources (i.e., the only resource

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<sup>84</sup> See Graf Aff. ¶ 32.

<sup>85</sup> *PJM Interconnection, L.L.C.*, Revisions to Reliability Pricing Model of PJM Interconnection, L.L.C., Docket No. ER25-682-000, at 78 (Dec. 9, 2024).

type that would be categorically exempt), to the extent the Commission accepts both filings and directs PJM to update the language on compliance. PJM intends to provide this same written consent in Docket No. ER25-682 when it submits its answer to comments and any protests to that filing.

**B. PJM Proposes to Set a Market Seller Offer Cap Floor to at Least Reflect Non-Performance Risk.**

*1. Relevant Background on the Purpose and Role of the Market Seller Offer Cap.*

In addition to the capacity must-offer requirement, the Market Seller Offer Cap is another tool used to mitigate against the potential exercise of seller-side market power in PJM's capacity market. Specifically, PJM's Market Seller Offer Cap sets a ceiling on Sell Offers that may be submitted by Capacity Market Sellers who fail PJM's market power test.<sup>86</sup> By capping Sell Offers from such Capacity Market Sellers, the Market Seller Offer Cap is intended to prevent those that may have the ability to exercise market power from submitting Sell Offers that may not represent the marginal costs of the underlying resource to: (1) inappropriately raise the overall capacity market clearing prices; or (2) uneconomically withhold resources from the market to the benefit of the rest of the resources within the seller's portfolio.

Under the current market structure test, all Capacity Market Sellers fail the three pivotal supplier test because any supplier added to the two largest suppliers in the PJM footprint would be jointly pivotal given the current level of supplier concentration. As a

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<sup>86</sup> See *PJM Interconnection, L.L.C.*, 154 FERC ¶ 61,151, at P 52 (2016) ("Market power mitigation in the [PJM] capacity market entails limiting the capacity offers of all existing capacity resources to either the default or resource-specific value to prevent economic withholding that could otherwise result in market clearing capacity prices exceeding a competitive level.").

result, every Sell Offer for an Existing Generation Capacity Resource is capped by the Market Seller Offer Cap. Tariff, Attachment DD, section 6.4(a) specifies that the Market Seller Offer Cap can be based on the default values specified in the Tariff or, if requested by a Capacity Market Seller, a resource-specific Market Seller Offer Cap that is reviewed by the Market Monitor and approved by PJM. The default Market Seller Offer Cap does not include a cost of risk associated with Non-Performance Charges<sup>87</sup> and, for most of the Existing Generation Capacity Resources currently exempt from the must-offer requirement, generally results in a default net ACR equal to zero.<sup>88</sup> In fact, Dr. Graf states that “in the 2025/2026 Base Residual Auction, 75% of all Accredited UCAP was offer capped at \$0/MW-day, largely because the default [Market Seller Offer Cap] for those resources reflected EAS revenues equal to or greater than their default ACR.”<sup>89</sup> As a result, the only way most Capacity Market Sellers can currently reflect the actual costs of a resource, including CPQR, in a Sell Offer is by requesting a resource-specific Market Seller Offer Cap as detailed in Tariff, Attachment DD, section 6.8(a).

In the 2015 Capacity Performance order,<sup>90</sup> the Commission explained that the ACR “reflect[s] the cost of becoming a capacity resource . . . and that, for some resources, the overall physical and capital expenditures required to ensure performance during emergency operations are extensive, presenting additional costs which are not currently reflected in the [ACR] calculation.”<sup>91</sup> Thus, the Commission noted that “[CPQR] is intended to

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<sup>87</sup> See Tariff, Attachment DD, section 6.4(a).

<sup>88</sup> See Graf Aff. ¶¶ 37, 55.

<sup>89</sup> Graf Aff. ¶ 37.

<sup>90</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208.

<sup>91</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 353.

explicitly allow suppliers to include in their offers risks that can be quantified and that are not already reflected in the [ACR] formula.”<sup>92</sup>

The Commission has since reaffirmed that “the replacement rate continues to provide capacity sellers a full opportunity to include appropriate costs and risks in their offers.”<sup>93</sup> More particularly, the Commission explained that in developing the Market Seller Offer Cap, Capacity Market Sellers may “include costs and risk assessments that are quantifiable, reasonably supported, and attributable to a seller’s capacity obligation under Capacity Performance. The unit-specific mitigation structure does not supplant any seller’s ability to formulate those costs in the first instance . . . .”<sup>94</sup> The Commission further explained that “any cost or risk that can be adequately supported by a seller as arising from its need to meet a capacity supply obligation, and is allowable under the Tariff, is acceptable in unit-specific review.”<sup>95</sup>

In sum, the Commission has clearly indicated that Capacity Market Sellers should be allowed to include the cost of the risk of Non-Performance Charges that a committed Capacity Resource may incur during a PAI as part of the resource-specific Market Seller Offer Cap calculation. This cost of risk is allowable under the CPQR, “which may include sellers’ quantifiable, reasonably-supported risks attributable to a Capacity Performance obligation.”<sup>96</sup>

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<sup>92</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 353.

<sup>93</sup> *Indep. Mkt. Monitor for PJM v. PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,137 (2021), *order on reh’g*, 178 FERC ¶ 61,121, at P 16 (2022), *aff’d sub nom. Vistra Corp. v. FERC*, 80 F.4th 302 (D.C. Cir. 2023).

<sup>94</sup> *Indep. Mkt. Monitor for PJM*, 178 FERC ¶ 61,121, at P 16.

<sup>95</sup> *Id.* at P 86.

<sup>96</sup> *Id.* at P 47.

2. *Under Current Tariff Rules, Market Seller Offer Caps May Fail to Capture Significant Capacity Performance Risks and Lead to Market Inefficiencies.*

Even though the resource-specific gross ACR calculation set forth in the Tariff provides Capacity Market Sellers with an avenue to account for CPQR,<sup>97</sup> resources with high net projected EAS offsets can have a net ACR value that may be lower than the CPQR component alone, or even negative.<sup>98</sup> This can lead to capacity Market Seller Offer Caps that fail to adequately reflect the cost of risks from Non-Performance Charges and are arguably confiscatory.

This phenomenon can occur for all types of resources, but is particularly pronounced for Intermittent Resources such as solar and wind resources that have relatively low avoidable costs that are mostly, if not entirely, offset by high expected EAS revenues. When this occurs, capacity offers should not be mitigated below those levels equal to the natural, profit-maximizing offers of competitive Capacity Market Sellers. Under the current Tariff, however, resources with high initial capital expenditures but low going-forward costs will typically have EAS offsets that exceed their relatively low going-forward costs, which results in a negative ACR value. With a Market Seller Offer Cap set at net ACR, a resource's CPQR may not be high enough to raise the price cap above \$0/MW-day. As a result, absent updates to the existing Market Seller Offer Cap rules, such resources would effectively be required to participate in the capacity market as a price-

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<sup>97</sup> See Tariff, Attachment DD, section 6.8(a) (“Avoidable Cost Rate = [Adjustment Factor \* (AOML + AAE + AFAE + AME + AVE + ATFI + ACC + ACLE) + ARPIR + APIR + CPQR]”).

<sup>98</sup> *PJM Interconnection, L.L.C.*, Proposed Enhancements to PJM’s Capacity Market Rules - Market Seller Offer Cap, Performance Payment Eligibility, and Forward Energy and Ancillary Service Revenues of PJM Interconnection, L.L.C., Docket No. ER24-98-000, at 19 (Oct. 13, 2023).

taker and the Sell Offer may not properly reflect the non-performance risks associated with obtaining a capacity obligation.

To illustrate, a hypothetical resource may have a gross ACR (excluding the CPQR component) of \$50/MW-day, a CPQR component of \$10/MW-day, and a net EAS offset of \$70/MW-day. Under the existing rules, this hypothetical resource would have a resource-specific net ACR of negative \$10/MW-day, which effectively means the Capacity Market Seller of such a resource would not be allowed to offer above \$0/MW-day for this resource in the RPM Auctions even though the CPQR cost alone is \$10/MW-day. Taking into account the must-offer requirement, this resource would be required to offer into the capacity market at \$0/MW-day as a price taker and potentially end up with a capacity commitment that is worth less than the cost of the non-performance risk (i.e., if the capacity market clearing price is below the CPQR component of \$10/MW-day). When this occurs, a Capacity Market Seller is effectively required to accept a capacity obligation that reduces their net profits. Such an outcome would clearly be confiscatory. Put another way, the cost of the Capacity Performance risk should be allowed to be reflected in those resources' capacity offers so that the cost of the capacity obligation is no less than the cost associated with the capacity performance risk. Otherwise, Capacity Market Sellers of resources that are subject to the must-offer requirement could potentially be required to effectively take on a capacity obligation that exceeds their avoidable costs, ultimately resulting in uneconomic capacity market outcomes.<sup>99</sup>

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<sup>99</sup> See *id.* at Attachment D (Affidavit of Dr. Walter Graf on Behalf of PJM Interconnection, L.L.C.) ¶ 87.

The cost associated with the risk of potential Non-Performance Charges is real and should be allowed to be reflected in Sell Offers to allow for efficient market outcomes. Indeed, during Winter Storm Elliot in December 2022, PJM initially assessed approximately \$1.8 billion in Non-Performance Charges to committed Capacity Resources that underperformed or did not perform during the associated PAIs.<sup>100</sup> Capacity Market While the stop-loss and PAI triggers have since been revised in a manner that likely reduces the risk of Non-Performance Charges, the stop-loss still exceeds the capacity market revenues that a resource would be paid in a year. Thus, there remains a potential net exposure for a Capacity Market Seller taking on a commitment, which warrants the inclusion of CPQR in Sell Offers. As stated previously, failure to allow CPQR to be reflected in Sell Offers in conditions where the net ACR, absent CPQR, is less than or equal to \$0/MW-day forces the Capacity Market Seller to accept a capacity commitment that reduces their overall profitability, which does not reflect the behavior of a competitive participant and is ultimately confiscatory.

3. *Recent Commission Guidance in Response to PJM's Previously Proposed Revisions to the Market Seller Offer Cap Broadly Supports a Cap Based on Standalone CPQR Costs.*

On February 6, 2024, the Commission rejected a slate of tariff revisions proposed by PJM in 2023, including, among other things, a proposal to allow the Market Seller Offer Cap to be based on standalone avoidable incremental costs that may be incurred to mitigate against the risk of non-performance. The Commission rejected this proposal on the

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<sup>100</sup> While the originally assessed amount totaled nearly \$1.8 billion, the total amount was later reduced to approximately \$1.25 billion based on a settlement that was approved by the Commission. See *PJM Interconnection, L.L.C.*, 185 FERC ¶ 61,204 (2023).

grounds that PJM had not provided “a defining principle to identify and differentiate costs incurred only in the absence of a capacity obligation compared to costs incurred in whole or in part for some other purpose[.]”<sup>101</sup> Specifically, the Commission found that the phrase “incremental costs that would be avoided only in the absence of a capacity obligation” was not clear and created a standard “too vague to be enforceable and does not contain sufficient information for the Market Monitor to engage in a thorough review process.”<sup>102</sup> As such, the Commission reasoned, “capacity sellers and other stakeholders face uncertainty about what costs may and may not be included in PJM’s proposed standalone CPQR offer cap.”<sup>103</sup>

Despite these concerns, however, the Commission “provide[d] guidance to assist PJM in developing a new proposal.”<sup>104</sup> Specifically, the Commission expressly “agree[d with PJM] that, as a general matter, a competitive offer in the capacity market may reasonably reflect only incremental costs that are avoidable if the resource does not receive a capacity commitment.”<sup>105</sup> Furthermore, the Commission disposed of arguments against standalone CPQR offer caps generally.

First, the Commission found arguments that PJM’s proposal would “sever the link between energy and capacity markets” unavailing. The Commission reasoned that it had previously found, with respect to ISO-NE’s similar static de-list bid paradigm, “that most generators will participate in the EAS markets regardless of whether they are also providing

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<sup>101</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 37.

<sup>102</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 37.

<sup>103</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 37.

<sup>104</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 35.

<sup>105</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 35.

capacity, and it is appropriate to base the calculation of net going-forward costs on that assumption.”<sup>106</sup> The Commission found this same logic to be applicable to PJM’s proposal as well.<sup>107</sup>

Second, the Commission rejected the argument that it would be unjust and unreasonable to permit sellers without “missing money” and who do not require the additional incentive of a capacity payment to continue offering to have an offer cap above zero. The Commission reasoned that such a resource “would still incur the incremental risks, which are borne as costs, from taking on a capacity commitment, including, for example, costs to mitigate a risk of Non-Performance Charges[.]”<sup>108</sup>

Third, the Commission disagreed with the assertion that “[a] standalone CPQR offer cap would allow sellers to mitigate the risk of non-performance at the expense of consumers” as this argument “applies generally to the existence of CPQR,” which the Commission reaffirmed, “is just and reasonable for sellers to include . . . in their offer caps[.]”<sup>109</sup> In other words, according to the Commission, the justness and reasonableness of CPQR was not itself at issue.

Fourth, the Commission noted that “there is more than one just and reasonable approach to developing market seller offer caps in capacity markets.”<sup>110</sup> As such, PJM’s

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<sup>106</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 38 (citing *ISO New England, Inc.*, 135 FERC ¶ 61,029, at PP 322-324 (2011), *order on reh’g*, 138 FERC ¶ 61,027 (2012)).

<sup>107</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 38.

<sup>108</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097 at P 39.

<sup>109</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097 at P 42.

<sup>110</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097 at P 40.

offer cap framework need not be “identical to the [static de-list bid paradigm] construct in ISO-NE.”<sup>111</sup>

Significantly, the Commission concluded that “allowing sellers to offer at CPQR, without an EAS offset, would not automatically shift additional risk onto consumers, but rather would allow sellers to offer their incremental costs of accepting a capacity commitment.”<sup>112</sup>

4. *PJM Proposes a Market Seller Offer Cap Floor Set at the Level of the CPQR.*

Based on the Commission’s guidance and the reasons provided, PJM proposes to “allow[] sellers to offer at CPQR, without an EAS [o]ffset.”<sup>113</sup> In other words, beginning with the 2026/2027 Delivery Year, PJM proposes to revise the resource-specific Market Seller Offer Cap to be equal to the greater of: (1) gross ACR less projected net EAS revenues (i.e., net ACR); or (2) CPQR costs that are not offset by projected net EAS revenues. PJM’s proposal effectively sets a floor on the Market Seller Offer Cap at the level of the CPQR.

Setting the floor price of a resource-specific Market Seller Offer Cap based on a verified CPQR level that is calculated in accordance with the existing methodology specified in Tariff, Attachment DD, section 6.8(a) removes any uncertainty around whether to include or exclude other types of incremental costs, which was the impetus for the Commission’s rejection of PJM’s 2023 proposal. Thus, PJM’s proposed Market Seller

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<sup>111</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097 at P 44.

<sup>112</sup> *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097 at P 42.

<sup>113</sup> *See PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 42.

Offer Cap floor addresses the basis for the Commission’s decision to reject PJM’s previous standalone CPQR proposal while also acknowledging the need to allow Capacity Market Sellers to submit capacity market offers that reflect at least the risk that the resource would have avoided in the absence of a capacity obligation. According to Dr. Graf, this issue is “essential to address . . . if the must-offer requirement is extended to all Existing Generation Capacity Resources. Together, these reforms will enhance the efficiency and competitiveness of the capacity market.”<sup>114</sup> This amendment would allow Capacity Market Sellers to appropriately reflect the cost of risk associated with Non-Performance Charges in their capacity offers.

Together, with the resource-specific segmented offer cap proposal that is submitted as part of this filing, these enhancements to the Market Seller Offer Cap rules will allow Capacity Market Sellers to “reflect the true economic costs of providing . . . capacity and taking on a capacity obligation. This will lead to more efficient price formation, as Market participants can directly reflect their costs through their Sell Offers.”<sup>115</sup> To effectuate the aforementioned revisions, PJM proposes to amend Tariff, Attachment DD, section 6.4(a), as shown in relevant part below:

beginning with the 2026/2027 Delivery Year the Market Seller Offer Cap shall be the greater of (a) Avoidable Cost Rate for such resource, less the Projected PJM Market Revenues for such resource, or (b) if applicable, the Capacity Performance Quantifiable Risk for such resource, as defined in Tariff, Attachment DD, section 6.8(a), to the extent such value has been supported and obtained approval pursuant to the requirements set forth in this Tariff, Attachment DD, section 6.4(b), stated in dollars per MW-day of unforced capacity.

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<sup>114</sup> Graf Aff. ¶ 7.

<sup>115</sup> Graf Aff. ¶ 6.

5. *PJM's Proposed Market Seller Offer Cap Floor Set at the Level of the CPQR Is Applicable to All Generation Capacity Resources.*

A resource-specific Market Seller Offer Cap equal to the *greater of* either net ACR or the CPQR costs not offset by projected net EAS revenues, as PJM has proposed, must be applicable to *all* Generation Capacity Resources with resource-specific Market Seller Offer Caps. A rule of broad applicability is appropriate and non-discriminatory here, as *all* Generation Capacity Resources are potentially subject to Non-Performance Charges and, therefore, under the current Market Seller Offer Cap rules, *all* Generation Capacity Resources face some risk of taking on a capacity obligation that exceeds their CPQR costs.<sup>116</sup> By effectively setting a floor on the Market Seller Offer Cap at the level of a resource's CPQR costs, PJM ensures that the Market Seller Offer Cap will not require any Capacity Resource to take on a capacity obligation that ultimately exceeds the resource's costs. While, as noted above, the issue of capacity market offers failing to reflect the cost of risk from Non-Performance Charges is particularly pronounced for Intermittent Resources and Capacity Storage Resources, the proposed Tariff revision would apply to *all* Generation Capacity Resources participating in the capacity market with resource-specific Market Seller Offer Caps allowing them to reflect the very real risks of participating in the PJM capacity market posed by the potential assessment of Non-Performance Charges in their default capacity market offers.

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<sup>116</sup> See, e.g., *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at PP 35-41.

6. *This Filing Does Not Propose Any Changes to the Existing Rules for Calculating CPQR.*

To be clear, PJM is *not* proposing any changes to the existing Tariff rules pertaining to how CPQR is calculated or the existing review and approval process for CPQR. Additionally, PJM's proposal does not change the requirement currently set forth in the Tariff that all CPQR values must be reviewed by the Market Monitor and accepted by PJM, with the input of the Market Monitor. In short, nothing in this filing changes the existing formulation of CPQR, which is outside the scope of this filing. As the Commission has consistently explained:

[T]he risk that market sellers face from offering capacity resources under the new capacity market construct requires a complex calculation that depends on the company-specific nature of valuing performance risk and may expand beyond the risk that a resource is subject to Non-Performance Charges in excess of its capacity auction revenue. We continue to find that the current ACR formula, and the CPQR component in particular, involves a complex, fact-specific calculation that varies by capacity resource. Given this, we decline to provide an exhaustive list of costs that could be included in the CPQR component.<sup>117</sup>

Moreover, the Commission has also stated that:

[A]ny cost *or risk* that can be adequately supported by a seller as arising from its need to meet a capacity supply obligation, and is allowable under the Tariff, is acceptable in unit-specific review. In other words, under the Tariff rules, the *Market Monitor and PJM may not substitute their assessment of costs or risks* permitted in the ACR formula for the seller's unless PJM and the Market Monitor determine the seller has failed to support and justify them.<sup>118</sup>

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<sup>117</sup> *Indep. Mkt. Monitor for PJM*, 178 FERC ¶ 61,121, at P 51 (citing *PJM Interconnection, L.L.C.*, 155 FERC ¶ 61,157 (2016)).

<sup>118</sup> *Indep. Mkt. Monitor for PJM*, 178 FERC ¶ 61,121, at P 86 (emphasis added).

Taken together, the Commission has consistently held that the existing CPQR provisions are reasonable and necessary to sufficiently allow Capacity Market Sellers to include the company-specific nature of valuing non-performance risk so long as they can be supported and justified to the satisfaction of PJM and the Market Monitor. Therefore, any potential efforts to limit this flexibility are contrary to the Commission's statements and assurances that Capacity Market Sellers are given sufficient latitude to support their cost of risk in their capacity offers.

**C. PJM Proposes Discrete Tariff Revisions that Would Allow Requests for Resource-Specific Segmented Market Seller Offer Caps to Reflect Incremental Costs Associated with the Risk of Non-Performance.**

The third component of this filing proposes to allow Capacity Market Sellers to submit resource-specific Market Seller Offer Caps that reflect the incremental costs of having a capacity obligation across different segments of a resource. PJM filed a similar proposal as part of a larger package of proposed capacity market enhancements<sup>119</sup> that the Commission rejected due to other, non-severable parts of that overall proposal.<sup>120</sup> However, the Commission did not substantively address the previously proposed resource-specific segmented Market Seller Offer Cap provision when it rejected PJM's proposed suite of capacity market reforms. As a result, the Commission has not previously made a determination on this specific proposal.

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<sup>119</sup> *PJM Interconnection, L.L.C.*, Proposed Enhancements to PJM's Capacity Market Rules - Market Seller Offer Cap, Performance Payment Eligibility, and Forward Energy and Ancillary Service Revenues of PJM Interconnection, L.L.C., Docket No. ER24-98-000 (Oct. 13, 2023).

<sup>120</sup> See *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097.

*1. The Proposal to Allow for a Segmented Resource-Specific Market Seller Offer Cap Will Allow a Capacity Market Seller to Reflect the Incremental Costs of a Capacity Resource by Output.*

Under PJM’s existing capacity market rules, a Capacity Market Seller’s Sell Offer “may take the form of offer segments with varying price-quantity pairs for varying output levels from the underlying resource, but may not take the form of an offer curve with nonzero slope.”<sup>121</sup> In other words, while Capacity Market Sellers are allowed to submit a separate offer price for different MW segments of a Sell Offer, they are currently bound by a single offer cap value for a resource’s entire accredited capacity quantity, and all offers associated with the resource, segmented or not, must be offered at or below that price level. The existing rules do not provide for segmented Market Seller Offer Caps.<sup>122</sup>

The lack of offer caps specific to each offer segment produces economic inefficiencies, and induces Capacity Market Sellers of resources that are categorically exempt from the must-offer requirement and cannot reflect performance risk through their offer price to reduce or entirely avoid offered quantities for such resources. To illustrate, consider a hypothetical 100 MW resource with a relatively low risk of Non-Performance Charges for the first 50 MW segment of \$5/MW-day but a higher risk of Non-Performance Charges equal to \$15/MW-day for the second 50 MW segment. Under the current rules, the CPQR for each 50 MW segment would be capped at the average of the two segments (i.e., \$10/MW-day). However, if the auction clears at \$11/MW-day, 50 MW of the resource would be uneconomically committed at a level that does not reflect the

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<sup>121</sup> Tariff, Attachment DD, section 5.6.1(b)(ii).

<sup>122</sup> PJM’s software program, Capacity Exchange, currently allows sellers to enter up to 10 resource-specific offer segments in a given Sell Offer.

incremental cost associated with taking on additional capacity commitment risks. Conversely, if the clearing price is \$9/MW-day, the resource would not be committed at all and PJM would lose the economic commitment of the first 50 MW portion of the resource. Thus, as Dr. Graf explains, “[s]egmented offer caps provide a more granular and accurate representation of risk, allowing resources to tailor their offers to reflect the specific risk profile of each capacity increment.”<sup>123</sup> In contrast, under the existing must-offer exemption, such a resource may prefer to account for its risk by not offering or offering fewer quantities into the capacity auctions.

Establishing rules that allow for a resource-specific segmented Market Seller Offer Cap improves the equitable application of PJM’s capacity must-offer requirement by enhancing the ability for Capacity Market Sellers of all Existing Generation Capacity Resources to reflect the incremental costs of risks associated with receiving a capacity commitment. Addressing this inefficiency under the current single offer cap for an entire offer also addresses one of the most salient remaining concerns Capacity Market Sellers have with the PJM’s proposal to require all Existing Generation Capacity Resources to be offered into the capacity auctions, which otherwise would limit their ability to reflect the cost of risk in their respective Sell Offers. Additionally, the ability for Capacity Market Sellers to request a resource-specific segmented offer cap is “particularly relevant for resources like wind, solar, and hydro, where weather conditions can significantly affect output and therefore the risk of non-performance.”<sup>124</sup> Specifically, certain Intermittent Resources, such as a run-of-river hydro facility with limited pooling capability, can face

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<sup>123</sup> Graf Aff. ¶ 46.

<sup>124</sup> Graft Aff ¶ 46.

greater uncertainty in the availability of their megawatts at the upper end of their output compared with the lower end of such output during PAIs, which can drive varying levels of performance risk and associated costs across different segments on the resource. As Constellation Energy Generation, LLC previously explained, allowing for the submission of a segmented resource-specific Market Seller Offer Cap:

[W]ould be particularly well suited for run-of-river hydro resources, which face unique challenges in modeling expected resource performance. The output level that a run-of-river hydro resource can achieve is directly tied to water flows during the operating day. When assessing future resource performance, run-of-river hydro resource owners must collect and analyze historical water levels, among other things, to assess the likelihood that the generator will be able to perform reliably at different levels of output. These likelihoods, in turn, inform the risk associated with taking on a capacity obligation for those different levels of output. The risk can vary considerably. . . . The segmented offer cap approach recognizes this reality and would facilitate a more accurate and granular representation of resource costs and risks.<sup>125</sup>

Likewise, a wind resource may have limited performance risk for the first MW of capacity committed, but its incremental risk of non-performance during a PAI could be greater for each successive MW tranche of capacity committed, which if properly priced to reflect each tranche's successive incremental risk would have different price, quantity offer segments.<sup>126</sup> In these situations, it is appropriate to allow Capacity Market Sellers to request a resource-specific Market Seller Offer Cap on a segmented basis. Assessing that performance risk on a segmented basis, rather than forcing a one-size-fits-all approach across the resource's entire output will allow Capacity Market Sellers to more accurately

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<sup>125</sup> See *PJM Interconnection, L.L.C.*, Motion for Leave to Reply and Reply of Constellation Energy Generation, LLC, Docket Nos. ER24-98-000 & ER24-99-000, at 9 (Dec. 15, 2023).

<sup>126</sup> *PJM Interconnection, L.L.C.*, Comments and Limited Protest of Constellation Energy Generation, LLC, Docket Nos. ER24-98-000 & ER24-99-000, at 35 (Nov. 9, 2023).

reflect the incremental costs associated with a capacity obligation in a resource's segmented Sell Offer.<sup>127</sup> To be clear, since *all* Generation Capacity Resources are potentially subject to Non-Performance Charges and any resource type could have higher incremental risks of taking on additional capacity obligations, this proposal would allow requests for segmented offer caps from any class of resource and is not limited to Intermittent Resources, Capacity Storage Resources, or Hybrid Resources.

Allowing resource-specific segmented Market Seller Offer Caps for Existing Generation Capacity Resources to reflect incremental costs of risk associated with additional capacity obligations is appropriate and non-discriminatory as it would allow all resources to appropriately reflect legitimate incremental risks at different capacity commitment levels, while continuing to act as a safeguard against the potential exercise of market power.<sup>128</sup> This enhancement, coupled with the ability to allow for a standalone CPQR, will allow Capacity Market Sellers to include appropriate costs in the relevant Sell Offers and help support the just and reasonableness of removing the existing categorical capacity market must offer exemption for Intermittent Resources, Capacity Storage Resources, and Hybrid Resources.

2. *PJM Proposes to Allow Capacity Market Sellers to Request Resource-Specific Segmented Market Seller Offer Cap.*

Under the proposal to allow Capacity Market Sellers to request a resource-specific segmented Market Seller Offer Cap, the first segment of the resource-specific Market Seller Offer Cap can be either “(1) the resource-specific Avoidable Cost Rate, less the

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<sup>127</sup> See *PJM Interconnection, L.L.C.*, Comments and Limited Protest of Vistra Corp. and Dynegy Marketing and Trade, LLC, Docket No. ER24-98-000, at 10 (Nov. 9, 2023).

<sup>128</sup> See generally *PJM Interconnection, L.L.C.*, 186 FERC ¶ 61,097, at P 39.

Projected PJM Market Revenues for such resource[;] or (2) a Capacity Performance Quantifiable Risk.”<sup>129</sup> It is appropriate to allow the first segment of the resource-specific offer cap to be based on the net Avoidable Cost Rate (i.e., Avoidable Cost Rate minus expected energy and ancillary service revenues) because it represents the estimated going forward cost that an Existing Generation Capacity Resource needs to break even to remain a Capacity Resource. In other words, the net Avoidable Cost Rate is the net cost needed to economically keep a Capacity Resource operational. Given that the going forward cost of keeping a resource economically operational should not change based on the number of MW that are ultimately committed as capacity, so long as that commitment is above zero, this proposal limits all subsequent segments to “include only incremental Capacity Performance Quantifiable Risk associated with the incremental capacity commitment in that offer segment,”<sup>130</sup> as those additional segments are not dependent on the cost of keeping the resource in-service.<sup>131</sup> This limitation reflects the fact that once any portion of the resource is committed on its first segment, the incremental costs to operate the generating resource are no longer avoidable so each subsequent offer segments should be limited to only incremental risks associated with taking on the additional, incremental capacity obligation. Thus, this rule prevents Capacity Market Sellers from including duplicative expenses in subsequent resource-specific offer segments.

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<sup>129</sup> Proposed Tariff, Attachment DD, section 6.4(e).

<sup>130</sup> Proposed Tariff, Attachment DD, section 6.4(e).

<sup>131</sup> Given software limitations, there would be a maximum of 10 resource-specific offer cap segments that a Capacity Market Seller may request, consistent with the maximum number of offer segments that a Capacity Market Seller can submit today.

At the same time, the first segment does not necessarily have to be limited to the net Avoidable Cost Rate as currently defined. That is because for certain resources, the expected net EAS revenues could exceed the gross resource-specific Avoidable Cost Rate. In those circumstances, the net Avoidable Cost Rate would be less than zero, but the cost associated with the risk of non-performance (i.e., CPQR) should still be allowed for the first segment of the offer. Thus, PJM's proposal allows—but does not require—the first segment of a resource-specific offer cap to be based on the standalone cost of risk associated with potential Non-Performance Charges (i.e., CPQR without being offset by any expected EAS revenues) in lieu of a resource-specific net Avoidable Cost Rate, if elected by the Capacity Market Seller.

Below is an illustrative example of how a resource-specific segmented offer cap would be structured under this proposal. Take a hypothetical 100 MW resource, with a gross Avoidable Cost Rate (excluding CPQR) of \$40/MW-day, an expected net EAS offset of \$50/MW-day, and a CPQR of \$5/MW-day for the first 50 MW and \$15/MW-day for the second 50 MW. Given that its expected EAS revenue of \$50/MW-day exceeds its avoidable costs of \$40/MW-day, such resource would likely continue operating even if the resource does not receive a capacity commitment. In this case, for the hypothetical facility above, the existing Market Seller Offer Cap rules would cap the Sell Offer for the resource to be at \$0/MW-day, despite the fact that the cost of going-forward avoidable non-performance risk associated with a capacity obligation for even the first 50 MW segment would have been \$5/MW-day. Under this proposal, the first 50 MW offer cap segment would be equal to the CPQR of \$5/MW-day, while the second segment would reflect the approved CPQR value of \$15/MW-day for the next 50 MW segment. This will allow the

Capacity Market Seller to appropriately include in the Sell Offer of such resource a cost that reflects the cost associated with the risk of non-performance from receiving a capacity commitment.

In order for PJM to approve a requested resource-specific segmented offer cap, a Capacity Market Seller “must provide adequate justification for the use of a segmented offer cap with supporting documentation and calculations for the Market Seller Offer Cap of each segment” which are to be calculated in accordance with the provisions specified in Tariff, Attachment DD, section 6.8.<sup>132</sup> That is, a Capacity Market Seller must justify the requested offer cap for each segment proposed.<sup>133</sup> Two limiting principles naturally result from this proposed rule.

The first limiting principle is that the offer cap for each requested segment must be reflective of the costs applicable for such segment, i.e., costs that are avoidable if the corresponding MW are not committed.<sup>134</sup> As Dr. Graf notes, the seller would be required to justify the differing risk associated with each segment relative to the other segments.<sup>135</sup> Consistent with the Tariff’s existing CPQR rules, the seller would also have to “justify and provide supporting analysis and documentation for each individual CPQR through the existing unit-specific [Market Seller Offer Cap] process.”<sup>136</sup>

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<sup>132</sup> Proposed Tariff, Attachment DD, section 6.4(e).

<sup>133</sup> Dr. Graf describes how a market participant may think about the cost of the incremental risk associated with increasing MW commitment levels, and the type of analysis and documentation that PJM would consider to support such costs. Graf Aff. ¶ 45.

<sup>134</sup> Graf Aff. ¶ 54.

<sup>135</sup> Graf Aff. ¶ 54.

<sup>136</sup> Graf Aff. ¶ 54.

The second limiting principle is that segments must be chosen such that the costs that are calculated as corresponding to the respective segments are increasing for higher segments; i.e., “offers must be [at least] weakly monotonically increasing.”<sup>137</sup> In other words, because the risk of Non-Performance Charges can only increase as additional MWs are committed as capacity, PJM would require each subsequent segmented offer cap to be higher than the prior segment. As a result, a Capacity Market Seller cannot “frontload” all of the CPQR in the first segment and request subsequent segments with a lower CPQR value (which would be deemed as unsupported).<sup>138</sup> Similarly, if electing to include ACR costs in the first segment that excludes CPQR, a Capacity Market Seller would be required to ensure that the first segment offers a sufficiently large megawatt quantity such that the requested offer cap for that segment is no higher than the CPQR-only offer cap in the subsequent segment. Dr. Graf illustrates in the accompanying affidavit how these principles in devising segmented offers would appropriately allow Capacity Market Sellers to reflect the incremental costs of taking on additional capacity obligations while preventing the exercise of market power.<sup>139</sup>

In short, a Capacity Market Seller must be able to demonstrate that the requested resource-specific net Avoidable Cost Rate for the first segment is consistent with the standards set forth in Tariff, Attachment DD, section 6.8. Likewise, a Capacity Market Seller must also be able to demonstrate that any CPQR associated with every segment meets the existing standards and requirements set forth in Tariff, Attachment DD, section

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<sup>137</sup> Graf Aff. ¶ 56.

<sup>138</sup> See Graf Aff. ¶ 55.

<sup>139</sup> See Graf Aff. ¶¶ 56-60.

6.8(a). These provisions limit a resource-specific offer cap to be reflective of a resource's net Avoidable Cost Rate, including CPQR, that is "quantifiable, reasonably supported, and attributable to a seller's capacity obligation under Capacity Performance" without supplanting any Capacity Market Sellers' ability to formulate those costs in the first instance.<sup>140</sup> To be clear, PJM is not proposing any changes to the existing methodology for developing the gross Avoidable Cost Rate or the existing standards specified in the Tariff for supporting a CPQR. Rather, PJM merely seeks to leverage the existing standards and requirements in allowing Capacity Market Sellers to seek a resource-specific segmented Market Seller Offer Cap.

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<sup>140</sup> *Indep. Market Monitor for PJM*, 178 FERC ¶ 61,121, at P 16.

### **III. STAKEHOLDER CONSULTATION**

As required by Tariff, section 9.2(b), PJM consulted the Members Committee and the Transmission Owners no less than seven days prior to submitting this filing. PJM consulted with the Members Committee on December 13, 2024.<sup>141</sup> In addition, PJM consulted with the Transmission Owners on December 13, 2024, in accordance with the Consolidated Transmission Owners Agreement, section 7.5.1(ii).<sup>142</sup> This filing includes feedback and suggestions from stakeholders during that consultation that PJM found meritorious and which were achievable within the scope and time constraints associated with this filing and the upcoming Base Residual Auction scheduled pre-auction activities.

### **IV. EFFECTIVE DATE**

PJM requests an effective date of February 21, 2025, for this filing. This effective date is necessary to allow for the proposed amendments to be implemented for the Base Residual Auction for the 2026/2027 Delivery Year without further delay. More particularly, under the current auction schedule, the deadline for Capacity Market Sellers to request to remove a resource from Capacity Resource status is February 24, 2025, so a February 21, 2025 date gives Capacity Market Sellers limited time before this deadline to request removal of Capacity Resource status if deemed appropriate.

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<sup>141</sup> Members Committee, *Agenda*, PJM Interconnection, L.L.C. (Dec. 13, 2024), <https://www.pjm.com/-/media/DotCom/committees-groups/committees/mc/2024/20241213-special/agenda.pdf>.

<sup>142</sup> Transmission Owners Agreement-Administrative Committee, *PJM TOA-AC Open-Session, Special Session Agenda*, PJM Interconnection, L.L.C. (Dec. 13, 2024), <https://www.pjm.com/-/media/DotCom/committees-groups/committees/toa-ac/2024/20241213-special/agenda.pdf>.

## V. CORRESPONDENCE

The following individuals are designated for inclusion on the official service list in this proceeding and for receipt of any communications regarding this filing:

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## VI. DOCUMENTS ENCLOSED

This filing consists of the following:

1. This transmittal letter;
2. Revisions to the PJM Tariff (in redlined and non-redlined format (as Attachments A and B, respectively) and in electronic tariff filing format as required by Order No. 714);<sup>143</sup> and
3. Affidavit of Dr. Walter Graf on Behalf of PJM Interconnection, L.L.C., as Attachment C.

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<sup>143</sup> *Electronic Tariff Filings*, Order No. 714, 124 FERC ¶ 61,270 (2008), *final rule*, Order No. 714-A, 147 FERC ¶ 61,115 (2014).

## VII. SERVICE

PJM has served a copy of this filing on all PJM members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the Commission's regulations,<sup>144</sup> PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: <https://www.pjm.com/library/filing-order.aspx>, with a specific link to the newly filed document, and will send an e-mail on the same date as this filing to all PJM members and all state utility regulatory commissions in the PJM Region<sup>145</sup> alerting them that this filing has been made by PJM and is available by following such link. PJM also serves the parties listed on the Commission's official service list for this docket. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. Also, a copy of this filing will be available on FERC's eLibrary website located at the following link: <http://www.ferc.gov/docs-filing/elibrary.asp> in accordance with the Commission's regulations and Order No. 714.

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<sup>144</sup> See 18 C.F.R. §§ 35.2(e), 385.2010(f)(3).

<sup>145</sup> PJM already maintains, updates, and regularly uses e-mail lists for all PJM members and affected state commissions.

### VIII. CONCLUSION

Based on the foregoing, PJM requests that the Commission accept the enclosed  
Tariff revisions effective February 21, 2025.

Respectfully submitted,

/s/ Ryan J. Collins

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# Attachment A

## Revisions to the PJM Open Access Transmission Tariff

(Marked/Redline Format)

## 6.4 Market Seller Offer Caps

(a) The Market Seller Offer Cap, stated in dollars per MW/day of unforced capacity, applicable to price-quantity offers within the Base Offer Segment for an Existing Generation Capacity Resource shall be the Avoidable Cost Rate for such resource, less the Projected PJM Market Revenues for such resource, stated in dollars per MW/day of unforced capacity. Notwithstanding, beginning with the 2026/2027 Delivery Year, the Market Seller Offer Cap shall be the greater of (a) Avoidable Cost Rate for such resource, less the Projected PJM Market Revenues for such resource, or (b) if applicable, the Capacity Performance Quantifiable Risk for such resource, as defined in Tariff, Attachment DD, section 6.8(a), to the extent such value has been supported and obtained approval pursuant to the requirements set forth in this Tariff, Attachment DD, section 6.4(b), stated in dollars per MW-day of unforced capacity. A Capacity Market Seller offering above \$0/MW-day must support and obtain approval of a unit-specific Market Seller Offer Cap pursuant to the procedures and standards of subsection (b) of this section 6.4 or may, at its election, if available, utilize a Market Seller Offer Cap determined using the applicable default gross Avoidable Cost Rate for the applicable resource type shown in the table below, as adjusted for Delivery Years subsequent to the 2022/2023 or 2026/2027 Delivery Year, as applicable, to reflect changes in avoidable costs, net of Projected PJM Market Revenues equal to the resource's net energy and ancillary service revenues for the resource type, as determined in accordance with Tariff, Attachment DD, section 6.8(d).

Existing Resource Type	Through the 2025/2026 Delivery Years: Default Gross ACR (\$/MW-day) (Nameplate)	For the 2026/2027 Delivery Year and Subsequent Delivery Years: Default Gross ACR (\$/MW-day) (Nameplate)
Nuclear – single	\$697	\$591
Nuclear – dual	\$445	\$537
Coal	\$80	\$94
Combined Cycle	\$56	\$113
Combustion Turbine	\$50	\$52
Steam Oil & Gas	NA	\$64
Solar PV (fixed and tracking)	\$40	\$70
Wind Onshore	\$83	\$147

The Market Seller Offer Cap for an Existing Generation Capacity Resource shall be the Opportunity Cost for such resource, if applicable, as determined in accordance with Tariff, Attachment DD, section 6.7.

(b) For each Existing Generation Capacity Resource, a potential Capacity Market Seller must provide to the Market Monitoring Unit and the Office of the Interconnection data and documentation required under section 6.7 below to establish the level of the Market Seller Offer

Cap applicable to each resource by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller must promptly address any concerns identified by the Market Monitoring Unit regarding the data and documentation provided, review the Market Seller Offer Cap proposed by the Market Monitoring Unit, and attempt to reach agreement with the Market Monitoring Unit on the level of the Market Seller Offer Cap by no later than ninety (90) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller shall notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, whether an agreement with the Market Monitoring Unit has been reached or, if no agreement has been reached, specifying the level of Market Seller Offer Cap to which it commits by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction. The Office of the Interconnection shall review the data submitted by the Capacity Market Seller, make a determination whether to accept or reject the requested unit-specific Market Seller Offer Cap, and notify the Capacity Market Seller and the Market Monitoring Unit of its determination in writing, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction. In the event the Office of the Interconnection rejects the Capacity Market Seller's requested unit-specific Market Seller Offer Cap for a particular Capacity Resource, the Capacity Market Seller of such Capacity Resource may submit an offer up to (1) should one exist, the default gross Avoidable Cost Rate for the applicable resource type net of Projected PJM Market Revenues equal to the resource's net energy and ancillary service revenues for the resource type, or (2) the unit-specific Market Seller Offer Cap proposed by the Market Monitoring Unit upon PJM approval of such value. If the Market Monitoring Unit does not provide its determination to the Capacity Market Seller and the Office of the Interconnection by the specified deadline, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction the Office of the Interconnection will make the determination of the level of the Market Seller Offer Cap, which shall be deemed to be final. If the Capacity Market Seller does not notify the Market Monitoring Unit and the Office of the Interconnection of the Market Seller Offer Cap it desires to utilize by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction, it shall be required to utilize a Market Seller Offer Cap determined using the applicable default Avoidable Cost Rate specified in section 6.4(a) above.

Notwithstanding the provisions of Tariff, Attachment M-Appendix, section II.E.2 and this Tariff, Attachment DD, section 6.4(b), no later than eighty (80) days prior to the commencement of the offer period for the auction, the Market Monitoring Unit and the relevant Capacity Market Seller may mutually agree on the value of such Market Seller Offer Cap. Nothing herein shall preclude the Market Monitoring Unit from modifying the Market Seller Offer Cap for a Generation Capacity Resource beyond the eighty-day (80-day) deadline prior to the commencement of the offer period for the auction, through the commencement of the offer period for the auction, so long as the Market Monitoring Unit and the relevant Capacity Market Seller mutually agree with the value of such Market Seller Offer Cap. The Capacity Market Seller shall notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, if such an agreement with the Market Monitoring Unit has been reached. The Office of the Interconnection shall review the Market Seller Offer Cap submitted by the Capacity Market Seller and make a determination whether the Market Seller Offer Cap complies with the tariff, and notify the Capacity Market Seller and the Market Monitoring Unit of its determination.

(c) Nothing in this section precludes the Capacity Market Seller from filing a petition with FERC seeking a determination of whether the Sell Offer complies with the requirements of the Tariff.

(d) For any Third Incremental Auction for the 2018/2019 Delivery Year or any subsequent Delivery Year, the Market Seller Offer Cap for an Existing Generation Capacity Resource offering as a Capacity Performance Resource shall be determined pursuant to subsection (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year.

(e) Effective with the 2026/2027 Delivery Year, Capacity Market Sellers that request a resource-specific Market Seller Offer Cap by the deadline may request to use and provide support for a segmented offer cap to reflect incremental costs of having a capacity obligation across different segments of their resource. Such request shall be submitted and reviewed in accordance with the timelines set forth in this Tariff, Attachment DD, section 6.4(b) and provide adequate justification for the use of a segmented offer cap with supporting documentation and calculations for the Market Seller Offer Cap of each segment. Segmented Market Seller Offer Caps shall be comprised of multiple Market Seller Offer Caps, each calculated in accordance with Tariff, Attachment DD, sections 6.4(a) and 6.8. If elected by the Capacity Market Seller, the first segment shall have a Market Seller Offer Cap reflective of the resource-specific Avoidable Cost Rate, less the Projected PJM Market Revenues for such resource. All subsequent offer segments (and in the first segment if solely requesting a Capacity Performance Quantifiable Risk for the Market Seller Offer Cap) shall include only incremental Capacity Performance Quantifiable Risk associated with the incremental capacity commitment in that offer segment to the extent such value has been supported and obtained approval pursuant to the requirements set forth in this Tariff, Attachment DD, section 6.8(b).

## 6.6A Offer Requirement for Capacity Performance Resources

(a) ~~For the 2018/2019 Delivery Year and subsequent Delivery Years, t~~The installed capacity of every Existing Generation Capacity Resource located in the PJM Region that is capable ~~-(or that reasonably can become capable)~~ of qualifying as a Capacity Performance Resource shall be offered as a Capacity Performance Resource by the Capacity Market Seller that owns or controls all or part of such resource (which may include submission as Self-Supply) in all RPM Auctions for each such Delivery Year, less any amount determined by the Office of the Interconnection to be eligible for an exception to the Capacity Performance Resource must-offer requirement, where installed capacity is determined as of the date on which bidding commences for each RPM Auction pursuant to Tariff, Attachment DD, section 5.6.6. ~~Beginning with the 2025/2026 Delivery Year and subsequent Delivery Years, a~~ A Planned Generation Capacity Resource associated with a notice of intent to offer submitted pursuant to Tariff, Attachment DD, section 5.5 shall be required to be offered by the Capacity Market Seller of such resource in the relevant RPM Auction.

(b) Determinations of EFORD, Accredited UCAP, and Unforced Capacity made under this Tariff, Attachment DD, section 6.6 as to a Generation Capacity Resource shall govern the offers required under this section as to the same Generation Capacity Resource.

(c) Exceptions to the requirement in subsection (a) shall be permitted only for a resource which the Capacity Market Seller demonstrates is reasonably expected to be ~~physically~~ incapable of satisfying the requirements of a Capacity Performance Resource. Through the 2025/2026 Delivery Year, Intermittent Resources, Capacity Storage Resources, Hybrid Resources consisting exclusively of components that in isolation would be Intermittent Resources or Capacity Storage Resources, Demand Resources, and Energy Efficiency Resources shall not be required to offer as a Capacity Performance Resource, but shall not be precluded from being offered as a Capacity Performance Resource at a level that demonstrably satisfies such requirements. Beginning with the 2026/2027 Delivery Year, Demand Resources shall not be required to offer as a Capacity Performance Resource, but shall not be precluded from being offered as a Capacity Performance Resource at a level that demonstrably satisfies such requirements. Exceptions shall be determined using the same timeline and procedures as specified in section 6.6.

Effective with the 2023/2024 Delivery Year, Capacity Market Sellers seeking an exception for a Base Residual Auction on the basis that a resource is incapable of meeting the Capacity Performance Resource requirement shall include a documented plan with the submission of their request showing the steps the Capacity Market Seller intends to pursue for the resource to become physically capable of satisfying the requirements of a Capacity Performance Resource. Such plan shall include (i) a timeline for design, permitting, procurement, and construction milestones, as applicable, where such timeline shall not exceed one Base Residual Auction exception, and (ii) evidence of corporate commitment (e.g., an SEC filing, a press release, or a letter from a duly authorized corporate officer indicating intent to make such investment). Periodic updates on the progress, shall be provided by the Capacity Market Seller to the Office of the Interconnection and the Market Monitoring Unit for their review by no later than (i) one hundred twenty (120) days prior to the commencement of the

offer period for subsequent Incremental Auctions for the applicable Delivery Years, and (ii) the December 1 that last precedes subsequent Base Residual Auctions. The Capacity Market Seller shall also immediately notify the Office of the Interconnection and the Market Monitoring Unit of any material changes to the plan that may occur. Upon request by a Capacity Market Seller, a one year extension to the plan timeline shall be permissible only for delays not caused by the Capacity Market Seller, and that could not have been remedied through the exercise of due diligence by the Capacity Market Seller. In no event may an exception be requested by the Capacity Market Seller for more than two Base Residual Auctions.

Failure to submit a documented plan, or lack of good faith effort by a Capacity Market Seller to make an Existing Generation Capacity Resource physically capable of meeting the requirements of a Capacity Performance Resource in accordance with a documented plan, shall result in the removal of the resource's Capacity Resource status effective with the first future Delivery Year for which the resource was granted an exception, no earlier than the 2023/2024 Delivery Year. The Office of the Interconnection shall amend the applicable Interconnection Service Agreement or wholesale market participation agreement to reflect any such removal of the Capacity Interconnection Rights, and shall report the amended agreement to the Commission in the same manner as the original (e.g. FERC Filing or Electronic Quarterly Reports). The Office of the Interconnection shall file the amended agreement unexecuted if the Interconnection Customer or wholesale market participant does not sign the amended Interconnection Service Agreement or wholesale market participation agreement. The required change in Capacity Resource status shall only apply to those Generation Capacity Resources that are shown to be physically incapable of satisfying the requirements of a Capacity Performance Resource.

(d) A resource not exempted or excepted under subsection (c) hereof that is capable of qualifying as a Capacity Performance Resource and does not offer into an RPM Auction as a Capacity Performance Resource shall be subject to the same restrictions on subsequent offers, and other possible remedies, as specified in section 6.6.

# Attachment B

Revisions to the  
PJM Open Access Transmission Tariff

(Clean Format)

## 6.4 Market Seller Offer Caps

(a) The Market Seller Offer Cap, stated in dollars per MW/day of unforced capacity, applicable to price-quantity offers within the Base Offer Segment for an Existing Generation Capacity Resource shall be the Avoidable Cost Rate for such resource, less the Projected PJM Market Revenues for such resource, stated in dollars per MW/day of unforced capacity. Notwithstanding, beginning with the 2026/2027 Delivery Year, the Market Seller Offer Cap shall be the greater of (a) Avoidable Cost Rate for such resource, less the Projected PJM Market Revenues for such resource, or (b) if applicable, the Capacity Performance Quantifiable Risk for such resource, as defined in Tariff, Attachment DD, section 6.8(a), to the extent such value has been supported and obtained approval pursuant to the requirements set forth in this Tariff, Attachment DD, section 6.4(b), stated in dollars per MW-day of unforced capacity. A Capacity Market Seller offering above \$0/MW-day must support and obtain approval of a unit-specific Market Seller Offer Cap pursuant to the procedures and standards of subsection (b) of this section 6.4 or may, at its election, if available, utilize a Market Seller Offer Cap determined using the applicable default gross Avoidable Cost Rate for the applicable resource type shown in the table below, as adjusted for Delivery Years subsequent to the 2022/2023 or 2026/2027 Delivery Year, as applicable, to reflect changes in avoidable costs, net of Projected PJM Market Revenues equal to the resource's net energy and ancillary service revenues for the resource type, as determined in accordance with Tariff, Attachment DD, section 6.8(d).

Existing Resource Type	Through the 2025/2026 Delivery Years: Default Gross ACR (\$/MW-day) (Nameplate)	For the 2026/2027 Delivery Year and Subsequent Delivery Years: Default Gross ACR (\$/MW-day) (Nameplate)
Nuclear – single	\$697	\$591
Nuclear – dual	\$445	\$537
Coal	\$80	\$94
Combined Cycle	\$56	\$113
Combustion Turbine	\$50	\$52
Steam Oil & Gas	NA	\$64
Solar PV (fixed and tracking)	\$40	\$70
Wind Onshore	\$83	\$147

The Market Seller Offer Cap for an Existing Generation Capacity Resource shall be the Opportunity Cost for such resource, if applicable, as determined in accordance with Tariff, Attachment DD, section 6.7.

(b) For each Existing Generation Capacity Resource, a potential Capacity Market Seller must provide to the Market Monitoring Unit and the Office of the Interconnection data and documentation required under section 6.7 below to establish the level of the Market Seller Offer

Cap applicable to each resource by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller must promptly address any concerns identified by the Market Monitoring Unit regarding the data and documentation provided, review the Market Seller Offer Cap proposed by the Market Monitoring Unit, and attempt to reach agreement with the Market Monitoring Unit on the level of the Market Seller Offer Cap by no later than ninety (90) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller shall notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, whether an agreement with the Market Monitoring Unit has been reached or, if no agreement has been reached, specifying the level of Market Seller Offer Cap to which it commits by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction. The Office of the Interconnection shall review the data submitted by the Capacity Market Seller, make a determination whether to accept or reject the requested unit-specific Market Seller Offer Cap, and notify the Capacity Market Seller and the Market Monitoring Unit of its determination in writing, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction. In the event the Office of the Interconnection rejects the Capacity Market Seller's requested unit-specific Market Seller Offer Cap for a particular Capacity Resource, the Capacity Market Seller of such Capacity Resource may submit an offer up to (1) should one exist, the default gross Avoidable Cost Rate for the applicable resource type net of Projected PJM Market Revenues equal to the resource's net energy and ancillary service revenues for the resource type, or (2) the unit-specific Market Seller Offer Cap proposed by the Market Monitoring Unit upon PJM approval of such value. If the Market Monitoring Unit does not provide its determination to the Capacity Market Seller and the Office of the Interconnection by the specified deadline, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction the Office of the Interconnection will make the determination of the level of the Market Seller Offer Cap, which shall be deemed to be final. If the Capacity Market Seller does not notify the Market Monitoring Unit and the Office of the Interconnection of the Market Seller Offer Cap it desires to utilize by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction, it shall be required to utilize a Market Seller Offer Cap determined using the applicable default Avoidable Cost Rate specified in section 6.4(a) above.

Notwithstanding the provisions of Tariff, Attachment M-Appendix, section II.E.2 and this Tariff, Attachment DD, section 6.4(b), no later than eighty (80) days prior to the commencement of the offer period for the auction, the Market Monitoring Unit and the relevant Capacity Market Seller may mutually agree on the value of such Market Seller Offer Cap. Nothing herein shall preclude the Market Monitoring Unit from modifying the Market Seller Offer Cap for a Generation Capacity Resource beyond the eighty-day (80-day) deadline prior to the commencement of the offer period for the auction, through the commencement of the offer period for the auction, so long as the Market Monitoring Unit and the relevant Capacity Market Seller mutually agree with the value of such Market Seller Offer Cap. The Capacity Market Seller shall notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, if such an agreement with the Market Monitoring Unit has been reached. The Office of the Interconnection shall review the Market Seller Offer Cap submitted by the Capacity Market Seller and make a determination whether the Market Seller Offer Cap complies with the tariff, and notify the Capacity Market Seller and the Market Monitoring Unit of its determination.

(c) Nothing in this section precludes the Capacity Market Seller from filing a petition with FERC seeking a determination of whether the Sell Offer complies with the requirements of the Tariff.

(d) For any Third Incremental Auction for the 2018/2019 Delivery Year or any subsequent Delivery Year, the Market Seller Offer Cap for an Existing Generation Capacity Resource offering as a Capacity Performance Resource shall be determined pursuant to subsection (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year.

(e) Effective with the 2026/2027 Delivery Year, Capacity Market Sellers that request a resource-specific Market Seller Offer Cap by the deadline may request to use and provide support for a segmented offer cap to reflect incremental costs of having a capacity obligation across different segments of their resource. Such request shall be submitted and reviewed in accordance with the timelines set forth in this Tariff, Attachment DD, section 6.4(b) and provide adequate justification for the use of a segmented offer cap with supporting documentation and calculations for the Market Seller Offer Cap of each segment. Segmented Market Seller Offer Caps shall be comprised of multiple Market Seller Offer Caps, each calculated in accordance with Tariff, Attachment DD, sections 6.4(a) and 6.8. If elected by the Capacity Market Seller, the first segment shall have a Market Seller Offer Cap reflective of the resource-specific Avoidable Cost Rate, less the Projected PJM Market Revenues for such resource. All subsequent offer segments (and in the first segment if solely requesting a Capacity Performance Quantifiable Risk for the Market Seller Offer Cap) shall include only incremental Capacity Performance Quantifiable Risk associated with the incremental capacity commitment in that offer segment to the extent such value has been supported and obtained approval pursuant to the requirements set forth in this Tariff, Attachment DD, section 6.8(b).

## **6.6A Offer Requirement for Capacity Performance Resources**

(a) The installed capacity of every Existing Generation Capacity Resource located in the PJM Region that is capable (or that reasonably can become capable) of qualifying as a Capacity Performance Resource shall be offered as a Capacity Performance Resource by the Capacity Market Seller that owns or controls all or part of such resource (which may include submission as Self-Supply) in all RPM Auctions for each such Delivery Year, less any amount determined by the Office of the Interconnection to be eligible for an exception to the Capacity Performance Resource must-offer requirement, where installed capacity is determined as of the date on which bidding commences for each RPM Auction pursuant to Tariff, Attachment DD, section 5.6.6. A Planned Generation Capacity Resource associated with a notice of intent to offer submitted pursuant to Tariff, Attachment DD, section 5.5 shall be required to be offered by the Capacity Market Seller of such resource in the relevant RPM Auction.

(b) Determinations of EFORd, Accredited UCAP, and Unforced Capacity made under this Tariff, Attachment DD, section 6.6 as to a Generation Capacity Resource shall govern the offers required under this section as to the same Generation Capacity Resource.

(c) Exceptions to the requirement in subsection (a) shall be permitted only for a resource which the Capacity Market Seller demonstrates is reasonably expected to be physically incapable of satisfying the requirements of a Capacity Performance Resource. Through the 2025/2026 Delivery Year, Intermittent Resources, Capacity Storage Resources, Hybrid Resources consisting exclusively of components that in isolation would be Intermittent Resources or Capacity Storage Resources, Demand Resources, and Energy Efficiency Resources shall not be required to offer as a Capacity Performance Resource, but shall not be precluded from being offered as a Capacity Performance Resource at a level that demonstrably satisfies such requirements. Beginning with the 2026/2027 Delivery Year, Demand Resources shall not be required to offer as a Capacity Performance Resource, but shall not be precluded from being offered as a Capacity Performance Resource at a level that demonstrably satisfies such requirements. Exceptions shall be determined using the same timeline and procedures as specified in section 6.6.

Effective with the 2023/2024 Delivery Year, Capacity Market Sellers seeking an exception for a Base Residual Auction on the basis that a resource is incapable of meeting the Capacity Performance Resource requirement shall include a documented plan with the submission of their request showing the steps the Capacity Market Seller intends to pursue for the resource to become physically capable of satisfying the requirements of a Capacity Performance Resource. Such plan shall include (i) a timeline for design, permitting, procurement, and construction milestones, as applicable, where such timeline shall not exceed one Base Residual Auction exception, and (ii) evidence of corporate commitment (e.g., an SEC filing, a press release, or a letter from a duly authorized corporate officer indicating intent to make such investment). Periodic updates on the progress, shall be provided by the Capacity Market Seller to the Office of the Interconnection and the Market Monitoring Unit for their review by no later than (i) one hundred twenty (120) days prior to the commencement of the offer period for subsequent Incremental Auctions for the applicable Delivery Years, and (ii) the December 1 that last precedes subsequent Base Residual Auctions. The Capacity Market Seller

shall also immediately notify the Office of the Interconnection and the Market Monitoring Unit of any material changes to the plan that may occur. Upon request by a Capacity Market Seller, a one year extension to the plan timeline shall be permissible only for delays not caused by the Capacity Market Seller, and that could not have been remedied through the exercise of due diligence by the Capacity Market Seller. In no event may an exception be requested by the Capacity Market Seller for more than two Base Residual Auctions.

Failure to submit a documented plan, or lack of good faith effort by a Capacity Market Seller to make an Existing Generation Capacity Resource physically capable of meeting the requirements of a Capacity Performance Resource in accordance with a documented plan, shall result in the removal of the resource's Capacity Resource status effective with the first future Delivery Year for which the resource was granted an exception, no earlier than the 2023/2024 Delivery Year. The Office of the Interconnection shall amend the applicable Interconnection Service Agreement or wholesale market participation agreement to reflect any such removal of the Capacity Interconnection Rights, and shall report the amended agreement to the Commission in the same manner as the original (e.g. FERC Filing or Electronic Quarterly Reports). The Office of the Interconnection shall file the amended agreement unexecuted if the Interconnection Customer or wholesale market participant does not sign the amended Interconnection Service Agreement or wholesale market participation agreement. The required change in Capacity Resource status shall only apply to those Generation Capacity Resources that are shown to be physically incapable of satisfying the requirements of a Capacity Performance Resource.

(d) A resource not exempted or excepted under subsection (c) hereof that is capable of qualifying as a Capacity Performance Resource and does not offer into an RPM Auction as a Capacity Performance Resource shall be subject to the same restrictions on subsequent offers, and other possible remedies, as specified in section 6.6.

# Attachment C

Affidavit of Dr. Walter Graf on Behalf of PJM  
Interconnection, L.L.C.



## II. PURPOSE AND SUMMARY OF AFFIDAVIT

5. My affidavit supports PJM’s filing to enhance market efficiency in the RPM capacity market through two key and complementary changes:
  - **Extending the must-offer requirement** to intermittent, storage, and hybrid resources beginning with the 2026/27 Base Residual Auction (“BRA”), while maintaining the exemption for Demand Resources (“DR”).
  - **Enhancing the Market Seller Offer Cap (MSOC) rules** to allow Capacity Market Sellers to better reflect the cost associated with the risk of Non-Performance Charges during a Delivery Year by: (1) setting a floor on the MSOC at the level of the Capacity Performance Quantifiable Risk (“CPQR”); and (2) permitting Capacity Market Sellers to request unit-specific segmented offer caps.
6. These proposed changes work together to allow Capacity Market Sellers to submit Sell Offers that reflect the true economic costs of providing that capacity and taking on a capacity obligation. This will lead to more efficient price formation, as Market Participants can directly reflect their costs through their Sell Offers for selection in the auction on a least-cost basis.
7. Analysis I conducted and describe in this affidavit, including an examination of portfolio incentives and economic theory, indicates that there is a potential for profitable capacity withholding related to unilateral market power for a significant amount of currently exempt generation capacity. Even for the capacity for which that is not the case, I also describe conditions under which the current rules may incentivize Capacity Market Sellers to choose not to offer capacity when they would be unable to reflect their true costs when doing so. The proposed MSOC reforms are essential to address this issue if the must-offer requirement is extended to all Existing Generation Capacity Resources. Together, these reforms will enhance the efficiency and competitiveness of the capacity market.

## III. MODERNIZING THE MUST-OFFER REQUIREMENT FOR A CHANGING RESOURCE MIX

8. In pursuit of maintaining resource adequacy while mitigating against the potential exercise of market power, PJM’s rules require that certain Existing Generation Capacity Resources offer their accredited capacity into the capacity market. Historically, prior to the implementation of Capacity Performance (“CP”) which instituted significant performance incentives and the potential for penalties for non-performance during system stress events, this requirement applied to all Existing Generation Capacity Resources. However, intermittent, storage, and hybrid resources have been exempt from this general capacity market must-offer

requirement since 2015 when Capacity Performance was implemented.<sup>1</sup> This exemption, while initially justifiable, is now misaligned with the current resource mix and market dynamics. As a result, PJM proposes to remove this categorical exemption to the capacity must-offer requirement for intermittent, storage, and hybrid resources, beginning with the 2026/27 BRA, while maintaining the existing exemption for DR.

9. The rationale for the original exemption, as detailed in PJM’s Capacity Performance Filing of December 12, 2014, was twofold. First, it recognized the inherent intermittency of certain resources and the potential for substantial performance penalties that could introduce uneconomic risk.<sup>2</sup> It also recognized that “as a practical matter, these types of resources do not raise the same physical withholding concerns as do existing generation resources (ownership of which is relatively concentrated).”<sup>3</sup> Since that filing, however, the landscape has shifted significantly.

**A. The Growing Share of Must Offer Exempt Resources Challenges PJM’s Reliability Outlook**

10. Intermittent, storage, and hybrid resources together now represent an overwhelming majority of new resources in the PJM interconnection queue. Their continued exemption creates a potential for uneconomic withholding that could compromise the integrity of the capacity auction results and undermine resource adequacy, particularly as the system faces a growing need for additional capacity. Meanwhile, PJM has introduced other changes that substantially reduce the financial risks that originally led PJM to institute the categorical exemption; I return to this topic in the following sections.
11. The 2025/26 BRA illustrates this evolving challenge. Approximately 1,600 megawatts (“MW”) Unforced Capacity (“UCAP”) of categorically exempt generation resources were not offered, of which 1,100 MW UCAP were wind, solar, and battery resources.<sup>4</sup> This unoffered capacity is nearly equivalent to the 1,300 MW UCAP of total accredited capacity of these resource types when the

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<sup>1</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208 (2015), *order on reh’g & compliance*, 155 FERC ¶ 61,157 (2016), *aff’d sub nom. Advanced Energy Mgmt. All. v. FERC*, 860 F.3d 656 (D.C. Cir. 2017).

<sup>2</sup> *PJM Interconnection, L.L.C.*, Reforms to the Reliability Pricing Market (“RPM”) and Related Rules in the PJM Open Access Transmission Tariff (“Tariff”) and Reliability Assurance Agreement Among Load Serving Entities (“RAA”) of PJM Interconnection, L.L.C., Docket No. ER15-623-000, at 60-62 (Dec. 12, 2014).

<sup>3</sup> *Id.* at 61.

<sup>4</sup> Tim Horger & Adam Keech, *2025/2026 Base Residual Auction Results*, PJM Interconnection, L.L.C., 38 (Aug. 21, 2024), <https://pjm.com/-/media/committees-groups/committees/mrc/2024/20240821/20240821-item-08---2025-2026-base-residual-auction---presentation.ashx>.

exemption was initially established in 2015 (for the 2018/19 Delivery Year).<sup>5</sup> The price impact of this unoffered capacity becomes magnified, leading to potential reliability shortfalls and unnecessarily high prices, as system margins tighten due to load growth or resource retirements.

12. Tables 1.A and 1.B present data I compiled regarding the capacity of must offer exempt resources, in UCAP terms and as shares of all must offer exempt qualified capacity and of all accredited capacity, for the 2018/19 and 2025/26 Delivery Years, respectively. I observe that while the aggregate accredited capacity across all must offer exempt resource types is nearly the same, the capacity of wind and solar resources has grown substantially, tripling in UCAP MW terms over that time period.<sup>6</sup>

Table 1.A: Capacity by Must Offer Exempt (MOE) Resource Class, 2018/19

Resource Type	UCAP MW	UCAP as share of...	
		MOE	Total
<b>Solar</b>	199	2%	0.1%
<b>Wind</b>	1,104	10%	0.6%
<b>Hydro</b>	9,534	88%	4.9%
<b>Total MOE</b>	10,836	100%	5.5%
<b>Total All Resources</b>	196,021		100%

Table 1.B: Capacity by Must Offer Exempt (MOE) Resource Class, 2025/26

Resource Type	UCAP MW	UCAP as share of...	
		MOE	Total
<b>Solar</b>	1,818	17%	1.2%
<b>Wind</b>	2,054	19%	1.4%
<b>Hydro</b>	6,924	64%	4.6%
<b>Total MOE</b>	10,796	100%	7.2%
<b>Total All Resources</b>	150,168		100%

13. Looking forward, I expect this trend to only increase. The PJM interconnection queue provides an indication that wind, solar, and storage (and hybrid resources consisting primarily of combinations of these resource types) will represent a majority of new capacity built and brought online going forward, which is in stark contrast to expectations based on the queue in 2015, as illustrated in Figure 1. The vast majority of new capacity would be exempt from the requirement to offer

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<sup>5</sup> 1,300 MW UCAP was the total accredited capacity of wind, solar, and battery resources in the 2018/19 Delivery Year, the first year to which the Capacity Performance provisions would apply. The 1,100 MW UCAP of unoffered capacity of these resource types in 2025/26 was in fact larger as a share of total accredited capacity in RPM, due to changes in the PJM resource mix and changes to the accreditation methodology.

<sup>6</sup> Accreditation methodology changes have impacted the accredited capacity of these resource types in ways that make the UCAP MW not directly comparable between the two Delivery Years.

economically into the capacity market. Without these proposed changes, capacity market rules that continue to allow and in some cases incentivize resources to not offer the full accredited amount may not adequately mitigate against the potential exercise of market power and could exacerbate reliability challenges in PJM if these resources choose not to participate in the capacity market while simultaneously reserving transmission capacity, limiting access for other resources that are able to accept capacity obligations. I further discuss each of these concerns in the following sections.

Figure 1.A: PJM Interconnection Queue Capacity by Resource Class, 2015

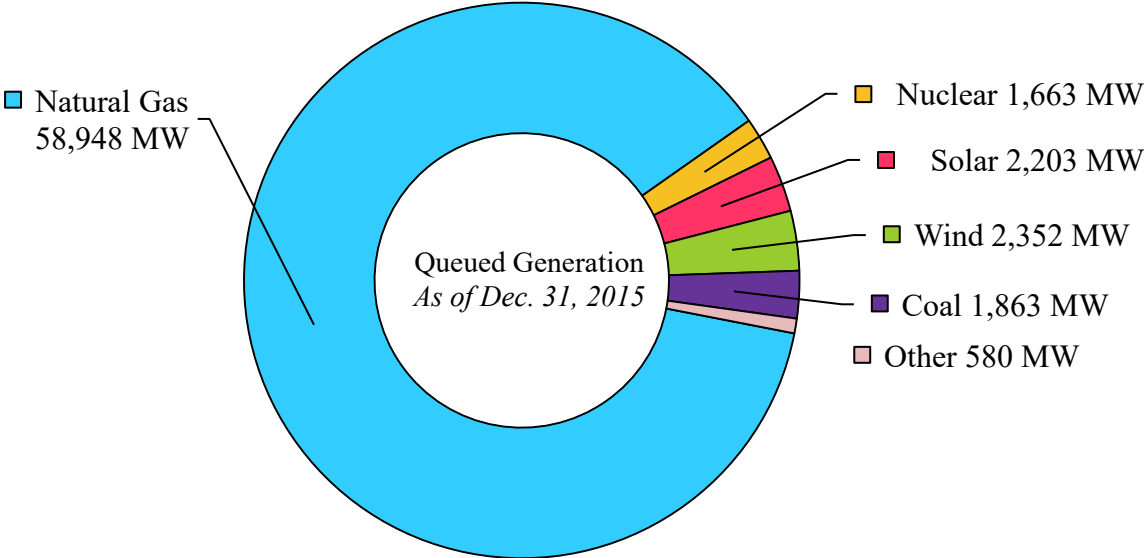
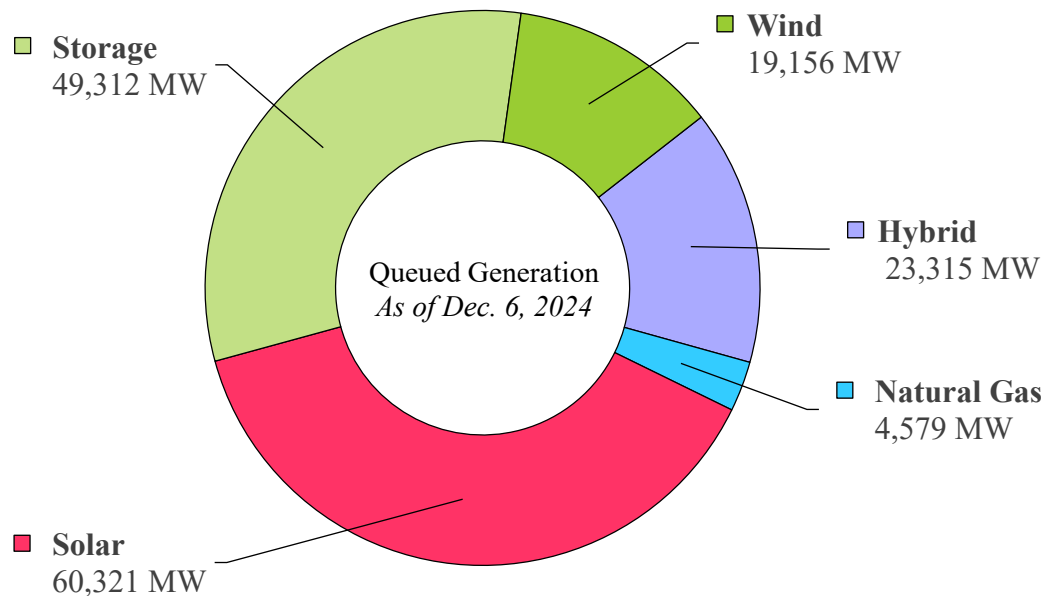


Figure 1.B: PJM Interconnection Queue Capacity by Resource Class, 2024



**B. There Exists Potential for Portfolio Market Power Abuse Under the Current Exemption**

14. Under PJM’s existing rules, PJM conducts a market structure test, commonly referred to as the “three-pivotal supplier test.” The current market structure test is a general screen that looks at whether any individual Capacity Market Seller is jointly pivotal with the two largest Capacity Market Sellers in PJM (i.e., whether the supply from each individual Capacity Market Seller, together with the supply from the two largest sellers, is required in order to meet demand in the market). Under current conditions, all Capacity Market Sellers fail the market structure test because any supplier added to the two largest suppliers in the PJM footprint would be jointly pivotal given the current level of supplier concentration.
15. I further analyzed Capacity Market Sellers’ abilities to profitably exercise market power through physical withholding of Existing Generation Capacity Resources that are exempt from the capacity must-offer requirement and found the potential for market power to be exercised based on current portfolios. Summarizing my conclusions, my analysis reveals that nearly half of exempt generation capacity—over 5,000 MW UCAP—is held in portfolios of Capacity Market Sellers that have the incentive and ability to exercise unilateral market power and profitably withhold capacity for generation portfolio benefits as assessed at the parent company. These results challenge assumptions regarding the limited potential for physical withholding of Intermittent Resources, Capacity Storage Resources, and Hybrid Resources under current market conditions and resource ownership structures that originally supported the exemption in 2015.

16. Market power generally refers to the ability of a seller<sup>7</sup> to manipulate the price of product transacted in a market, that is, to raise the price above the competitive level.<sup>8</sup> Defined in this general way, many Capacity Market Sellers possess market power in the PJM capacity market, given structural factors including the relative tightness of the market and in-elasticity of both supply and demand curves.
17. However, possessing market power is not the same as the ability to *profitably exercise* market power. This is because it is not costless to exercise market power; doing so requires the seller to *sell less*. Selling less (“withholding”), either economically (by offering at a higher price) or physically (by not offering at all), requires the seller to forgo revenues that they could otherwise receive on every unit (MW) withheld. By definition, such revenues reflect the market price, which must exceed the sellers’ marginal (incremental) cost (notwithstanding portfolio impacts); if price does not exceed the marginal cost on a unit, then it would not be economic, efficient, or welfare maximizing for that unit to be transacted. Because the sellers’ marginal revenues exceed their marginal costs, they *could* earn a net profit on any units withheld. Choosing to forgo this net profit is a cost.
18. A rational market seller would only attempt to withhold and exercise market power if doing so was expected to be profitable, that is, better than not doing so. This requires the cost of withholding—the foregone revenues net of costs for withheld MW—to be lower than the expected benefit of withholding—the increase in infra-marginal revenues effectuated by the higher price enjoyed on every MW that is sold and not withheld.
19. Intuitively, the cost of withholding scales roughly with the clearing price, while the benefit of withholding is independent of the clearing price and is a function of the *increase* in the clearing price. More specifically, it is the product of the quantity sold (the size of the portfolio not withheld) and the change in the clearing price effectuated by the withholding. Very large Capacity Market Sellers have a large portfolio in which every MW sold benefits from the increased clearing price, so the benefit of withholding is large relative to the cost of withholding. In contrast, very small Capacity Market Sellers have a small quantity of MW that could benefit from any increased clearing price, so the benefit of withholding is small relative to the cost of withholding. While such a seller *could* withhold, and *could* exercise market power, the distinction I am making is that such a seller *could not profit* from doing

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<sup>7</sup> Strictly speaking, I have defined *supplier* or *seller-side* market power. Symmetrically, then, *buyer-side* market power is the ability of a buyer to manipulate the market price at which they purchase a product. For brevity and clarity, I dispense with further explicit clarification that my exposition on the matter focuses on seller market power only in the context of this filing.

<sup>8</sup> In this context, the competitive price level refers to that price which would prevail in a competitive market, that is, one in which no buyer or seller has the incentive or ability to exercise market power, and therefore price outcomes reflected both marginal cost (to sellers) and marginal value (to buyers).

so, and therefore would not be incentivized to withhold.<sup>9</sup> Such a seller is thus “competitive.”

20. To further examine the potential for market power, I conducted an analysis that focused on differentiating across Capacity Market Sellers that could conceivably *profitably* withhold from those that would not be able to do so profitably.<sup>10</sup> For the 2025/26 BRA, I estimate the maximum impact of withholding on the clearing price, per MW withheld, based on the slope of the capacity market demand curve.<sup>11</sup> I focus on examining the potential for market power withholding at the PJM Regional Transmission Organization (“RTO”) level.<sup>12</sup> Based on this price impact per MW withheld, for each parent company I calculated the approximate portfolio benefit given the total capacity owned in that portfolio. I then compared this withholding benefit to the withholding cost, given reasonable assumptions regarding the going-forward avoidable economic costs of withholding, and focusing on the impact on the Market Sellers’ generation portfolio.<sup>13</sup> In the 2025/26 Base Residual Auction, I found that nearly half of exempt generation capacity—representing over 5,000 MW UCAP—was held in portfolios with at least hundreds of megawatts of must offer exempt generation capacity and sufficiently large portfolios of non-exempt resources so as to be able to benefit from strategic market power withholding. In other words, there now appear to be at least some Capacity Market Sellers with large ownership of categorically exempt Existing Generation Capacity Resources that could conceivably benefit their generation portfolios by physically withholding from the capacity market.
21. In summary, my analysis shows that a significant amount of currently exempt generation capacity is held in sufficiently large generation portfolios (including exempt and non-exempt resources) such that they could profit from withholding certain of their resources; they have both the ability and incentive to exercise market

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<sup>9</sup> In fact, they would be incentivized to do the exact opposite: sell as much capacity as possible.

<sup>10</sup> The portfolio test I describe here has precedent in similar tests in actual use as market power screens in the capacity market context in ISOs outside of PJM. For example, it is consistent with the test used in ISO-NE and described in ISO New England, Inc. Transmission, Markets and Services Tariff, Section III, Appendix A, Section III.A.24.

<sup>11</sup> I caveat this as “maximum” price impact of withholding as I assume the withholding causes a one-for-one reduction in the cleared quantity. Some elasticity of supply would reduce this impact somewhat.

<sup>12</sup> Focusing on an analysis of market power with respect to the RTO is a reasonable simplification for a few reasons. First, in general this provides a lower bound on the potential for profitable withholding, as additional withholding might be profitable in smaller Locational Deliverability Areas (“LDAs”) with steep demand curves if Sellers have a sufficiently large portfolio in that location. Second, the only LDAs that had a price different from the RTO in the 2025/26 BRA cleared at the price cap. Under these circumstances, a Capacity Market Seller attempting locational withholding would not profit from doing so, as doing so would be costly but with no impact on price.

<sup>13</sup> I assume most must-offer-exempt capacity has a going-forward cost equal to a modest CPQR only with no other avoidable costs or offsetting EAS revenues. Later sections provide additional context on this assumption.

power. Further, I believe that this risk could grow in the coming Delivery Years given the penetration of additional Intermittent Resources and Capacity Storage Resources in the interconnection queue. Taken together with the fact that all Capacity Market Sellers fail the current market structure test, the existing categorical exemption for intermittent, storage, and hybrid resources raises a significant concern that market power could potentially be exercised. It is thus appropriate to proactively mitigate against the potential exercise of market power by requiring all Existing Generation Capacity Resource to be offered into the capacity auctions. To be clear, my analysis is limited to whether Capacity Market Sellers with existing large generation portfolios could have the incentive and ability to exercise market power. This analysis should not be construed as concluding that there was an exercise of market power in the 2025/2026 Base Residual Auction as that would require substantial additional and different analysis and would be addressed through avenues separate and distinct from this Section 205 filing.

**C. An Expanded Must-Offer Requirement Promotes Efficient Use of the Transmission System**

22. It is in the public interest to efficiently utilize the transmission system, ensuring that this critical infrastructure delivers maximum value to consumers. Capacity Interconnection Rights (“CIRs”) are fundamental to this objective. Generators invest in interconnection facilities and receive CIRs, which provide a guaranteed level of deliverability. PJM’s transmission planning process ensures that capacity resources with CIRs can reliably deliver their output to the grid, even as the system evolves. The costs associated with maintaining this deliverability, including upgrades and expansions, are allocated to Load Serving Entities, reflecting the shared benefit derived from a reliable transmission network.
23. However, the current must-offer exemption creates a significant disconnect between these transmission investments and the actual provision of capacity. For example, in the 2025/26 BRA, approximately 1,600 MW of capacity resources holding CIRs did not offer their capacity into the market. This means that load serving entities are paying to maintain the deliverability of resources that are not contributing to system resource adequacy, effectively underutilizing the very infrastructure they are funding. Substantial transmission capacity is being reserved for resources that may not be available and have no obligation to perform when needed. As the penetration of generation resources with a categorical exemption in PJM grows, there is a risk of an increasingly larger quantity of Existing Generation Capacity Resources for which load must continue to pay to maintain deliverability but that elects not to even offer their capacity – at any price – in return for those investments.
24. The efficient use of transmission system capacity warrants mandating capacity market participation by all resources for whom transmission headroom and deliverability is being reserved. By requiring intermittent, storage, and hybrid resources holding CIRs to offer their capacity into the market, PJM can ensure that

the investments made in transmission infrastructure are fully utilized to support the reliable delivery of electricity.

**D. Recent Market Changes Substantially Reduce CP Risks Relative to When the Must-Offer Exemption Was Established**

25. PJM recognizes the historical concerns regarding the imposition of undue performance risk on intermittent and storage resources. Beyond the proposed change in accounting for CPQR in the MSOC and segmented offer cap, I note that several other recent changes to market rules have also substantially mitigated these performance risks.
26. First, in 2023, in Docket No. ER23-1996-000, PJM changed the criteria for Emergency Actions, which trigger Performance Assessment Intervals (“PAI”) in which CP bonus payments and Non-Performance Charges are assessed. The revised PAI triggers, now focused on more extreme conditions, significantly reduce the likelihood of assessing Non-Performance Charges to Intermittent Resources for under or non-performance during PAIs. For example, during Winter Storm Elliott, the previous PAI rules resulted in approximately 23 hours of PAIs, whereas the revised rules would have resulted in only about 6 hours.<sup>14</sup> This targeted approach ensures that Non-Performance Charges are assessed only when performance failures are most impactful to the system and reflect a true capacity emergency, but also serves to reduce the overall risk of PAIs by reducing the probability of incurring large Non-Performance Charges.
27. Second, the adoption of a marginal Effective Load Carrying Capability (“ELCC”) accreditation in recent PJM filing ER24-99 further reduces risk. This approach, which utilizes historical performance data or output profiles, provides a more accurate reflection of resource capability compared to previous average forced outage-based approaches. In particular, by accrediting resources based on their expected contribution during periods of system stress, ELCC incrementally reduces the probability of a resource under-performing its capacity obligation during a PAI, thus mitigating exposure to Non-Performance Charges associated with capacity commitments for many intermittent and storage resources.
28. Third, the calculation of the annual “stop-loss,” or maximum Non-Performance Charge, was also changed in PJM’s recent filing in Docket No. ER24-99-001. That filing changed the stop-loss from 150% of Net CONE to 150% of BRA revenues for the relevant Delivery Year. This change reduces the potential downside of accepting a capacity obligation in all years with auction clearing prices below Net CONE. Reducing the probability of a market participant being assessed Non-

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<sup>14</sup> *PJM Interconnection, L.L.C.*, Proposed Enhancements to PJM’s Capacity Market Rules - Market Seller Offer Cap, Performance Payment Eligibility, and Forward Energy and Ancillary Service Revenues of PJM Interconnection, L.L.C., Docket No. ER24-98-000, at Attachment D (Affidavit of Dr. Walter Graf on Behalf of PJM Interconnection, L.L.C.) ¶ 87 (Oct. 13, 2023).

Performance Charges several times that of their market revenues changed the risk-reward calculus of capacity market participation for many participants.

29. Altogether, these recent changes, in combination with the proposed MSOC adjustments in this filing, eliminate the original justification for the categorical exemption to the must-offer requirement for intermittent, storage, and hybrid resources.

**E. The Existing Categorical Exemption for Demand Resources Remains Reasonable**

30. PJM is not proposing to extend the must-offer requirement to DR at this time.
31. PJM believes there are fundamental differences between DR and all other Capacity Resources that warrant maintaining the exemption. First and foremost, DR differs from generation resources in that it represents a reduction in consumption rather than an increase in generation. Requiring DR to offer into the capacity market would essentially force consumers to commit to reducing their consumption, even if market conditions or their individual preferences change. This raises both philosophical and practical concerns about the appropriate role of the market operator in dictating consumer behavior.
32. Furthermore, I would note in a manner that is symmetric to how generation resources are structurally “long” capacity in advance of a BRA (in that their expected physical capacity position for the Delivery Year is higher than their capacity commitment going into the auction), loads are structurally “short” (in that they expect to have capacity obligations and be assigned capacity costs in the Delivery Year for which they do not possess a physical hedge). As a result, loads – the only Market Participants ultimately able to provide demand response reductions – benefit from *lower*, not higher capacity prices. Perhaps a Curtailment Service Provider (“CSP”) that is affiliated with a generation owner might wish for higher prices, but ultimately loads seeking to reduce their capacity costs by providing curtailment capability are not incentivized to do so by participating through a CSP who will ultimately withhold their capabilities and increase their costs.
33. Finally, I am skeptical that PJM even could implement a must-offer requirement for DR in a way that is enforceable and binding. While mechanically PJM could require that DR aggregators offer all “accredited” capacity (that is, the capacity in their DR Sell Offer Plan), such a requirement would incentivize any Market Participant that *theoretically* did have market power to simply reduce their DR Sell Offer plan. It is not clear how PJM could remove that option and compel specific consumers to offer load curtailment capability, or compel CSPs to commit load registrations for continued participation, if they do not want to curtail and would rather pay the cost of capacity for doing so.
34. In summary, while PJM believes the must-offer requirement should be extended to intermittent, storage, and hybrid resources, it is not appropriate or practical to apply

the same requirement to DR at this time. The unique nature of DR as load side reduction, coupled with the practical challenges of enforcing a must-offer requirement on consumers, distinguishes it from other types of Capacity Resource.

35. Nevertheless, I recognize, as the federal courts have, that “[t]he methods and techniques of [market] manipulation are limited only by the ingenuity of man.”<sup>15</sup> PJM will continue to monitor this issue. Nothing in my comments is intended to suggest that compliance with these rules absolves a Market Participant from potential wrongdoing nor precludes a referral to FERC Office of Enforcement should PJM or the Independent Market Monitor have concern that the participant is exercising market power.

**F. The Capacity Obligation Imposes Certain Costs that May Not be Fully Reflected in Capacity Sell Offers Under the Existing Market Seller Offer Cap Rules**

36. As I have previously described and summarize below, I believe the proposed enhancements to PJM’s current MSOC framework are appropriate.<sup>16</sup> As such, I would be reluctant to support a PJM proposal to extend the must-offer obligation even more broadly than today by removing the categorical exemption for intermittent, storage, and hybrid resources without PJM’s concomitant proposal to correct certain of those flaws.
37. Under the current market power mitigation rules, the default MSOC levels do not generally allow market sellers to reflect their full costs. Particularly for resources classes with low default Avoidable Cost Rates (“ACR”), and relatively high Energy and Ancillary Services (“EAS”) revenues, including most of the resources classes categorically exempt from the must-offer obligation, the default MSOC is zero. Indeed, in the 2025/2026 Base Residual Auction, 75% of all accredited UCAP was offer capped at \$0/MW-day, largely because the default MSOC for those resources reflected EAS revenues equal to or greater than their default ACR.
38. Even if a Capacity Market Seller elects to request a unit-specific MSOC, the CPQR, which represents the quantifiable risk of incurring capacity performance penalties, is treated like any other going-forward cost and is offset by net EAS revenues. Especially (but not exclusively) when a Capacity Market Seller’s only economic cost of accepting a capacity obligation is CPQR, this will still result in MSOC values below the resource’s incremental cost of accepting a capacity obligation, effectively capping offers below the level of going-forward avoidable costs.

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<sup>15</sup> *Cargill, Inc. v. Hardin*, 452 F.2d 1154, 1163 (8th Cir. 1971).

<sup>16</sup> *PJM Interconnection, L.L.C.*, Proposed Enhancements to PJM’s Capacity Market Rules - Market Seller Offer Cap, Performance Payment Eligibility, and Forward Energy and Ancillary Service Revenues of PJM Interconnection, L.L.C., Docket No. ER24-98-000, at Attachment D (Affidavit of Dr. Walter Graf on Behalf of PJM Interconnection, L.L.C.) (Oct. 13, 2023).

39. This creates a clear disincentive for certain resources, particularly those with relatively low going-forward costs and high net EAS revenues, such as Intermittent Resources, to be offered as capacity. Capacity Market Sellers of Capacity Resources that face a non-zero CPQR would rationally seek to reflect this cost in its capacity offer, as offering below this level risks clearing if prices are so low that the revenues received by selling capacity exceed the costs incurred by to provide that capacity, including CPQR. However, the current MSOC calculation can prevent this, forcing resources to offer below their actual costs – or choosing to not offer altogether. This can lead to withholding of capacity, even by competitive suppliers that have no ability to profitably exercise market power, and nevertheless distort market outcomes.
40. In the 2025/26 Base Residual Auction, a number of market sellers exempt from the must-offer obligation chose not to offer their full capacity, following a period of low capacity prices. This choice was rational and competitive under rules that did not allow Market Participants to offer their full costs, but did allow them to choose not to offer.
41. Economic auction theory suggests that, under certain assumptions, the Sell Offer level that Capacity Market Sellers choose in order to maximize their individual profits equals their going-forward avoidable costs. While the capacity market is not perfectly competitive, this result should also hold for competitive Capacity Market Sellers (those who lack either the incentive or ability to profitably exercise market power) even in markets where structural market power exists for other Market Participants. In fact, this theory – that properly designed auction rules can elicit cost information and incentivize truthful revelation of costs for competitive participants – indeed forms the basis for restructuring and the transition to wholesale electric markets in RTOs.
42. Had more Capacity Market Sellers forecasted the higher prices of the 2025/26 Base Residual Auction, it would have been in their best interest to offer, as the auction revenues likely would have exceeded any risk-based economic costs. But incentives for participants, even competitive market sellers, to offer strategically based on their expectations of auction outcomes rather than their own costs limits the market’s ability to deliver efficient outcomes. In short, if Market Participants are not incentivized (or permitted) to reveal their costs through their offers, the market will not necessarily clear those offers that have the lowest going-forward avoidable costs.
43. PJM’s proposed MSOC modifications, further described in the following section, address this issue directly. These MSOC enhancements are not merely supplemental to the expanded must-offer requirement; they are integral to its success. They allow resources that are required to offer capacity to better reflect their true economic costs, promoting efficient market outcomes while fostering greater participation. These reforms promote market efficiency by allowing participants to base their offers on their own unit-specific costs, rather than requiring them to speculate on auction outcomes.

**G. Allowing Capacity Market Sellers to Better Reflect the True Economic Costs of Capacity Commitments in Sell Offers Can Unlock Economic Capacity**

44. Concurrent with the proposed expansion of the must-offer requirement, PJM proposes critical modifications to the MSOC framework. These modifications are essential to ensure that required offers based on unit-specific costs accurately reflect the true economic costs of capacity commitments, including the risks associated with Capacity Performance.
45. First, PJM proposes establishing a floor for the MSOC at the level of the CPQR. This improves sellers' abilities to submit offers that reflect the incremental risk of a capacity commitment, regardless of their Net EAS Revenues. This is consistent with fundamental economic principles, which dictate that competitive offers should reflect all going-forward net avoidable costs. By setting a floor at CPQR, PJM better protects against inadvertently suppressing offers below the level of demonstrable, economic, going-forward avoidable costs of providing capacity and accepting a capacity obligation.<sup>17</sup>
46. Second, PJM proposes allowing segmented offer caps. This would allow resources to reflect varying levels of CP penalty risk corresponding to obligations on different quantities of their capacity. This is particularly relevant for resources like wind, solar, and hydro, where weather conditions can significantly affect output and therefore the risk of non-performance. Segmented offer caps provide a more granular and accurate representation of risk, allowing resources to tailor their offers to reflect the specific risk profile of each capacity increment.
47. Use of segmented offer caps could be appropriate for any resource that has greater risk associated with the last MW of generation compared to the first MW of generation, and particularly those whose availability often falls between the extremes of no availability (full outage) and full availability. As an extreme example, consider a resource with a guaranteed minimum production level. Some hydro facilities may nearly match this description. In such a case, the capacity performance risk associated with the first MW of capacity performance commitment may well be near zero. Beyond that minimum production level, higher capacity commitments increase risk. Commitment of the last accredited UCAP MW would introduce the most risk due to the higher fraction of expected PAIs in which the resource has less than the full installed capacity available for dispatch.
48. To illustrate the benefits of segmented offer caps, consider a hypothetical 100 MW intermittent resource. In this first example, I assume that EAS revenues entirely

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<sup>17</sup> I stand behind previous testimony submitted in docket ER24-98 regarding the value of broader changes to the PJM MSOC framework. While this proposal implements only a subset of the previously proposed changes, I believe it moves the PJM market power mitigation framework in the direction of better and more fully reflecting economic costs.

offset the gross ACR, and that CPQR represents the only going-forward avoidable cost. Suppose that, based on an assessment of potential performance under a range of system conditions and the distribution of expected penalty and bonus outcomes as a function of capacity commitment level, the first 50 MW of capacity has a very low but non-zero risk of non-performance, with a CPQR of \$5/MW-day, while the second 50 MW faces a higher risk, with a CPQR of \$15/MW-day.

49. Under the current rules, the resource would have a single offer cap based on the average CPQR of \$10/MW-day. In the scenario that the capacity clearing price equals \$11/MW-day, this would result in the full commitment of the 100 MW resource, of which 50 MW is uneconomic commitment capacity with costs that are higher than the price. Alternatively, under the same offer structure, if the price were instead \$9/MW-day, the resource would not be committed at all. PJM would lose the economic commitment of the first 50 MW portion of the unit. With segmented offer caps, the resource could submit two offer segments: the first at \$5/MW-day and the second at \$15/MW-day. This allows the resource to more accurately reflect its costs and risks in its offer.
50. In a second example, I consider a different hypothetical 100 MW resource. Suppose this resource, in contrast with the first, does not expect its EAS revenues to entirely offset going-forward costs—perhaps net EAS revenue forecast for the whole resource equals \$1,825,000 (\$50/MW-day) and gross ACR excluding CPQR equals \$1,460,000 (\$40/MW-day). Further suppose that the Capacity Market Seller has estimated CPQR for each of ten, 10 MW segments to equal \$5/MW-day in the first segment, \$10/MW-day in the second segment, and so on until reaching \$50/MW-day in the tenth segment, corresponding to the 91<sup>st</sup> through 100<sup>th</sup> MW. Finally, assume the resource has the option to mothball for a single year at no cost, and that the decision to mothball is all-or-nothing, such that if electing to mothball the resource would save all \$50/MW-day in going-forward costs but also forgo \$40/MW-day in going-forward net revenues in the Delivery Year. Thus, the additional capacity revenues the resource would need to earn from the capacity market are \$10/MW-day.
51. Under today's market rules, this seller could choose to offer in multiple segments, but would only be able to request a single, flat unit-specific MSOC. Given the costs specified above, PJM would be able to accept an MSOC of \$37.50/MW-day: a total net cost excluding CPQR of \$365,000 (\$10/MW-day), plus a total CPQR cost of \$1,003,750, divided by 100 MW and 365 days equals \$37.50/MW-day. Note that the CPQR cost calculated here of \$27.50/MW-day is simply the average CPQR for the entire 100 MW unit.
52. As in the first, simpler example, a flat, non-segmented MSOC at this level is insufficient to represent the resource's true cost structure. For example, if all MW were offered at the status quo MSOC of \$37.50/MW-day, and the market clearing price was \$40/MW-day, it would be fully cleared—even though the Capacity Performance Quantifiable Risk cost for the 81st through 90th MW was \$45/MW-day, and for the 91st through 100th MW was \$50/MW-day. In other words, the current MSOC that does not allow segmentation would lead directly to inefficient

resource allocation, clearing capacity even when its marginal cost exceeded its marginal value to load.

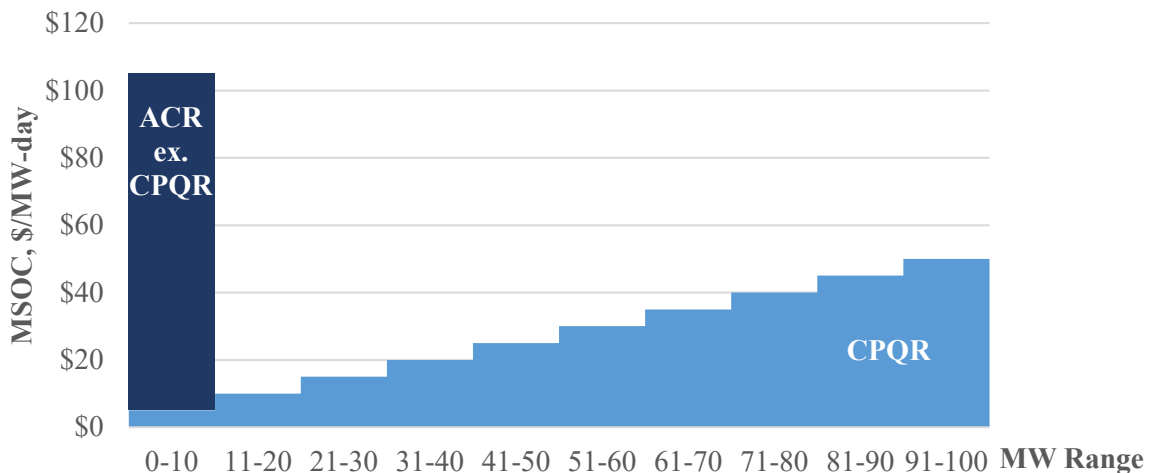
53. Under the proposed segmented offer cap, the seller would have multiple options with respect to how to represent their costs over the resource. Note that a competitive seller's objective is to structure her offer so as to: (1) minimize the risk of clearing MW at a price below the cost of those MW; and (2) minimize the risk of *not* clearing MW at a price above the cost of those MW. Not all of the potential options for choosing segmentation and representing costs could or would be accepted by PJM as not all reasonably represent the seller's going-forward avoidable costs associated with increasing levels of risk at higher commitment levels.
54. This rationale provides a set of principles that market sellers should use when constructing their requests for segmented offer caps, and that PJM will use when evaluating such requests. The purpose of segmentation in MSOC levels is to allow sellers to reflect the potentially higher costs of accepting risks associated with capacity obligations on higher commitment levels. One limiting principle is that, given a proposed segmentation, the MSOC requested for each segment must be reflective of the costs applicable for that segment—that is, costs that are avoidable if the corresponding MW are not committed. A market seller would be required to justify why the risk associated with each segment of UCAP MW commitment is different from the risk associated with other segments, and also justify and provide supporting analysis and documentation for each individual CPQR through the existing unit-specific MSOC process.
55. A second limiting principle is that the segmentation itself must be rational: it must be chosen such that the costs that are calculated as corresponding to the respective segments are increasing for higher segments, or at least non-decreasing. PJM could not accept a seller's request for segmented MSOC in which ACR were "frontloaded," leaving higher segments with a lower MSOC—simply because doing so would not reflect the price at which a competitive Market Participant would be willing versus unwilling to accept a commitment on each MW.<sup>18</sup> Accepting such requests could allow abuse of the segmented MSOC for the purpose of economic withholding. As a practical matter, this likely limits the applicability of segmented offer caps to resources with low or zero ACR. Together, these principles ensure that the segmented offer caps cannot be abused or lead to the exercise of market power. They serve as a check on gaming of the segmentation and proposed ACR and CPQR associated with each segment.

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<sup>18</sup> Indeed, under current market rules, if a Market Seller provides multiple Sell Offer segments, they would be re-ordered from lowest to highest such that an upper segment could be cleared before a lower segment if offered at a lower price. Thus a competitive seller would risk clearing an upper segment without clearing the segment in which all non-CPQR ACR costs were included. This would not be profit maximizing for such a participant, and thus offers that decline from one segment to the next are not rational offer levels for a competitive seller.

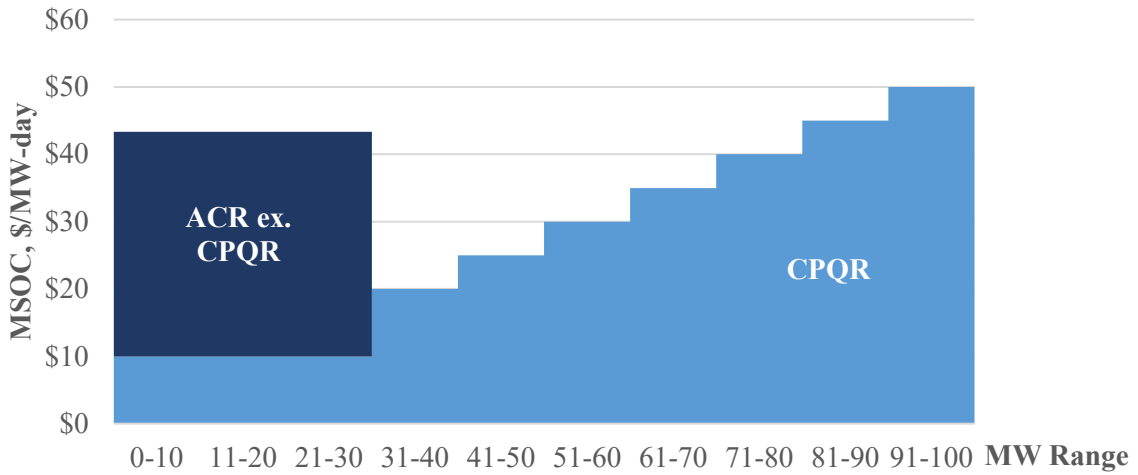
56. In the following discussion I explore how these principles would be applied to the second example resource above. First consider a potential request by the seller to include all costs that could be avoided by mothballing in the first segment, corresponding to the 1st through 10th MW. This would correspond to an expectation of not mothballing the resource if the entirety of the first segment cleared. These costs would include the \$365,000 in ACR net of EAS, excluding CPQR, plus \$18,250 in CPQR costs. Dividing by 10 MW and 365 days yields a potential offer cap of \$105/MW-day. The seller also would not be allowed any CPQR above \$10/MW-day for the next 10 MW segment, as any level above that would not be reflective of going-forward avoidable costs. But then the next offer segment would only include a CPQR of \$10/MW-day, and PJM would not allow declining offers across segments; offers must be weakly monotonically increasing. Finally, note that regardless of alternative potential segmentations chosen for the remaining 90 MW, in no case could PJM accept an MSOC above \$50/MW-day, given that is the highest CPQR. I illustrate this disallowed offer structure in Figure 2.

Figure 2: Example of Disallowed Segmented MSOC Submission



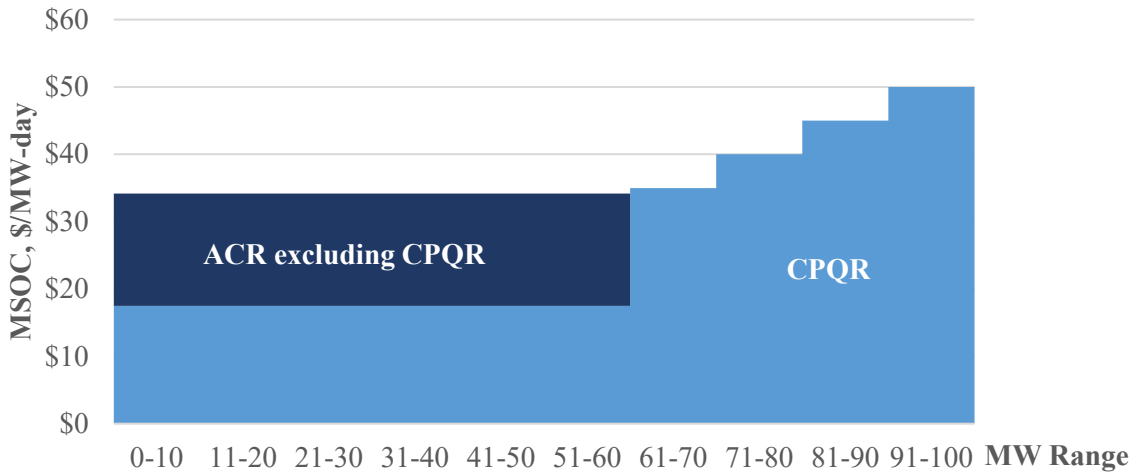
57. Following similar math, if the Capacity Market Seller considered including all costs in a new segment combining the first two segments, corresponding to the first 20 MW of the resource, the average cost for this segment would be \$57.50/MW-day, with the same issues as described above.
58. Following similar math, if the Seller considered including all costs in a new segment corresponding to the first 30 MW of the resource, the average cost for this segment would be \$43.33/MW-day. While this is lower than the highest CPQR of \$50/MW-day, the CPQR of segments three through nine are lower, so there would be no segmentation based on this first segment for which PJM could accept an MSOC request, as the requested MSOC would either not be weakly monotonically increasing or the MSOC for some segment(s) would not reflect costs. I illustrate this disallowed offer structure in Figure 3.

Figure 3: Additional Example of Disallowed Segmented MSOC Submission



59. However, there does exist a reasonable segmentation and offer structure that meets the market seller’s objectives described above and that PJM could accept as an accurate and competitive representation of costs. One such option would combine the first 60 MW into a single segment, to be offered “non-flexibly” so the seller could guarantee to either clear all or none of it. Following similar math as above, the average cost for this segment would be \$34.17/MW-day. The next segment corresponding to the 61st through the 70th MW has a CPQR of \$35/MW-day; the following corresponding to the 71st through the 80th MW has a CPQR of \$40/MW-day; the following a CPQR of \$45/MW-day; and the final segment a CPQR of \$50/MW-day. PJM would be able to approve such a unit-specific MSOC request following this format and including these costs as it is both cost-reflective and monotonically increasing. Further, offering at these levels would reflect the fact that the market seller would be unwilling to take any obligation to provide capacity at a price below \$34/MW-day and would thus prefer to mothball, while also reflecting that she would be willing to not mothball and provide 60 MW of at a price of \$34.50/MW-day, provide 70 MW at a price of \$35/MW-day, and so on. This offer structure and level allows PJM to economically clear the resource in a way that maximizes efficiency, and also maximizes profit for the seller. I illustrate this permitted segmented MSOC structure in Figure 4.

Figure 4: Example of Allowed Segmented MSOC Submission



60. Together, these MSOC reforms ensure that the must-offer requirement does not force resources to offer at prices below their actual economic costs. By allowing offers to reflect the true costs and risks of accepting a capacity obligation, these changes promote efficient market outcomes and support the broader goal of the must-offer requirement in enhancing reliability and mitigating market power.
61. This concludes my Affidavit.

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.

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Docket No. ER25-\_\_\_\_-000

**VERIFICATION**

I, Walter Graf, pursuant to 28 U.S.C. § 1746, state, under penalty of perjury, that I am the Walter Graf referred to in the foregoing “Affidavit of Dr. Walter Graf on Behalf of PJM Interconnection, L.L.C.,” that I have read the same and am familiar with the contents thereof, and that the facts set forth therein are true and correct to the best of my knowledge, information, and belief.

*/s/Walter Graf*  
Walter Graf

Executed on: December 20, 2024