



The purpose of MOPR has evolved from a focus on preventing intentional monopsonistic behavior to preventing interventions in competitive markets that are inconsistent with Commission jurisdiction. The goal of MOPR rules is to ensure that markets establish a competitive, efficient outcome with prices to customers as low as possible. The goal is to provide a disincentive for the creation of subsidies that suppress prices that discourage competitive investment. If unchecked, subsidies can block competitive investment. The ultimate outcome could be a cost of service regime rather than a market, comprised primarily or solely of subsidized resources. The cost of service regime is likely to be significantly more expensive for customers than competitive market outcomes. MOPR was intended to avoid this result.

The existing MOPR is a straightforward approach to ensuring that the impact of state subsidies on wholesale power markets is limited, that the impact of state subsidies is largely confined to the states that choose to implement subsidies and that the impact on other states is limited.

The Market Monitor recognizes that some states and others have taken the position that the existing MOPR prevents the states from exercising their appropriate control over the generation mix in their states. The Market Monitor recognizes that some states have seriously contemplated withdrawing from the PJM Capacity Market as a result of the MOPR and establishing FRR entities in place of the capacity market. The Market Monitor's analyses have shown that subsidies are inconsistent with efficient and competitive markets and tend to propagate. The Market Monitor's analyses have shown that FRR plans, almost without exception, would increase customer costs and reduce efficiency. The Market Monitor's analyses have shown that the assertions about the cost increases that will result from MOPR are not supported. The Market Monitor's analyses have shown that the assertions about requiring states to pay twice for capacity are generally overstated and apply only to uneconomic offshore wind. The Market Monitor's analyses have shown that in cases where the details of the FRR plans have been defined the FRR plans are primarily a vehicle to subsidize nuclear plants and do not generally support renewables.

The Market Monitor's position is that while the FERC has authority over the wholesale power markets, the states have authority over the generation in their individual states.<sup>2</sup> The states have the authority to leave the capacity market and establish FRR designs of their choosing. The Market Monitor's opinions about the appropriateness of state actions to pursue FRR options and to subsidize specific resources are irrelevant. Those choices are the choices of the states and the states alone. The question that remains is what to do, given that the goals of FERC's authority and the states' authority are inconsistent and not reconcilable and the states wish to and have the authority to pursue their individual goals.

The Market Monitor's understanding is that the Commission has decided, based on a similar evaluation, that the existing MOPR is inconsistent with the states' authority and therefore must be modified. The modifications would eliminate any restrictions on the offers of state subsidized resources in the PJM Capacity Market. The modifications would accommodate the states' authority over generation. The Market Monitor agrees that such accommodation is required, given the overlapping authorities of the Commission and the states.

Given that understanding, the Market Monitor's position is that the market design should reflect the Commission's view in the simplest, most efficient way possible. That means the elimination of MOPR floor prices for state subsidized resources. That means that state subsidized resources may offer into the capacity market at any price they choose. That will mean that prices for nonsubsidized resources in the PJM Capacity Market will be reduced. That will mean that some nonsubsidized resources that would otherwise have cleared in the PJM Capacity Market will not clear. That will mean that the impacts of individual state policies will unavoidably affect market outcomes for capacity resources in other states.

---

<sup>2</sup> See 16 U.S.C. § 824 (a) & (b)(1).

If PJM markets are going to continue to be sustainable, it is essential that the basic structure of the current capacity market remain, including the single definition of reliability for the PJM market, the incorporation of transmission constraints and locational supply and demand fundamentals, and a clear definition of capacity and the contribution of capacity to reliability. The basic structure of the capacity market also includes a must offer and a must buy requirement that are essential and have been demonstrated to be essential to limiting market power and operating a competitive market. The PJM Capacity Market has never been nor was it ever intended to be a residual market as evidenced by the must buy and must sell provisions of the market rules. Reliability is only definable at the level of the entire PJM market, including locational differences based on transmission constraints. The market reflects the interactions across free flowing ties throughout the entire network. There are transmission constraints that prevent the lowest cost capacity from providing reliability in constrained areas. Locational prices reflect the combination of transmission constraints and local supply and demand conditions. Although it has received less attention, it is essential that the contribution of different types of capacity be calculated in a comparable manner. The contribution of one MW of solar or wind resources is not the same as the contribution of one MW of a gas fired combined cycle resource. Capacity must be defined in a homogeneous manner so that the clearing price is the same for all MW of capacity that provide the same contribution to reliability. Capacity should be offered and cleared in the capacity market only at a MW level that reflects its contribution to reliability. For most wind and solar resources that means a capacity value appropriately derated from the nameplate capability.

It is essential to get the derating factors or ELCC values right. PJM currently uses derating factors by technology type with the ability to provide unit specific data. PJM recently filed a proposal to use calculated Effective Load Carrying Capability (ELCC) as a replacement for the derating factors. But PJM's ELCC filing was badly flawed and will not result in correctly calculated ELCCs for all resources and will, as a result of special treatment for certain resources including long term guarantees, not result in competitive or

least cost outcomes in PJM's Capacity Market. It is essential for that reason to reject PJM's currently filed proposal on ELCC.<sup>3</sup> Fixing the PJM approach to ELCC is a manageable task if there is a shared goal of letting markets reflect the actual, marginal contribution of all types of capacity to reliability without assumptions that arbitrarily favor some resource types.<sup>4</sup>

Purely bilateral markets are characterized by lack of transparency, the corresponding asymmetry in access to information that favors market sellers, and the resultant ability of sellers to exercise market power. Transparent clearing markets are the best way to facilitate bilateral contracts. The market sellers who advocate bilateral markets have never explained why all legitimate goals of bilateral transactions cannot be met in a transparent clearing market.

The PJM Capacity Market was created at the request of the Pennsylvania Public Utility Commission because the purely bilateral capacity market in existence at the time permitted the exercise of market power by sellers of capacity and was a significant and uneconomic barrier to retail competition.<sup>5 6 7</sup> The development of the PJM Capacity Market

---

<sup>3</sup> See Comments of the Independent Market Monitor for PJM, Docket No. ER21-278-000 (November 20, 2020); Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM, Docket No. ER21-278-001 (December 18, 2020); and Comments and Motion of the Independent Market Monitor for PJM, Docket No. ER21-278-001 (March 22, 2021).

<sup>4</sup> PJM released preliminary ELCC values in a response to the Commission's deficiency letter that indicate significant changes relative to the current capacity values. See "Response to Commission Deficiency Letter" at 29, PJM Interconnection, L.L.C., ER21-278-001 (March 1, 2021).

<sup>5</sup> Pennsylvania Public Utility Commission, "Interim Order," Docket No. I-00980078 et al (September 17, 1998).

<sup>6</sup> *PJM Interconnection, L.L.C.*, Filing of amendments to Amended & Restated Operating Agreement, Docket ER99-196-000 (October 14, 1998) and *PJM Interconnection, L.L.C.*, Amendment to Filing Regarding Capacity Credit Markets, Docket ER99-196-000 (November 19, 1998).

<sup>7</sup> See Joseph Bowring, "The Evolution of PJM's Capacity Market," in *Competitive Electricity Markets*, F. P. Sioshansi (Ed), Elsevier, 2008, for more complete history of the development of PJM capacity markets.

did not create the demand for capacity. The demand for capacity was created by the PJM power pool rules that predated the creation of the market and that were established to ensure reliability. The first PJM Capacity Market was intended to create a competitive mechanism to facilitate retail competition by permitting owners of capacity to trade capacity credits so that the rights to existing capacity could follow load.

The post MOPR capacity market design should include a new PJM market mechanism to permit the states to procure desired resources through a competitive capacity market mechanism. That means creating a competitive auction for the capacity from state supported resources that is scalable from one to 15 states/districts. PJM would create a separate demand curve for state supported resources that do not want to offer into the capacity market directly. The goal would be to allow states to define their demand for a specific level of resources with specific characteristics, e.g. wind or solar. The demand would be included in the capacity market clearing model. The demand could be for individual states or it could be for multiple states together or a combination. The key point is that that demand be locational so that the PJM capacity market clearing can appropriately reflect the locational attributes of the state supported resources. These resources would clear at a price less than or equal to the capacity market clearing price. These resources would take on a capacity obligation like all other capacity resources, appropriately derated to reflect their contribution reliability. The capacity market would be cleared simultaneously with this separate demand and supply curves for state supported resources such that the total capacity purchased meets the PJM overall reliability requirement and all locational reliability requirements. The capacity market could also accommodate state supported resources that are unlikely to clear in any competitive auction. Those resources would be offered in the capacity market at zero or whatever price they choose. Given that the MOPR is not likely to have a significant impact on the capacity market to be run in December 2021 for the 2023/2024 Delivery Year, the implementation of this separate demand curve approach and the associated details could wait until the June 2022 auction for the 2024/2025 Delivery Year.

This approach is very similar to the proposal by the Maryland PSC for what it termed a CCOA.<sup>8</sup> There is no need for Brattle's ICCM approach which would require a radical redesign of the capacity market, and require joint offers of energy and capacity, which would effectively restore cost of service regulation in the guise of markets.<sup>9</sup>

It is logically possible to calculate the capacity market price that would exist without state subsidies.<sup>10</sup> That proposed approach is the only market design answer that addresses the wholesale price suppression issue in the presence of state subsidies. The approach is clean and avoids the issues created in the FERC unit specific FRR proposal,<sup>11</sup> the PJM repricing proposal,<sup>12</sup> the current LS proposal (requires over procurement among other

---

<sup>8</sup> See Initial Comments of the Maryland Public Service Commission, Docket No. EL1-49, ER18-1314-000,-001, EL18-178, (October 2, 2018), Attachment A.

<sup>9</sup> Some of the key elements of the ICCM proposal that would undermine market fundamentals and increase costs to customers are: locking in prices for a period of from 7 to 12 years; the lack of a definition of the key parameters of the demand curve; the lack of a clear definition of the components of a supply curve; the apparent definition of offers as total revenue requirements rather than marginal costs; the absence of market power mitigation; and the absence of a definition of competitive offers. Despite the repeated assertions that ICCM is not just competitive, but highly competitive, the ICCM fails to explain how competitive offers are defined and fails to explain how the demand curve is defined. Brattle does not provide a metric for evaluating its assertion that the outcome of ICCM would be highly competitive. The assertion that the ICCM proposal is superior to the current PJM capacity market design is not supported, despite the well documented flaws in the PJM capacity market design. See Market Monitor Reply Comments, New Jersey Board of Public Utilities, *Investigation of Resource Adequacy Alternatives*, Docket No. EO20030203 (March 5, 2021).

<sup>10</sup> See Commissioner James Danly Proposal: State Option to Choose Resources for RTO Capacity Markets (April 15, 2021).

<sup>11</sup> See *Calpine Corporation v PJM*, 163 FERC ¶ 61,236 at P 8 (2018).

<sup>12</sup> See PJM Interconnection, L.L.C., Capacity Repricing or in the Alternative MOPR-Ex Proposal: Tariff Revisions to Address Impacts of State Public Policies on the PJM Capacity Market, Docket No. ER18-1314 (April 9, 2018).

issues)<sup>13</sup> and ISO-NE's Competitive Auctions with Sponsored Policy Resources (CASPR),<sup>14</sup> all of which are unworkable in PJM.

The proposed approach attempts to insulate the wholesale market price from state subsidies and does so in a way that works logically. But the proposed approach, like any such effort, no matter how well designed, is likely to fail because it requires the calculation of an artificial price. Any effort to omit subsidized resources from a separate market clearing calculation and to create an artificial price is likely to fail. Wholesale market designs that are not consistent with the economic fundamentals are not likely to succeed, even when the economic fundamentals include state subsidies. An artificial price that would not be paid to the marginal resources that set the price plus some level of inframarginal resources will create unintended consequences including incentives to exercise market power and to offer below competitive levels.

Even with the elimination of the current MOPR design, a MOPR is still required. The new MOPR should include: a competitive entry exemption; a self supply exemption with net short position and net long position rules; a unit specific exception process; no size threshold; no technology exclusions; a *Hughes* based screen;<sup>15</sup> floor prices equal to net ACR for new and existing resources.

---

<sup>13</sup> See LS Power proposal ("LS Proposal") presented to the PJM Capacity Market Workshop (March 12, 2021).

<sup>14</sup> See *ISO New England Inc.*, 162 FERC ¶ 61,205 (2018).

<sup>15</sup> See [Hughes v. Talen Energy Mktg., LLC, 136 S. Ct. 1288](#) (2016).

The Market Monitor respectfully requests that the Commission afford due consideration to these comments as the Commission resolves the issues raised in this proceeding.

Respectfully submitted,



Joseph E. Bowring

Jeffrey W. Mayes

Independent Market Monitor for PJM

President  
Monitoring Analytics, LLC  
2621 Van Buren Avenue, Suite 160  
Eagleville, Pennsylvania 19403  
(610) 271-8051  
*joseph.bowring@monitoringanalytics.com*

General Counsel  
Monitoring Analytics, LLC  
2621 Van Buren Avenue, Suite 160  
Eagleville, Pennsylvania 19403  
(610) 271-8053  
*jeffrey.mayes@monitoringanalytics.com*

John Hyatt  
Senior Economist  
Monitoring Analytics, LLC  
2621 Van Buren Avenue, Suite 160  
Eagleville, Pennsylvania 19403  
(610) 271-8050  
*john.hyatt@monitoringanalytics.com*

Alexandra Salaneck  
Senior Analyst  
Monitoring Analytics, LLC  
2621 Van Buren Avenue, Suite 160  
Eagleville, Pennsylvania 19403  
(610) 271-8050  
*alexandra.salaneck@monitoringanalytics.com*

Dated: April 26, 2021

## 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 Eagleville, Pennsylvania,  
this 26<sup>th</sup> day of April, 2021.



---

Jeffrey W. Mayes

General Counsel

Monitoring Analytics, LLC

2621 Van Buren Avenue, Suite 160

Eagleville, Pennsylvania 19403

(610)271-8053

*jeffrey.mayes@monitoringanalytics.com*

# Appendix

## II. COMMENTS ON SUPPLEMENTAL NOTICE<sup>16</sup>

### A. Panel 1: Implications of Status Quo MOPR in the PJM Capacity Market

1. **What should be the goals of the centralized capacity markets in the Eastern RTOs/ISOs? For instance, should the goal of centralized capacity markets in the Eastern RTOs/ISOs be limited to ensuring resource adequacy, or are there other objectives that a capacity market should meet? Why?**

**Answer:**

The goal of the capacity market should be to contribute to least cost resource adequacy through competitive markets, given policy constraints. Capacity markets are part of a sustainable set of competitive markets that work together to provide energy to customers at the lowest possible cost. Capacity by itself is meaningless. The markets, working together, ensure appropriate incentives for entry and exit and ensure a sustainable design that does not depend on out of market payments. Capacity markets are an alternative to cost of service regulation which provides out of market payments to generators. Resource adequacy is complex and includes, but is not limited to, having a clear definition of the capacity product, a clear definition of the target level of capacity and a clear definition of locational constraints.

2. **Is the concept of “Missing Money” still the purpose of capacity markets, and if so, should there be an effort to minimize the missing money through enhancements to energy and ancillary service markets where resources are paid to provide specific services? If not, why not?**

**Answer:**

Yes. The missing money concept simply means that, as a result of an exogenously imposed reliability requirement, the resultant supply of energy will generally result in

---

<sup>16</sup> FERC Supplemental Notice of Technical Conference on Resource Adequacy in the Evolving Electricity Sector, Docket No. AD21-10 (March 16, 2021).

energy market prices equal to the marginal cost of the units used to serve peak load. Those resources will not recover their going forward or fixed costs unless there is an additional source of revenue. The capacity market is designed to be that source of revenue. The capacity market in PJM has effectively served that function.<sup>17</sup>

No. It would be a mistake to modify energy and ancillary services markets in order to increase revenues and reduce the role of capacity markets. Energy market prices that reflect short run marginal costs and scarcity when relevant are the efficient, competitive energy market prices. Use of arbitrary, administratively defined ORDCs in the energy market do not result in an improvement in market efficiency.

ORDCs are more administrative than capacity markets because they require the regulators to set prices. Under PJM's current ORDC proposal, due to go into effect on May 1, 2022, administrative prices will be in effect for a large number of hours. Capacity market prices are a function of both energy market net revenues and capacity market rules including the VRR curve maximum price; the reference unit technology; the slope and location of the VRR curve; and rules about the MW and prices when PJM sells excess capacity back to the market.

There is no reason to modify the ancillary services markets to increase revenues. Ancillary services markets for reserves exist to meet the defined demand for specific products defined by NERC. The demand curves for these reserve products can be derived in a simple, transparent manner that minimizes the use of administrative pricing, such as the reserve demand curves that PJM has historically used.

**3. What purpose do price signals produced by a capacity market serve in a structure in which state actions are a primary driver of resource entry?**

*Answer:*

---

<sup>17</sup> See 2020 State of the Market Report for PJM, Volume 2, Section 7: Net Revenue, Table 7-37 and Table 7-38

State policies are not and are not likely to be the primary driver of resource entry. State policies are likely to be the primary driver of resource entry only in the case where the desired resources are not competitive and not economic. But that does not appear to be the case. Renewable resources are increasingly competitive now and costs are expected to decline further. If there were a state established carbon price in PJM or a state ban on building carbon emitting resources, state policies could be considered the primary driver of resource type, but competitive markets would be the least cost way to drive entry of the most economic resources and provide incentives for innovation. In the absence of such state policies, competitive markets will continue to be essential. If renewables are competitive then they will outcompete thermal generation. For the foreseeable future, it is essential to have a market design that allows competition to provide capacity, defined in an accurate and comparable way (ELCC issue) that will also continue to define the need for flexible resources that are available when called.

Capacity market price signals are the signal to existing resources and new entrant resources about the value of capacity, as a homogenous reliability product, in PJM markets. Capacity market price signals continue to be a metric for the competitiveness of new entrant renewables. New renewables are competitive now. Competitive markets are good for renewables and all resource types. Renewable competition will displace fossil resources. There will be competition among renewables.

Competitive markets are good for customers regardless of technology. Market provides incentives for cost reductions, entry and exit.

- 4. Should the design of a capacity market change in light of the evolving resource mix? Are the needs of the evolving resource mix better addressed in the capacity market or the energy and ancillary services market? Could RTOs/ISOs play a role in helping states achieve their diverse policy goals through a centralized resource procurement? Please explain.**

**Answer:**

Energy and capacity markets are complements. The design of the capacity market should ensure effective participation by resources that can provide capacity/reliability.

PJM could play a role in helping states achieve their diverse policy goals through a centralized resource procurement. A centralized procurement of renewable resources in the PJM capacity market could improve the competitiveness and efficiency of adding renewable capacity. This approach would require agreement by the states about imports and exports of renewable energy and target MW levels of resources with defined characteristics.

5. **Could enhancements to the energy and ancillary services markets serve to make the energy market a more significant driver of resource entry and exit decisions vis-à-vis capacity markets? Please explain.**

**Answer:**

No. (See the response to question 2.) Zero marginal cost renewables will reduce energy market prices. It would be a mistake to mask that competitive market signal, required for efficient and reliable real-time dispatch, through artificial increases in energy prices.

Nonetheless, the price signals in the energy market need continuous review for possible enhancements, but enhancements should not be designed to shift revenues or make energy markets more essential in entry/exit decisions. Examples of enhancements: correction of timing mismatches in SCED/LPC software; expanding real time unit commitment; use of multi period LMP; algorithmic definition of following dispatch; clarifying uplift rules; and ensuring the use of flexible offer parameters. Despite its flaws, the energy market has provided competitive, efficient, and reliable economic dispatch for two decades.

6. **What are the long run implications of continuing with the status quo Minimum Offer Price Rule (MOPR) framework? Is it a durable solution? Why, or why not?**

**Answer:**

The existing MOPR is not a durable solution if fundamentally inconsistent with state objectives. Regardless of whether it is fundamentally inconsistent, if states or any individual state leave the capacity market because they believe the MOPR to infringe on their authority, the MOPR is not a durable solution. If the states were to leave a perfectly designed PJM capacity market, it would be a Pyrrhic victory and would mean that the existing MOPR is not a durable solution.

Given that the states have the ultimate authority to determine their state generation mix, the goal of MOPR design must be to work symbiotically with state authority and policy objectives while maintaining the advantages of a central capacity market for all states.

- 7. How do the MOPR rules affect the ability of resources to clear the capacity market? Does that depend on whether or not those resources receive revenues pursuant to state programs? Will such resources remain in the market if they do not clear the capacity market? Why or why not? What, if any, challenges does this pose to the functioning of the capacity market as well as the energy and ancillary services markets?**

**Answer:**

Under the existing MOPR, the capacity market offers of resources that receive state subsidies must be greater than or equal to the MOPR floor, either the default floor or a unit specific floor. Such floors may be high enough that some resources do not clear in the capacity market. The MOPR floor prices are intended to be competitive offers. But the existing MOPR defines competitive offers to be the net cost of new entry. The correctly defined competitive offer is net avoidable costs or net ACR for both new and existing units.<sup>18</sup>

---

<sup>18</sup> See Comments of the Independent Market Monitor for PJM, Docket No. ER18-1314-000,-001, (May 7, 2018); and also Summary of the Sustainable Market Rule Proposal of the Independent Market Monitor for PJM, Docket Nos. ER18-1314-000, -001; EL16-49-000; EL18-178-000. (April 15, 2019).

Resources that receive state subsidies are likely to remain in the PJM markets regardless of whether they clear in the capacity markets, if the state subsidies result in adequate revenue. As frequently pointed out, it would be inefficient for there to be significant levels of capacity supported by state subsidies but not recognized in the capacity market as capacity. This is the double counting issue. While it does not currently exist and is unlikely to exist in the next few capacity auctions, it could occur if the states support significant levels of uneconomic resources. That is one reason to ensure that the PJM wholesale market design accommodate state policy choices. A benefit of such accommodation is that the capacity market would recognize all capacity on a comparable basis, together with obligations of capacity resources. That is an essential feature of the market design. It is essential to keep all capacity resources in the PJM markets and subject to market rules about the definition of capacity and the obligations of capacity. The result is the most efficient way to maintain reliability.

8. **The quantity of capacity procured in the Eastern RTOs/ISOs has often exceeded the amount of capacity that each RTO/ISO aims to procure in the capacity market to meet the target 1-in-10 loss of load expectation. What are the drivers of that result (e.g., specific parameters used to establish the demand curve(s) in the capacity market, resource offer behavior, etc.)? Do the additional reliability benefits provided by this additional amount of capacity exceed the incremental costs? Why or why not?**

**Answer:**

PJM over procures capacity as a result of systematically over forecasting load and the shape of the demand curve (VRR curve). The accuracy of the peak load forecast has a significant impact on RPM Base Residual Auction results. The peak load forecast for the Third IA has historically been lower than the peak load forecast used in the corresponding BRA. The Third IA is the last auction prior to the beginning of the delivery year, and the peak load forecast for the Third IA provides the best indicator of the capacity needed to meet the reliability criterion. For the five delivery years from 2014/2015 through 2018/2019, the peak load forecast for the Third IA has been on average 5.8 percent lower than the peak

load forecast used in the corresponding BRA.<sup>19</sup> The Market Monitor found that if the peak load forecast for the 2021/2022 RPM Base Residual Auction had been 5.8 percent lower and everything else had remained the same, total RPM market revenues for the 2021/2022 RPM Base Residual Auction would have been \$2.8 billion lower, or 30.0 percent.<sup>20</sup>

The downward sloping shape of the VRR curve directly results in customers buying more capacity and paying a higher price, almost without exception, than if there were a vertical demand curve.<sup>21</sup> In addition, the highest price on the VRR curve is inappropriately based on the higher of gross CONE and net CONE. It should be based on net CONE.<sup>22</sup>

PJM sells back what it defines to be excess capacity at low prices. If buying extra capacity is a good thing, selling it back is illogical and inconsistent and results in customers paying a high price for capacity in the BRA and selling it back at a much lower price in subsequent IAs.

**9. In a multi-state RTO with a centralized capacity market, please describe how one state's actions to shape the resource mix can affect other states. What are the Commission's responsibilities with respect to addressing such effects?**

**Answer:**

In PJM, state actions unavoidably affect other states. Such effects occur at present. For example, RGGI carbon pricing affects prices paid for energy for customers outside RGGI states, even though the RGGI carbon price is very low. State policies to advance the

---

<sup>19</sup> See "Analysis of the 2021/2022 RPM Base Residual Auction," Table 45 (August 24, 2018) <[http://www.monitoringanalytics.com/reports/Reports/2018/IMM\\_Analysis\\_of\\_the\\_20212022\\_RPM\\_BRA\\_Revised\\_20180824.pdf](http://www.monitoringanalytics.com/reports/Reports/2018/IMM_Analysis_of_the_20212022_RPM_BRA_Revised_20180824.pdf)>.

<sup>20</sup> Id. at Scenario 3.

<sup>21</sup> See 2020 State of the Market Report for PJM; Volume 2, Section 5: Capacity Market, p 278, Figure 5-4.

<sup>22</sup> See Protest of the Independent Market Monitor for PJM, Docket Nos. EL19-58, ER19-1486 (May 15, 2019) at 68.

retirement of coal plants affect energy and capacity market prices which affect all states. The markets are integrated and it is not possible to avoid impacts on other states. When state actions are accommodated there will be unavoidable impacts on other states. Subsidies to economic nuclear plants or to uneconomic offshore wind plants will reduce capacity and energy prices across PJM. Such effects may make coal generation less economic in other states.

**10. Should there be options for states that want to achieve resource adequacy outside of the capacity market? Are these options compatible with continuing a capacity market for states that do wish to participate in it?**

**Answer:**

Yes. Maintaining the FRR option makes sense, especially for vertically integrated utilities subject to cost of service regulation. But the FRR rules need to be updated. The current FRR rules have not changed substantively since 2007 and the FRR rules arbitrarily favor FRR entities over participants in the capacity market. The rules should not create artificial incentives to choose or not choose the FRR option. The current rules require a lower level of capacity for FRR entities than they would have to procure in the markets and provide weaker performance incentives. Given that PJM provides reliability for the entire network as a whole, including FRR entities, such rules are discriminatory. All capacity resources should have the same obligations.

**B. Panel 2: MOPR in the PJM Capacity Market**

**1. As the public policy goals from the PJM member states increasingly affect a significantly higher proportion of the resource mix, what is the appropriate role of the PJM capacity market? Should it continue to be limited to ensuring resource adequacy? What challenges, if any, does the current MOPR pose in ensuring resource adequacy at a just and reasonable rate? What challenges, if any, would the elimination of the current MOPR pose in ensuring resource adequacy at a just and reasonable rate?**

**Answer:**

See response to II.A.1.

**2. What role do capacity revenues and price signals play under current market rules, including the MOPR rules, and how well do they reflect the region's resource adequacy objective?**

**Answer:**

See Comments and Overview.

See response to II.A.2.

The capacity market in PJM has worked effectively to provide incentives for entry and exit and as a needed supplement to net revenues from the energy market.<sup>23</sup> Capacity market revenues under the current market rules are critical to units covering avoidable costs.<sup>24</sup>

For the period from the introduction of the RPM capacity market design in the 2007/2008 Delivery Year through the 2019/2020 Delivery Year, internal PJM generation capacity decreased by 866.0 MW after accounting for 41,979.4 MW of new resources, reactivations, and uprates, and 42,845.4 MW of deactivations and derates, although in each of the last four delivery years (2016/2017 through 2019/2020), there was a net increase in internal PJM generation capacity. PJM maintained a reserve margin in excess of the target reserve margin throughout this 13 year period. Substantial demand side resources were also added to the capacity market during this time period. Including both completed and upcoming delivery years, 34,912.9 MW (78.1 percent) of internal PJM generation capacity

---

<sup>23</sup> See the 2020 PJM Generation Capacity and Funding Sources: 2007/2008 through 2021/2022 Delivery Years (September 15, 2020) <[https://www.monitoringanalytics.com/reports/Reports/2020/IMM\\_2020\\_PJM\\_Generation\\_Capacity\\_and\\_Funding\\_Sources\\_20072008\\_through\\_20212022\\_DY\\_20200915.pdf](https://www.monitoringanalytics.com/reports/Reports/2020/IMM_2020_PJM_Generation_Capacity_and_Funding_Sources_20072008_through_20212022_DY_20200915.pdf)>.

<sup>24</sup> See 2020 State of the Market Report for PJM, Volume 2, Section 7: Net Revenue, Table 7-37 and Table 7-38

additions are based on market funding and 9,770.2 MW (21.9 percent) are based on nonmarket funding.<sup>25</sup>

Capacity markets procure a relatively homogeneous product that is constant across technologies. The rules and price signals generally reflect the resource adequacy objective, but the capacity market design/implementation needs to address issues including over procurement; selling back excess capacity at below market prices; the market seller offer cap; the role of DR and EE; no firm fuel requirement; no definition of firm gas supply; no flexible parameter requirement for all resource types; the maximum price on the VRR curve; the continued use of CT as the reference resource; enforcement of the no excuses rule; the definition of high load days; and the definition of PAI.

3. **What is the risk of customers being required to pay for redundant capacity (i.e., where consumers in a state may be required to pay for resources even when those resources do not count as capacity and be required to fund additional resources via the capacity market)? Should this risk be managed under the current RTO rules? Why?**

Answer:

See response to II.A.7.

4. **Some have argued that if states want to exercise their rights over the resource mix they must be responsible for resource adequacy. Is this a necessary trade-off? Can PJM retain responsibility for resource adequacy while individual states also take action to shape the resource mix, or should that responsibility be shifted to the states? Why? What are the pros, cons, and tradeoffs of each approach?**

Answer:

---

<sup>25</sup> See the 2020 PJM Generation Capacity and Funding Sources: 2007/2008 through 2021/2022 Delivery Years (September 15, 2020) <[https://www.monitoringanalytics.com/reports/Reports/2020/IMM 2020 PJM Generation Capacity and Funding Sources 20072008 through 20212022 DY 20 200915.pdf](https://www.monitoringanalytics.com/reports/Reports/2020/IMM%202020%20PJM%20Generation%20Capacity%20and%20Funding%20Sources%2020072008%20through%2020212022%20DY%20200915.pdf)>.

No. This is not a necessary tradeoff or even a tradeoff at all. States may choose the FRR option, but the FRR option is generally higher cost, less efficient and prone to exposing states to the exercise of market power.<sup>26</sup> Even with the FRR option, PJM retains responsibility for reliability across the entire PJM region.

PJM maintaining responsibility for reliability across the entire region and PJM maintaining a centralized capacity market for the entire region are compatible with state authority to determine their own resource mix. The broader market provides benefits based on the increased efficiency of operating at a larger scale and the efficient sharing of resources across the interconnected grid.

PJM was initially formed based on the advantages of operating an interconnected grid and recognizing the shared benefits of using the cheapest resources across the entire grid. There has been a capacity market in PJM since the formation of PJM, even before the creation of formal markets, based on the mutual advantages of trade and sharing.

**5. Can the capacity market satisfy PJM’s resource adequacy requirements without serving as the primary vehicle to send resource entry and exit signals? If so, do the current MOPR rules allow it to meet that function? If not, why not?**

**Answer:**

See response to II.A.3.

---

<sup>26</sup> The MMU has posted several reports regarding the creation of FRRs. “Potential Impacts of the Creation of a ComEd FRR,” (December 18, 2019). <[http://www.monitoringanalytics.com/reports/Reports/2019/IMM\\_Potential\\_Impacts\\_of\\_the\\_Creation\\_of\\_a\\_ComEd\\_FRR\\_20191218.pdf](http://www.monitoringanalytics.com/reports/Reports/2019/IMM_Potential_Impacts_of_the_Creation_of_a_ComEd_FRR_20191218.pdf)>. “Potential Impacts of the Creation of Maryland FRRs,” (April 16, 2020). <[http://www.monitoringanalytics.com/reports/Reports/2020/IMM\\_Potential\\_Impacts\\_of\\_the\\_Creation\\_of\\_Maryland\\_FRRs\\_20200416.pdf](http://www.monitoringanalytics.com/reports/Reports/2020/IMM_Potential_Impacts_of_the_Creation_of_Maryland_FRRs_20200416.pdf)>. “Potential Impacts of the Creation of New Jersey FRRs,” (May 13, 2020). <[http://www.monitoringanalytics.com/reports/Reports/2020/IMM\\_Potential\\_Impacts\\_of\\_the\\_Creation\\_of\\_New\\_Jersey\\_FRRs\\_20200513.pdf](http://www.monitoringanalytics.com/reports/Reports/2020/IMM_Potential_Impacts_of_the_Creation_of_New_Jersey_FRRs_20200513.pdf)>. “Potential Impacts of the Creation of Ohio FRRs,” (July 17, 2020). <[http://www.monitoringanalytics.com/reports/Reports/2020/IMM\\_Potential\\_Impacts\\_of\\_the\\_Creation\\_of%20Ohio\\_FRRs\\_20200717.pdf](http://www.monitoringanalytics.com/reports/Reports/2020/IMM_Potential_Impacts_of_the_Creation_of%20Ohio_FRRs_20200717.pdf)>.

### C. Panel 3: Alternative Approaches for PJM Capacity Market

1. **If the Commission were to direct revisions to the currently effective MOPR and replace it with a MOPR designed to address only buyer-side market power (herein referred to as a Targeted MOPR), could such an outcome be just and reasonable? Would it be sustainable to remove the MOPR completely without making additional changes to other PJM market rules? Please explain and discuss the trade-offs among the various options that should be considered.**

**Answer:**

Yes.

Yes.

See Comments and Overview.

See prior responses.

2. **Would removing the current MOPR in PJM and simply replacing it with a Targeted MOPR shift costs among states or otherwise favor certain states over other states? Could it result in the shifting of one state's public policy preferences to another state with different state policies? Please explain any such concerns. If such cost shifting may occur, is that an inevitable consequence of any state regulation of any kind, and is it the Commission's role to address such cost shifting? If cost shifting is a concern, what are the ways to mitigate any such concerns?**

**Answer:**

See Comments and Overview.

3. **Is the independent power producer model compatible with a capacity market construct that does not account for the fact that certain resources receive out of market support? Why or why not?**

**Answer:**

Yes. But the compatibility and the continued viability of market based resources depends critically on defining capacity and the reliability contribution of capacity correctly. PJM's current ELCC filing fails to meet that test and thus puts the market based resource

model at risk. Although the impacts on existing resources will not occur immediately, it is likely that there will be an immediate impact on the incentives to invest in new resources.

In addition, a market design that sends appropriate price signals to resources is essential to the market based resource model. That design must include, in addition to the correct definition of capacity: a requirement for flexible operating parameters; rules that pay uplift only when units have flexible parameters and are algorithmically defined to be following dispatch; firm fuel requirements including a definition of firm gas supply.

In addition, it is not clear that states will continue to subsidize uneconomic resources indefinitely. Renewable resources are competitive now and becoming more competitive. If direct competition among renewable resources replaces subsidies as the least cost approach for states, a competitive equilibrium will evolve that includes market based resources. The market based resource model (independent power producer) includes renewable resources as well as thermal resources. The markets will work best when all economic resources rely on the market based model and state subsidies are restricted to the fundamentally uneconomic resources. But that decision belongs to the states.

- 4. Would removing the expanded MOPR in PJM and replacing it with a Targeted MOPR present resource adequacy or reliability issues in the short term? Are there such issues in the long term?**

Answer:

No.

No.

See Comments and Overview.

See prior responses under II.C.

- 5. Would removing the expanded MOPR in PJM and replacing it with a Targeted MOPR address the concerns that are driving certain states to consider leaving the Reliability Pricing Model (capacity market) via the Fixed Resource Requirement (FRR)? What are the benefits and costs associated with state decisions to remain in the capacity market versus opting for the FRR?**

Answer:

Yes.

See Comments and Overview.

See response to II.A.10.

See response to II.B.4.

- 6. In PJM, are or should there be options other than FRR for states that want to achieve resource adequacy outside of the capacity market? Are these options compatible with continuing a capacity market for states that do wish to participate in it?**

Answer:

States have the FRR option if they wish to opt out of the PJM Capacity Market. There is not a need for another option to opt out of capacity markets.

- 7. Aside from removing the expanded MOPR and implementing a Targeted MOPR, are there other mechanisms that can be used to better integrate state supported resources in PJM's capacity market? If so, what are those mechanisms and how would they work?**

Answer:

Yes.

Another option would be an explicit MOPR exemption for state supported resources together with a state supported capacity demand curve in the PJM capacity market auctions. See Comments and Overview. The MOPR tariff rules would need to be modified in addition. This option is functionally the same as the Targeted MOPR with the addition of a state supported capacity demand curve.

- 8. Would it be better to implement a resource carve out in PJM (in which capacity supply and demand that contract bilaterally outside of the market are removed from the capacity auction) instead of a Targeted MOPR (in which all capacity supply and demand still pass through the capacity auction)? An approach along those lines could, for example, allow states to procure capacity resources directly, and then hold a capacity auction to meet any remaining resource adequacy requirements. Is this meaningfully different than a Targeted MOPR? Why? What are the relative pros and cons of the two approaches?**

Answer:

No. Such an approach is significantly worse than continuing to rely on the capacity market auction. It is essential, if PJM is to manage reliability for the entire system, to have consistent definitions of capacity and of the obligations of capacity resources. The Targeted MOPR with a state supported demand curve option provides the states the ability to define specific capacity purchases while remaining within the market framework. This would use an efficient, competitive auction to support the states' goals to acquire a defined MW of resources with defined characteristics or simply to acquire a specific resource.

The bilateral approach is nontransparent, results in asymmetric access to information, and is subject to exercises of market power in addition to the fact that reliability is a PJM wide concept.

**9. If the Commission were to direct replacement of the current MOPR in time for the 2023/24 Base Residual Auction, when would such action be needed to limit any auction delay?**

**Answer:**

The deadlines for activity related to the December auction start in July. Those could be reasonably delayed for a few months assuming that the Commission order provided for modified deadlines.

### III. COMMENTS ON PJM'S CAPACITY MARKET<sup>27</sup>

#### A. Existing PJM MOPR Implications

1. **Have circumstances regarding the nature and scope of state actions to support specific resource types (e.g., new state legislation, new or revised state subsidies, new or revised standards such as increased renewable portfolio standards, etc.) changed in the PJM footprint since the establishment of the Reliability Pricing Model? If so, should the purpose and goals of the capacity market evolve in response to this change? Please explain.**

***Answer:***

Yes. At the beginning of RPM, Maryland and New Jersey in particular were concerned about reliability and proposed to subsidize gas fired combined cycle plants using long term contracts with above market guaranteed prices structured as contracts for differences against the PJM Capacity Market. The locational design of RPM provided for different price signals in different LDAs within PJM and reflected locational supply and demand fundamentals.

RPM reforms in response to potential locational reliability issues addressed the issues raised by New Jersey and Maryland. There is not a corresponding capacity market design issue currently.

Current issues related to the nature and scope of state actions are generally about state actions that are not based on market concepts. State subsidies for uneconomic resources are not a reflection of a flaw in the PJM Capacity Market, but are to some extent a reflection of a flaw in the PJM energy market. The absence of a carbon price in the PJM market design has been partly responsible for the lack of competitive renewable resources.

---

<sup>27</sup> FERC Notice Inviting Post-Technical Conference Comments, Docket No. AD21-10-000, (April 5, 2021)

States have failed to agree on joining RGGI and the states in RGGI have failed to implement a RGGI price that reflects the social cost of carbon.

Renewable resources are increasingly competitive and are not likely to require state subsidies in the near future, with the exception of uneconomic resources like offshore wind and states’ long term guarantees of above market prices to offshore wind. States are not pursuing offshore wind as a result of market design flaws in the PJM Capacity Market.

2. **Please explain how the expected quantity of state supported and non-state supported resources, by resource type, has changed since 2018. Please provide the relevant dates of relevant legislation, executive actions, rulemakings, and/or other state actions. How is the Expanded MOPR likely to affect the entry of these resources? Will the expected impact of the Expanded MOPR change over time? Please explain.**

**Answer:**

Table III-1 shows the installed capacity by fuel type on the first day of the year for 2018 through 2021. Wind ICAP has increased at an annual rate of 9.7 percent over the period from January 1, 2018, to January 1, 2021. Solar ICAP increased at an annual rate of 29.8 percent and gas ICAP increased at a rate of 7.4 percent from January 1, 2018, to January 1, 2021. The installed capacity of all other fuel types decreased over the three year period at an annual rate of 5.4 percent.

**Table III-1 PJM Installed Capacity**

Fuel Source	PJM Installed Capacity (MW)			
	1/1/2018	1/1/2019	1/1/2020	1/1/2021
Wind	7,693.5	8,631.4	8,893.4	10,144.2
Solar	1,345.0	1,721.8	2,185.4	2,942.3
Gas	67,811.4	74,716.8	81,950.9	84,031.3
Other	114,560.3	109,436.6	100,722.7	97,046.9
Total	191,410.2	194,506.6	193,752.4	194,164.7

Ten of 14 PJM jurisdictions, as of January 1, 2021, have enacted renewable portfolio standards (RPS) that require that a defined percentage of retail load be served by renewable

resources or other selected technologies.<sup>28</sup> In 2018, 7.4 percent of PJM load was mandated under state renewable portfolio standards (RPS) to be sourced from renewable or tier I generators.<sup>29</sup> In 2019, 8.2 percent of PJM load was mandated under state renewable portfolio standards (RPS) to be sourced from renewable or tier I generators, and the standard rose to 9.6 percent in 2020. Under current RPS rules 26.4 percent of 2030 PJM load is expected to be sourced from renewable or tier I generators.

The expanded MOPR is not expected to affect the entry of these resources. The RECs prices are designed to provide the incentive to enter. It is expected that the renewable resources covered under the various RPS rules will become increasingly competitive and rely less on state subsidies.

- 3. Is there a particular type or quantity of state supported resources that are unlikely to clear PJM's capacity market as a result of PJM's Expanded MOPR, in the near term or in the future? If so, please provide examples.**

***Answer:***

Offshore wind is the type of state supported resource that is unlikely to clear in PJM's Capacity Market as a result of its high costs and associated high MOPR offer floor under the Expanded MOPR.

---

<sup>28</sup> Virginia became the latest PJM state to establish a mandatory RPS on January 1, 2021. Additional information on RPS in PJM is available in Section 8 of the 2020 State of the Market Report <[http://www.monitoringanalytics.com/reports/PJM\\_State\\_of\\_the\\_Market/2020.shtml](http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2020.shtml)>.

<sup>29</sup> Although there are minor differences across the PJM states definitions of tier I resources, technologies that use solar photovoltaic, solar thermal, wind, ocean, tidal, biomass, low-impact hydro, and geothermal sources to produce electricity are classified as tier I resources

4. **Please explain whether and, if so, how PJM’s Expanded MOPR will result in over-procurement of capacity, or “surplus capacity” (i.e., capacity in excess of the PJM Installed Reserve Margin), due to reasons other than the capacity market’s sloped demand curve. To the extent the Expanded MOPR results in surplus capacity, including the delayed retirement of existing resources, what are the impacts on PJM’s customers? What impact could such surplus capacity have on PJM’s energy and ancillary services markets? How do any such impacts bear on the Commission’s responsibility to ensure just and reasonable rates under the Federal Power Act?**

**Answer:**

The Expanded MOPR is unlikely to result in the over procurement or double counting of capacity except in cases where a state wishes to purchase capacity that is clearly uneconomic. The Market Monitor evaluated the specific claims in New Jersey and found that any double counting would be very small and would not occur until 2025 in the case of offshore wind.<sup>30</sup>

5. **Does PJM’s Expanded MOPR affect states’ willingness to remain in PJM’s capacity market? Does the Expanded MOPR compel states to choose between relying on PJM’s capacity market to meet their resource adequacy needs and achieving state policies? If so, how? Which states are relying on or are considering relying on PJM’s Fixed Resource Requirement (FRR), rather than the PJM’s capacity market, as a result of the Expanded MOPR and why?**

**Answer:**

The Expanded MOPR does not compel such a response, but states are considering such a response as a result of states’ wishes to determine their generation asset mix using a range of nonmarket interventions and do not want to be constrained by the MOPR.

See Comments and Overview.

---

<sup>30</sup> See IMM Answer to PSEG and Exelon Reply, New Jersey Board of Public Utilities, Docket No. EO20030203 (July 15, 2020).

**6. Please explain whether the implementation of PJM’s Expanded MOPR has led or may lead to unforeseen impacts, including those enumerated below:**

- a. Several panelists at the conference noted the potential for greater use of the FRR construct as a result of the Expanded MOPR. Please explain any potential impacts or concerns from an increased reliance on PJM’s FRR construct in this manner (e.g., adverse impacts on capacity prices in PJM in zones that remain in the market, the reduced ability to ensure resource adequacy, etc.).*
- b. Does the Expanded MOPR create administrative burdens for PJM, capacity resource owners, or others? If so, please explain and include details regarding the difficulties encountered.*
- c. Does the Expanded MOPR have any impact on the ability of resources to engage in private voluntary, bilateral transactions?<sup>31</sup>*

**Answer:**

The Market Monitor has prepared reports on the impacts of possible FRR plans for a number of states. In general, FRR plans suppress capacity prices elsewhere in the PJM market.

See the response to II.B.4.

**7. What are the benefits of the Expanded MOPR? Please explain.**

**Answer:**

See Comments and Overview.

**8. Is it appropriate for the Commission to apply a MOPR to address state actions intended to suppress capacity market prices? Please explain why or why not?**

**Answer:**

See Comments and Overview.

---

<sup>31</sup> *Calpine Corporation v. PJM Interconnection, L.L.C.*, 169 FERC ¶ 61,239, at P 70 (2019) (“As to whether private, voluntary bilateral transactions might raise inappropriate subsidy concerns, we find that the record in the instant proceeding does not demonstrate a need to subject voluntary, arm’s length bilateral transactions to the MOPR at this time.”) (footnote omitted).

## B. Potential Alternatives to Expanded MOPR in PJM

1. **Should the Expanded MOPR be revised or eliminated? If so, what, if any, are any other changes to the PJM Tariff would be necessary or appropriate? Please explain fully.**

**Answer:**

See Comments and Overview.

2. **If any changes are made to the MOPR rules, is it necessary or appropriate to combine those changes with reforms to ensure that capacity resources are properly accredited for their reliability value?**

**Answer:**

See Comments and Overview.

Yes.

It is essential to get the derating factors or ELCC values right. PJM currently uses derating factors by technology type with the ability to provide unit specific data. PJM recently filed a proposal to use calculated Effective Load Carrying Capability (ELCC) as a replacement for the derating factors. But PJM's ELCC filing was badly flawed and will not result in correctly calculated ELCCs for all resources and will, as a result of special treatment for certain resources including long term guarantees, not result in competitive or least cost outcomes in PJM's Capacity Market. It is essential for that reason to reject PJM's currently filed proposal on ELCC.<sup>32</sup> Fixing the PJM approach to ELCC is a manageable task if there is a shared goal of letting markets reflect the actual, marginal contribution of all

---

<sup>32</sup> See Comments of the Independent Market Monitor for PJM, Docket No. ER21-278-000 (November 20, 2020); Answer and Motion for Leave to Answer of the Independent Market Monitor for PJM, Docket No. ER21-278-001 (December 18, 2020); and Comments and Motion of the Independent Market Monitor for PJM, Docket No. ER21-278-001 (March 22, 2021).

types of capacity to reliability without assumptions that arbitrarily favor some resource types.<sup>33</sup>

- 3. Please explain the timeframe in which a proposed replacement rate could be implemented to avoid delaying the December 2021 Base Residual Auction.**

**Answer:**

See response to II.C.9.

- 4. Should a MOPR designed to address only buyer-side market power (i.e., a Targeted MOPR) replace the Expanded MOPR? How should the Commission determine what constitutes a potential exercise of buyer-side market power?<sup>34</sup>**

**Answer:**

See Comments and Overview.

- 5. Please explain to which resources a Targeted MOPR should apply (e.g., only to natural gas-fired resources or to all resource types; only to new resources or to all new and existing resources).**

**Answer:**

See Comments and Overview.

- 6. Under a Targeted MOPR construct, what exemptions, if any, should be considered (e.g., self-supply, competitive entry exemptions)? Please explain.**

**Answer:**

---

<sup>33</sup> PJM released preliminary ELCC values in a response to the Commission's deficiency letter that indicate significant changes relative to the current capacity values. See "Response to Commission Deficiency Letter" at 29, PJM Interconnection, L.L.C., ER21-278-001 (March 1, 2021).

<sup>34</sup> For example, a buyer could contract with a seller outside of the PJM capacity market and direct the seller to submit an offer below the supplier's cost (e.g., at zero) in the PJM capacity auction to lower the market clearing price. Such a strategy would lower the buyer's total capacity procurement costs if the savings the buyer achieves from the lower market clearing price paid for the total quantity of capacity the buyer purchased in the PJM capacity market exceeds the losses (excess costs in this example) the buyer incurred from the out-of-market contract with the seller.

See Comments and Overview.

7. **For states that choose to achieve resource adequacy outside of the PJM capacity market, please describe any options (e.g. FRR, self-supply, etc.) that should be considered for availability to the states.**

- a. *Should FRR or other self-supply options be modified in any way to make them more useful to states that wish to reclaim authority for resource adequacy in order to meet state policies?*

Answer:

See response to II.A.10.

8. **Should load serving entities be able to procure capacity outside of PJM's capacity market such that PJM would only administer a residual capacity auction (i.e., an auction that removes demand procured outside the capacity market from the demand curve and supply curve would not include capacity procured outside of the capacity market) to procure the remaining capacity requirements? What rules should govern such a residual auction? Would a residual auction provide sufficient incentives for capacity to enter the PJM market when needed to ensure resource adequacy? Please explain.**

Answer:

No.

See Comments and Overview.

9. **Several panelists at the conference stated that removing the Expanded MOPR in PJM would not have any adverse impacts on resource adequacy and in turn reliability. Please explain whether you agree or disagree with this statement and why.**

Answer:

If PJM continues to define reliability, to define capacity and to ensure that the required level of capacity is acquired, elimination of Expanded MOPR will not negatively affect reliability.

See Comments and Overview.

- 10. Are there differences among the expected short-term, intermediate term, and long-term effects of removing the Expanded MOPR on resource adequacy and in turn reliability? Please explain why or why not.**

Answer:

If PJM continues to define reliability, to define capacity and to ensure that the required level of capacity is acquired, elimination of Expanded MOPR will not negatively affect reliability in any of the defined time frames. The impact on capacity market prices is harder to predict but will increase if the level of uneconomic resources displacing economic resources increases.

See Comments and Overview.

- 11. Is there a concern that merchant resources may fail to receive financing due to state supported resource entry in PJM? Please explain and provide supporting evidence if possible. Please also explain how this consideration bears on the Commission's responsibilities under the Federal Power Act.**

- a. Should PJM's capacity market address this concern, and if so, how? Is there an option to address potential financing challenges by adjusting the parameters that establish the capacity market demand curve, such as changes to the net cost of new entry (Net CONE) estimate? For example, Net CONE estimates could be adjusted by reducing the expected economic life of the reference unit used to establish Net CONE, increasing the reference unit's cost of capital to reflect higher risks, or through changes to the shape of the demand curve.*
- b. Many state policies related to electric generation (e.g., renewable portfolio standards) are specified in statute and include timelines (often decades into the future) that investors can use to estimate the timing, type, and quantity of state supported resources entering PJM's markets and potential market impacts. To what extent does the transparency of such state policies mitigate or reduce these risks to merchant resources?*
- c. Would a capacity market with a Targeted MOPR provide a sufficient incentive for capacity to enter the PJM market when needed to ensure resource adequacy?*

Answer:

See response to II.C.3.

See Comments and Overview.

This answer assumes that the question is about merchant capacity that is not renewable and therefore not qualified to receive state subsidies. Merchant capacity will provide the subsidized renewable capacity also.

A capacity market with a Targeted MOPR could provide sufficient incentive for merchant capacity to enter the PJM market when needed for reliability if the capacity market rules were clear, including a clear definition of capacity (see referenced responses on ELCC), a clear definition of reliability and a clear definition of the obligations of such new capacity.

In the absence of these key elements, the incentives would be substantially weaker.

The actual incentives will also depend on the extent to which uneconomic state supported resources have penetrated the PJM Capacity Market, the extent to which additional state supported resources are expected to continue to enter, and the extent to which there is a remaining viable PJM Capacity Market.

It is expected that renewables will be competitive and not require state subsidies in the very near future. If that is correct and the identified key elements are present, it is expected that the Targeted MOPR would provide sufficient incentives.

See response to II.A.3.

**12. What changes are needed to ensure PJM's energy and ancillary services markets send appropriate price signals and ensure sufficient incentives for investment?**

***Answer:***

See Comments and Overview.

See response to II.A.2.

**13. What is FERC's responsibility toward states in the PJM region that have chosen a state policy of not subsidizing their preferred resources in light of the competitive capacity market?**

**Answer:**

See Comments and Overview.

**14. How urgent is the need to reconcile PJM's capacity market rules and state policies? Could PJM or the Commission adopt a phased approach with short-term and long-term solutions? For example, could short-term actions include eliminating the Expanded MOPR and replacing it with a Targeted MOPR? What long-term solutions are needed, if any?**

**Answer:**

See Comments and Overview.