

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

**PJM Interconnection, L.L.C.**                    )                    **Docket No. EL19-58-\_\_**  
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**MOTION FOR CLARIFICATION  
AND REQUEST FOR EXPEDITED ACTION BY FEBRUARY 11, 2022,  
OF PJM INTERCONNECTION, L.L.C.**

PJM Interconnection, L.L.C. (“PJM”), pursuant to Federal Energy Regulatory Commission’s (“FERC” or “Commission”) Rule 212, 18 C.F.R. § 385.212, respectfully moves for clarification of the Commission’s December 22, 2021 order on remand.<sup>1</sup> The Commission’s Remand Order is not clear with respect the application of penalty factors and whether the Commission (i) left undisturbed its prior finding that the reserve market clearing prices should be determined consistent with the “price of serving the next increment of demand”<sup>2</sup> of each product under all conditions,<sup>3</sup> or (ii) overturned that finding, effectively directing PJM to apply price-capping provisions consistent with those currently in effect (i.e., those prior to the Commission’s May 2020 Order).

PJM seeks clarification to know how to address this issue in its upcoming February 22, 2022 compliance filing. To provide sufficient time to develop such compliance filing, PJM also respectfully requests that the Commission act on this request by February 11, 2022. Absent a Commission directive otherwise, PJM intends to submit a compliance filing that implements the Remand Order’s implicit acceptance of removing

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<sup>1</sup> *PJM Interconnection, L.L.C.*, 177 FERC ¶ 61,209 (2021) (“Remand Order”).

<sup>2</sup> *PJM Interconnection, L.L.C.*, Enhanced Price Formation in Reserve Markets of PJM Interconnection, L.L.C., Docket No. EL19-58-000, proposed Operating Agreement, Schedule 1, section 3.2.3A(d)(i) (Mar. 29, 2019) (“PJM Transmittal”). .

<sup>3</sup> *See PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,153, at P 157 (2020) (“May 2020 Order”).

the reserve market clearing price capping provisions consistent with the Commission's May 2020 Order.<sup>4</sup>

To be clear, removal of the reserve market clearing price capping provisions will increase the maximum prices for reserve products and also increase the maximum energy component of Locational Marginal Prices ("LMP"), due to the co-optimization of energy and reserves performed every five minutes in PJM's markets. The inclusion of a new, 30-minute reserve product, as accepted by the Commission in the May 2020 Order and affirmed in the Remand Order, will also impact the prices of energy and reserves, due to the addition of another product and the application of another level of Reserve Penalty Factor.

## **I. BACKGROUND**

On March 29, 2019, PJM submitted filings pursuant to FPA sections 205 and 206<sup>5</sup> presenting evidence that the reserve market provisions of its Tariff and Operating Agreement are unjust and unreasonable and proposing revisions to the Tariff and Operating Agreement as a just and reasonable replacement rate.<sup>6</sup> PJM proposed a replacement rate that, among other things, updated the day-ahead and real-time reserve market procurement and participation rules.<sup>7</sup> As relevant here, PJM proposed to eliminate the reserve market clearing price caps of two times the applicable Reserve Penalty Factor for the Synchronized

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<sup>4</sup> See May 2020 Order at P 157.

<sup>5</sup> 16 U.S.C. §§ 824d & 824e.

<sup>6</sup> In Docket No. EL19-58-000, PJM filed the proposed revisions to the Operating Agreement pursuant to section 206 of the FPA, and in Docket No. ER19-1486-000, filed pursuant to section 205 to include the same revisions to its Tariff, Attachment K-Appendix, which merely repeats certain provisions of the Operating Agreement. PJM Transmittal; *PJM Interconnection, L.L.C.*, Enhanced Price Formation in Reserve Markets of PJM Interconnection, L.L.C., Docket No. ER19-1486-000 (Mar. 29, 2019).

<sup>7</sup> See PJM Transmittal at 72-113.

Reserve market, and the applicable Reserve Penalty Factor for the Primary Reserve market, to allow the reserve and energy markets to fully reflect the prices for each product without the application of the limiting cap.<sup>8</sup>

In the May 2020 Order, the Commission “largely adopt[ed]” PJM’s proposed changes to the reserve market as the replacement rate,<sup>9</sup> including PJM’s proposal to remove the cap on reserve market prices and allowing the reserve market clearing prices to be additive.<sup>10</sup> On November 3, 2020, the Commission affirmed its findings.<sup>11</sup>

On December 22, 2021, following a voluntary remand from the Court of Appeals for the District of Columbia Circuit, the Commission revisited its findings regarding PJM’s reserve market and in setting a replacement rate.<sup>12</sup> The Commission affirmed its prior “findings regarding the unjustness and unreasonableness of . . . its current misalignment of the day-ahead and real-time reserve markets; and various provisions related to resources’ eligibility for reserves, determining resources’ reserve capability, and offer rules.”<sup>13</sup> However, the Commission found that “PJM failed to demonstrate that the currently effective Reserve Penalty Factors and two-step [operating reserve demand curves (“ORDCs”)] are unjust and unreasonable.”<sup>14</sup> Accordingly, the Commission directed PJM to submit a compliance filing revising the “Tariff and Operating Agreement records previously accepted in this proceeding (to become effective May 1, 2022) to reflect the

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<sup>8</sup> See PJM Transmittal at 99-100; see, e.g., PJM Transmittal, proposed Operating Agreement, Schedule 1, section 3.2.3A(d)(i)

<sup>9</sup> May 2020 Order at P 2.

<sup>10</sup> May 2020 Order at P 157.

<sup>11</sup> *PJM Interconnection, L.L.C.*, 173 FERC ¶ 61,123 (2020).

<sup>12</sup> See Remand Order at P 1.

<sup>13</sup> Remand Order at P 24 (footnotes omitted).

<sup>14</sup> Remand Order at P 25.

currently effective Reserve Penalty Factors and the ORDCs,”<sup>15</sup> meaning the reserve market revisions accepted in the May 2020 Order would be allowed to become effective.

With respect to whether the reserve market clearing prices should be capped and to what levels, the Remand Order is silent and thus, absent Commission clarification otherwise, PJM will proceed with a compliance filing in response to the Remand Order removing the existing price-capping provisions in the reserve markets.

## **II. REQUEST FOR CLARIFICATION**

### **A. The Commission Should Clarify the Remand Order’s Direction Regarding the Application of the Reserve Penalty Factors and Any Capping of Reserve Market Prices.**

To ensure the proper scope of its compliance filing, PJM requests the Commission to clarify whether the Remand Order (i) retained the May 2020 Order’s acceptance of the removal of price capping provisions in the reserve markets, or (ii) directed maintaining such provisions.

In the May 2020 Order, the Commission found that PJM demonstrated that its existing reserve market procurement rules were unjust and unreasonable.<sup>16</sup> PJM proposed a replacement rate related to the day-ahead and real-time reserve market procurement and participation rules that included the removal of the reserve market clearing price capping provisions (i.e., the removal of the limitation of two times the applicable Reserve Penalty Factor for the Synchronized Reserve market, and the applicable Reserve Penalty Factor for

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<sup>15</sup> Remand Order at P 26. Also, due to its reversal with respect to the ORDCs and Reserve Penalty Factors, the Commission reversed its determination that the prior backward-looking energy and ancillary services offset (“E&AS Offset”) is unjust and unreasonable, and directed PJM to restore the status quo ante with respect to the E&AS Offset. *See* Remand Order at P 25.

<sup>16</sup> *See* May 2020 Order at P 74.

the Primary Reserve market). The Commission accepted the removal of the limitation as a part of the replacement rate in the May 2020 Order.<sup>17</sup>

The Remand Order found that PJM had not supported that two aspects of its reserve market are unjust and unreasonable: the existing Reserve Penalty Factors and the ORDCs. However, neither one of these findings directly implicates the reserve market clearing price capping provisions that the Commission previously accepted in the May 2020 Order. Indeed, the removal of these capping provisions is unrelated to a change in price level of Reserve Penalty Factors or changes to the ORDCs. That is, whether the Reserve Penalty Factor is \$850/megawatt hour (“MWh”) or \$2,000/MWh does not dictate whether the clearing price should be capped at a lower multiple of the applicable Reserve Penalty Factor than what would occur through the co-optimization of energy and reserves; there is no relationship between the level of the Reserve Penalty Factor and the application Reserve Penalty Factor when short two of the five reserve requirements. Likewise, whether the applicable demand curve is stepped or downward-sloping does not dictate the maximum value that the clearing price can reach during shortage conditions.

Given that the Remand Order did not specifically address the application of price capping provisions, prompt clarification is appropriate.

**B. Continuation of the Removal of Price Capping Would Allow Clearing Prices to Reflect the Need for the Next Increment of Each Product Through the Application of the Reserve Penalty Factor When the System Is Short Reserves.**

The removal or continuation of these price capping provisions has implications on the reserve market clearing prices and energy prices. That is, when a reserve zone or sub-

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<sup>17</sup> May 2020 Order at P 157.

zone is short on reserves, the reserve and energy market clearing prices will reflect the need for additional reserves, where the maximum willingness to pay to meet any reserve requirement in any location, independent of the other reserve requirements, is the Reserve Penalty Factor. When a product can meet multiple requirements, such as the ability for Synchronized Reserve to meet the Synchronized Reserve, Primary Reserve and 30-Minute Operating Reserve requirements, the willingness to pay for that product (in that location if applicable), is the sum of all Reserve Penalty Factors for all the requirements to which the next MW of that product can contribute.

Prices may rise to the levels illustrated in the table below when there is a “simultaneous occurrence and confluence of multiple product and locational shortages.”<sup>18</sup> The table below illustrates the maximum reserve prices and the maximum level of the energy component of LMP that could result when the system is short reserves under the following three scenarios: Column A—existing prices (the curves and products) with the continuation of the existing price capping provisions; Column B—existing prices (the curves and products) without the price capping provisions; and Column C—reformed prices (the curves and products post-Remand Order) without the price capping provisions. The prices displayed are those that would occur in the reserve sub-zone when there is a simultaneous shortage of all products in both the reserve zone and the sub-zone. Under the status quo, this would equate to two products, Primary and Synchronized Reserves, but four reserve requirements because of the existence of a reserve zone and reserve sub-zone for each product.

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<sup>18</sup> PJM Transmittal at 12.

Reserve Product	(A)	(B)	(C)
	Existing Maximum Price Levels (\$/MWh)	Existing Maximum Price Levels Without Capping (\$/MWh)	Reformed Maximum Price Levels Without Capping (\$/MWh)
30-Minute Operating Reserves	N/A	N/A	850
Non-Synchronized Reserves	850	1,700	2,550
Synchronized Reserves	1,700	3,400	4,250
Energy Component of LMP <sup>19</sup>	3,700	5,400	6,250

As shown in Column A, the existing market rules (i.e., before the May 2020 Order) cap the energy component of LMP during a shortage event at approximately \$3,700/MWh, a price equal to the sum of the \$2,000/MWh energy offer cap and two \$850/MWh reserve penalty factors. Thus, the market clearing prices recognized at most that the system was short two reserve requirements, not four, ignoring the other two reserve requirements. In the hypothetical scenario represented in Column B where the capping provisions are removed, but the other pre-May 2020 Order reserve market rules remain the same (e.g., no 30-Minute Reserve Requirement), the maximum energy component of LMP could reach \$5,400/MWh, a price equal to the sum of the energy offer cap and four \$850/MWh reserve

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<sup>19</sup> The maximum energy component of LMP for the purpose of this table is approximate. These values reflect a \$2,000/MWh energy offer and a shortage of all reserve products in the reserve zone and sub-zone. The values would be higher when there is a transmission constraint that is in violation and the marginal resource for energy induces forward flow on the violated constraint.

penalty factors (i.e., the Reserve Penalty Factor for each unmet reserve requirement<sup>20</sup>). Comparing Columns A and B, the existing maximum level of reserve clearing prices (Column A) are half of what they would be when all four reserve requirements are allowed to affect price (Column B).

Column C illustrates the maximum clearing prices for the reserves and energy markets under the market reforms adopted in the May 2020 Order. The addition of the 30-Minute Reserve Requirement means that the PJM Region will have up to five applicable reserve requirement zones or sub-zones, and thus five reserve requirements.<sup>21</sup> Thus, Synchronized Reserve prices could reflect the Reserve Penalty Factor for each unmet reserve requirement in each reserve zone or sub-zone for which the next MW of Synchronized Reserves could contribute towards. This scenario would allow the maximum energy component of LMP could reach \$6,250/MWh,<sup>22</sup> a price equal to the sum of the energy offer cap and five \$850/MWh reserve penalty factors (i.e., the reserve penalty factor for each of the five unmet reserve requirements).

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<sup>20</sup> Specifically, the Synchronized Reserve Requirement in the RTO Reserve Zone and the Mid-Atlantic-Dominion Reserve Sub-Zone and the Primary Reserve Requirement in the RTO Reserve Zone and the MAD Reserve Sub-Zone.

<sup>21</sup> Specifically, the Synchronized Reserve Requirement in the RTO Reserve Zone and the Mid-Atlantic-Dominion Reserve Sub-Zone; the Primary Reserve Requirement in the RTO Reserve Zone and the MAD Reserve Sub-Zone; and the 30-minute Reserve Requirement in the RTO Reserve Zone.

<sup>22</sup> Note that the \$6,250/MWh value is less than the value of load loss discussed by the New York Independent System Operator, Inc. in a recent report on shortage pricing, which placed the estimated value of load loss between \$11,000/MWh and \$60,000/MWh. *Ancillary Services Shortage Pricing*, New York Independent System Operator, Inc., 31 (Dec. 2019), [https://www.nyiso.com/documents/20142/9622070/Ancillary%20Services%20Shortage%20Pricing\\_study%20report.pdf/15fb5f26-e1af-fa5a-ee29-3943ab483369](https://www.nyiso.com/documents/20142/9622070/Ancillary%20Services%20Shortage%20Pricing_study%20report.pdf/15fb5f26-e1af-fa5a-ee29-3943ab483369); *see also Scarcity Pricing Evaluation*, Midcontinent Independent System Operator, Inc., 7 (May 2021), <https://cdn.misoenergy.org/20210513%20MSC%20Item%20XX%20Scarcity%20Pricing%20Evaluation%20Paper550162.pdf> (“The IMM reviewed studies of [Value of Lost Load (“VOLL”)] and estimated that an appropriate VOLL for MISO would be \$23,000/MWh, but finds it reasonable to allow the ORDC to plateau at \$10,000/MWh.”).



The price levels in Column C represent the theoretical benefit to the system of the next increment of each product when the system is short reserves. For example, 30-Minute Operating Reserves is the lowest quality product of all and will generally only have a requirement defined at the RTO level whereas the Primary Reserves and Synchronized Reserves are both modeled with sub-zonal requirements (RTO Reserve Zone and the Mid-Atlantic-Dominion Reserve Sub-Zone). If PJM is short 30-Minute Operating Reserves and one more MW of 30-Minute Operating Reserves were available, that single MW would save the system \$850, because it would reduce the 30-Minute Operating Reserve shortage by one MW at a rate of \$850/MWh (the Reserve Penalty Factor).

**C. To the Extent the Commission Did Not Intend to Reaffirm the Removal of the Price Capping Provisions, the Commission Should Direct PJM to Apply the Existing Price Capping Provisions to the Reformed Reserve Market, with a 30-Minute Reserve Requirement.**

In the event the Commission acts on this request for clarification before PJM submits its compliance filing on February 22, 2022 and does not clarify that it intended to reaffirm the removal of the price capping provisions, then in the compliance filing, PJM will, among other things, (1) add in the 30-Minute Reserve Requirement, and (2) apply the reserve capping provisions to limit the maximum reserve and energy prices as described herein. For the reasons stated above and the Commission should clarify its desired outcome so that the compliance process can proceed smoothly and with clear guidance.

Should the Commission indicate that intended that price capping provisions continue, PJM would include capping provisions in the compliance filing that would allow for the maximum reserve and energy prices shown in the table below. This approach would be consistent with the existing reserve capping provisions. This implementation would allow for the clearing price for the highest quality product, Synchronized Reserves, to be

higher than that for Primary Reserves, which, in turn, would be higher than for 30-Minute Operating Reserves. Applying exactly the same price caps as currently exist in for Synchronized and Non-Synchronized Reserves would require that the same cap apply to Non-Synchronized Reserve as would apply to the additional 30-Minute Reserve product (\$850/MWh). Under a shortage of 30-Minute Operating Reserves only, this method would produce the same clearing price for 30-Minute Operating Reserves and Non-Synchronized Reserves (\$850/MWh) which does not reflect the fact that Non-Synchronized Reserves is a higher quality product because it can respond in 10-minutes, not 30. Essentially, the additional cost of meeting the Primary Reserve Requirement (shadow price for Primary Reserves) would not be included in the clearing price for Non-Synchronized Reserves because that would exceed the cap of \$850/MWh. Therefore, such approach would not allow prices to differentiate the different values of reserve products during certain conditions and thus not clearly communicate the greater reliability benefit of Non-Synchronized Reserves over 30-Minute Operating Reserves. Given this deficiency in propagating the current existing price cap levels, the caps in the table below would represent the appropriate application of the same existing capping approach to the complete set of products.

Reserve Product	Reformed Maximum Price Levels With Capping (\$/MWh)
30-Minute Operating Reserves	850
Non-Synchronized Reserves	1,700
Synchronized Reserves	2,550
Energy Component of LMP	4,550

### **III. REQUEST FOR EXPEDITED ACTION BY FEBRUARY 11, 2022**

PJM respectfully requests the Commission provide clarification on this narrow issue by February 11, 2022. Action by this date will afford PJM sufficient time to ensure the compliance filing properly reflects the Commission’s decision and provide for a smoother compliance implementation process. The reserve market changes affirmed by the Commission in the Remand Order are complex. PJM requests expedited Commission action to avoid successive compliance filings that would further complicate implementation of these important market reforms.

#### IV. CONCLUSION

PJM respectfully seeks clarification on whether the Remand Order directed the restoration of the reserve market price caps and their application given the additional product. PJM also respectfully requests the Commission to provide such clarification by February 11, 2022.

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January 18, 2022

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, D.C., this 18th day of January 2022.

*/s/ Ryan J. Collins*

Ryan J. Collins

**Attorney for  
PJM Interconnection, L.L.C.**