

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

PJM Interconnection, L.L.C. : Docket No. ER18-1314

**COMMENTS OF THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

I. INTRODUCTION

On April 9, 2018, PJM Interconnection L.L.C. (“PJM”) filed its Capacity Repricing or in the Alternative MOPR-Ex Proposal: Tariff Revisions to Address Impacts of State Public Policies on the PJM Capacity Market under Section 205 of the Federal Power Act, 16 U.S.C. §824d.¹ PJM describes its filing as revisions to the Reliability Pricing Model (“RPM”) rules in the PJM Open Access Tariff (“Tariff”) to establish the appropriate regional transmission (“RTO”) response to address supply-side state subsidies and their impacts on the PJM capacity market.²

Specifically, by this filing, PJM claims that circumstances require the Federal Energy Regulatory Commission (“FERC” or “Commission”) take action to mitigate the adverse impacts of certain state subsidies on the PJM capacity market’s ability to promote robust supply competition and send appropriate price signals.³ PJM contends its

¹ *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 (“PJM Filing”),* Docket No. ER18-1314.

² PJM Filing at 1.

³ *Id.* at 2-4.

proposal offers a sequenced approach for the Commission to consider two alternate (but mutually exclusive) proposals for ensuring that PJM’s wholesale capacity market can maintain just and reasonable price signals notwithstanding the potentially significant distorting effect of state subsidies. Those alternatives, each containing all necessary tariff revisions, are:

Option A: Accommodate state subsidies in a way that avoids impacts on wholesale prices by repricing a subsidized offer after it has cleared at its subsidized level, so that all offers that clear are paid a competitive price (“Capacity Repricing”) or,

Option B: Mitigate the impacts of state subsidies on wholesale prices by repricing subsidized offers through extension of the Minimum Offer Price Rule (“MOPR-Ex”).⁴

PJM requests that the FERC accept the “Option A” Tariff changes and further requests that, if the Commission cannot accept the accommodative Option A (Capacity Repricing) approach, even subject to suspension and further proceedings, that it then accept the MOPR-Ex mitigation approach which PJM concedes is a just and reasonable alternative. PJM proposes an effective date of January 4, 2019, for the accompanying Tariff revisions, and for that purpose, requests waiver of the Commission’s 120-day maximum notice rule. However, PJM also asks the Commission to issue an Order on this filing by June 29, 2018. To that end, PJM has assigned an effective date of June 30, 2018. PJM’s intent is to have one of the options in effect for the 2019 Base Residual Auction (“BRA”).⁵

⁴ *Id.* at 5-6.

⁵ *Id.* at 6-7.

PJM avers that there is ample evidence in the filing for FERC to choose one of the two options by June 29, 2018. However, if the Commission determines, under the sequenced approach outlined above, that it can only accept one of the two alternatives subject to suspension and further proceedings, then PJM requests that an expedited paper hearing and settlement judge proceeding be scheduled in lieu of trial-type proceedings.

PJM requests that FERC issue its final decision on this filing by January 4, 2019, to allow PJM and market participants sufficient time to implement the accepted terms in time for the May 2019 BRA for the 2022/2023 Delivery Year—the first auction to which these rules are proposed to apply.⁶

The Pennsylvania Public Utility Commission (“PAPUC”) herein submits its Comments (“Comments”) in response to PJM’s April 9, 2018 filing as follows.

II. PJM’S ALTERNATIVE PROPOSALS

A. Background

The impetus for PJM’s alternative proposals is its concern with increased participation of capacity resources receiving out-of-market subsidies which threaten to undermine the “first principles” of capacity markets recently recognized by the Federal Energy Regulatory Commission (“FERC”) in its *ISO New England* decision.⁷ According

⁶ *Id.* at 7-8.

⁷ *ISO New England, Inc.*, 162 FERC ¶ 61,205 at 18 (2018) (“CASPR Order”). In the CASPR Order, the Commission identified several “first principles of capacity markets,” i.e., that capacity markets like those of ISO New England and PJM should: facilitate robust competition for capacity supply obligations; provide price signals that guide the orderly entry and exit of capacity resources; result in the selection of the least-cost set of resources that possess the attributes sought by the markets; provide price transparency; shift risk as appropriate from customers to private capital; and mitigate market power. CASPR Order at 18.

to PJM, its capacity market “plainly shows these principles in action” through PJM’s: (i) managing the orderly entry and exit of resources; and (ii) shifting risk from customers to private capital. PJM provides its historical version of the evolution of the merchant generation business in its footprint since the inception of the RPM including the recent development of generation parent affiliates seeking out-of-market subsidies where no buyers of financially non-viable generation resources can be found. Predicated on its growing concerns over the increased participation by subsidized resources, PJM requests immediate FERC intervention to prevent what PJM deems to be the potential for exclusion of capacity resources not receiving out-of-market subsidies, suppression of prices in interstate markets, increased barriers to competitive entry and encouragement of additional state subsidies.⁸

In further support of its filing, PJM presents the results of an analysis performed by two experts supporting its concerns over out-of-market subsidies. The first analysis, summarized in the affidavit of Dr. Anthony Giacomoni, examines state programs (primarily the IL and NJ nuclear subsidies, NJ and MD offshore wind and renewable portfolio standards (“RPS”) programs) that the witness alleges provide subsidies to thousands of MW of PJM capacity resources. Dr. Giacomoni concludes that most of these subsidized resources depend on both subsidy revenues and PJM market revenues to be economic.⁹

⁸ *Id.* at 8-17.

⁹ *Id.* at 25-28.

In a similar analysis performed by PJM witness Adam Keech, Mr. Keech opines, through modelling simulations, that subsidized below-cost capacity offers can result in significant and widespread clearing price reductions that are attributable to these subsidies. Moreover, PJM alleges that the study demonstrates that the effects of state subsidies are not confined to the state where the resource is located but can adversely affect all wholesale market participants.¹⁰

B. Option A- Capacity Repricing

1. The Two-Stage Auction Process

PJM's preferred approach is Capacity Repricing. Under this option, PJM proposes to address the impacts of state resource decisions by instituting a two-stage BRA in which clearing resources and assigning capacity commitments is performed in the first stage and determining market clearing prices is performed in the second stage. The two-stage approach will allow all capacity resources for which the seller receives, directly or indirectly, material support from any state governmental entity connected with that resource's clearing in a BRA, which subsidy is determined to be actionable, to clear the auction based on their submitted (i.e., unmitigated) offers.¹¹

In the first stage, PJM will not seek to mitigate offer prices that may be suppressed due to out-of-market subsidies as PJM had done in the past through the MOPR. In the second stage, PJM will re-run the auction using the same demand curve, and the same supply stack. In that supply stack, PJM will use the same sell offers considered in the

¹⁰ *Id.* at 28-35.

¹¹ *Id.* at 59-60.

first stage, but for those cleared resources that qualify as capacity resources with actionable subsidy, PJM will reprice their offers to the Actionable Subsidy Reference Price (“ASRP”). Each ASRP will be a competitive offer price that is determined for that resource in accordance with the provisions of the revised market rules. The intersection of the demand curve and the reconstituted supply stack that uses ASRP will determine the Capacity Market Clearing Price.¹²

Under Capacity Repricing, PJM is not proposing any changes to the process for how it clears capacity resources or the optimization algorithm it employs to clear the BRA and assign capacity commitments. Rather, PJM is proposing to add a second stage to the BRA process that only determines Capacity Market Clearing Prices. However, this accommodative approach will not apply until a material amount of Capacity Resources with Actionable Subsidy offer clears a BRA across the entire PJM Region or within any modeled locational deliverability Area (“LDA”).¹³

As PJM explains, BRAs will continue to clear resources and determine clearing prices in the same manner as in the past, until the megawatt quantity of Capacity Resource with Actionable Subsidy reaches a threshold that has a materially suppressive impact on clearing prices. From that point on, the two-stage approach will be used to the extent any Capacity Resource with Actionable Subsidies clear in stage one.¹⁴ PJM provides several examples of capacity repricing at Figures 3-6 of the filing.¹⁵

¹² *Id.* at 59-60.

¹³ *Id.* at 60.

¹⁴ *Id.* at 60-61.

¹⁵ *Id.* at 61-67.

PJM's Capacity Repricing proposal establishes a two-stage capacity auction process for the procurement and pricing of capacity. Resources would submit one set of offers into a single capacity auction, as currently exists. However, the cleared capacity commitments and the clearing prices would be determined in separate stages. PJM asserts that a two-stage approach to determine cleared commitments and clearing prices in a single capacity auction is preferable because: (1) it maintains the correct price signal to incent the efficient entry and exit of resources; (2) sustains the competitive resources necessary to achieve long-term resource adequacy; and (3) commits only the quantity of capacity necessary for any given delivery year.¹⁶ Capacity Repricing will only apply to BRAs and not to Incremental Auctions.¹⁷

2. Determining a Material Subsidy

PJM proposes a multi-stage decision-tree approach for determining whether a subsidy is material.¹⁸ In fact, Capacity Resources are presumed to not be a Capacity Resource with Actionable Subsidy unless certain criteria are met.

(i) The Subsidy Received must be Material

PJM defines a Material Subsidy as material payments, concessions, rebates, payments, subsidies directly or indirectly from any governmental entity, state-sponsored or state-mandated process connected with the construction, development, operation or

¹⁶*Id.* at 61-67.

¹⁷ *Id.* at 68.

¹⁸ *Id.* at 80.

clearing in any RPM auction of the Capacity Resource. PJM excludes certain types of local, state and federal subsidies from consideration.¹⁹

(ii) Applicable Resource Types

PJM proposes to include, as a Generation Resource with Actionable Subsidies, generation capacity resources greater than a 20MW threshold and demand resources but excludes energy efficiency resources insofar as these resources are focused more on reduced consumption and energy conservation and do not raise price suppression concerns.²⁰

(iii) Criteria for Limiting Capacity Resource with Actionable Subsidy

PJM proposes to exclude from the definition of Capacity Resources with Actionable Subsidies resources: (i) that receive a non-material level of subsidy (less than 1% of actual or anticipated PJM-market revenues); (ii) for which electricity production is not the primary business; and (iii) municipal and electric cooperatives and vertically integrated utilities. PJM analogizes this last category as similar to the Self-Supply Exemption available under the MOPR.²¹ PJM's analysis further suggests that the types of facilities subject to the material subsidy threshold under Capacity Repricing will be similar to those resources that attempted to qualify for but did not obtain the MOPR Competitive Entry Exemption.²²

¹⁹ *Id.* at 69-72. Payments associated with incenting or promoting participation in programs to promote industrial development including a local or county entity; federal government production tax credits, investment tax credits available to local generation.

²⁰ *Id.* at 72-73.

²¹ *Id.* at 73-76.

²² *Id.* at 77-80.

(iv) Is the Level of Subsidized Unforced Capacity in PJM Less Than 5000MW Throughout the PJM Region?

After application of all other tests, if the level of subsidized unforced capacity in PJM regionwide is less than 5000MW, a Material Subsidy will not exist.²³ In sum, PJM proposes a path for resources to become a Capacity Resource with Actionable Subsidy alleging that only those resources with the greatest potential to negatively impact auction clearing prices will be repriced.

3. Process for Support and Review of Certification as Capacity Resource with Actionable Subsidy

PJM proposes to have market sellers “self-certify” the status of their resources as Capacity Resource with Actionable Subsidy. Specifically, for each Capacity Resource offered into a BRA, an officer of the seller must certify if a Capacity Resource is a Capacity Resource with Actionable Subsidy in accordance with section 5.14(j)(2) of the PJM Tariff, and if not, the officer must certify as to which criteria does not apply to the Capacity Resource. In addition, each seller will provide PJM and the Independent Market Monitor (“IMM”), regarding each Demand Resource and Generation Capacity Resource (or uprate), “information needed to determine whether such Capacity Resource qualifies as a Capacity Resource with Actionable Subsidy.”²⁴

Sellers would provide information regarding any subsidy associated with the resource to demonstrate whether a Material Subsidy exists and whether it amounts to

²³ *Id.* at 80,91-92.

²⁴ *Id.* at 80-82.

more than 1% of the resource's revenues. The seller should provide such information to PJM and the IMM by no later than 120 days before the BRA. To ensure that a resource is properly considered a Capacity Resource with Actionable Subsidy, sellers will have an ongoing obligation to promptly provide PJM and the IMM additional information, upon request. Once a resource is deemed to be a Capacity Resource with Actionable Subsidy, that resource shall continue to be considered a Capacity Resource with Actionable Subsidy until the Capacity Market seller provides notification of a change in such status or the Office of the Interconnection removes such status pursuant to a PJM or FERC determination.²⁵

4. Determination of Actionable Subsidy Reference Price

To perform the second stage in the auction and re-run the optimization algorithm to determine the appropriate Capacity Resource Clearing Prices, PJM will substitute adjusted competitive offer prices for the prices initially submitted for the Capacity Resources with Actionable Subsidy that cleared in the auction's first stage. The adjusted, competitive offer price will be the Actionable Subsidy Reference Price. This price will be determined differently based on whether the resource is an Existing Generation Capacity Resource, a Planned Generation Capacity Resource, or a Demand Resource, and based on the facts and circumstances specific to each Capacity Resource with Actionable Subsidy.²⁶

²⁵ *Id.*

²⁶ *Id.* at 82.

(i) Existing Generation Capacity Resources

For existing Generation Capacity Resources, the Actionable Subsidy Reference Price shall be the “higher of”: (1) the resource’s Avoidable Cost Rate (“ACR”), whether determined on a resource-specific basis or as a default for that resource type; and (2) the resource’s opportunity cost of committing as Capacity Performance. Either of these values would represent an adjusted competitive offer price for the subsidized resource and thereby allow the second stage of the auction to establish clearing prices based on adjusted competitive offers.²⁷

The ACR is, by definition, a competitive, cost-based rate for a Capacity Resource, based on inputs appropriate for providing capacity to the PJM Region. PJM is proposing two alternative means for selecting the ACR. First, the seller may elect to determine a resource-specific value that would be determined without consideration of any Material Subsidy. Such value would include a risk premium for assuming a Capacity Performance obligation and would be net of projected PJM market revenues. Alternatively, if the seller is not willing or able to obtain a resource-specific ACR, a default value based on the resource type could be used.²⁸

Historically, most existing resource types in PJM were offer capped at default Maximum ACR as stated in the PJM Tariff or posted on PJM’s website. PJM proposes to carry forward this accepted practice and rely on stated Maximum ACR for existing resources if PJM is unable to determine a suitable ACR. The Actionable Resource

²⁷ *Id* at 82-83.

²⁸ *Id* at 83.

Reference Price will be the higher of the resource's ACR (whether a determined or default value) and the resource's opportunity cost. PJM proposes to calculate and post ACR values for those resources such as nuclear, wind and solar based on information from a federal government data base. For each resource type, including nuclear, solar, and wind resources, PJM is proposing to add a requirement that PJM calculate and post such values.²⁹

The other value to be considered in determining the Actionable Subsidy Reference Price for an Existing Generation Resource is the value obtained by incorporating the opportunity cost of Capacity Performance participation in a manner consistent with the derivation of the Market Seller Offer Cap. That is, PJM would take the higher of the ACR and the specific resource's opportunity cost.³⁰

By using the "higher of" of these two values as the Actionable Subsidy Reference Price, PJM's claims that its proposal follows the logic underlying the Market Seller Offer. As the Commission explained, the offer cap "reflect[s] the opportunity cost that a resource faces when choosing to become a capacity resource," where the opportunity cost is "the expected reduction in Performance Bonus Payments and/or increased Non-

²⁹ *Id* at 83-84.

³⁰ *Id.* at 86-88. The opportunity cost is defined as the value of Performance Bonus Payments earned from performing during emergencies when the resource is not required to perform to meet any capacity commitments. According to PJM, when calculating such an offer price, the seller must "employ alternative assumptions" than used in determining the Market Seller Offer Cap for certain inputs "based on the actual market conditions and the actual circumstances of the unit." Specifically, the seller must use actual values for "the availability ratio, the number of Performance Assessment Hours, the Balancing Ratio, and the Capacity Performance bonus payment rate." This competitive price formulation of existing resources generally tracks the formulation of RPM's Market Seller Offer Cap as it includes "the marginal and opportunity costs faced by an existing resource."

Performance Charges that a resource would experience by becoming a capacity resource rather than remaining a non-capacity resource.” However, because some resources may have an ACR higher than the offer cap value, the Commission accepted PJM’s proposal “to allow a resource with a higher avoidable cost rate to submit data supporting a unit-specific offer cap that details all ACR components including a risk premium.”³¹

PJM states that the current Market Seller Offer Cap and PJM’s Actionable Subsidy Reference Price recognize that the competitive price for Existing Generation Resources may vary depending on the resource’s allowable avoidable costs and its risk exposure. However, in the event that there is no ACR obtainable for a resource (i.e., the resource-specific ACR cannot be determined and there is no default value for that resource type), then the Actionable Subsidy Reference Price or the resource will be PJM’s default Market Seller Offer Cap, which is the Net Cost of New Entry (“CONE”) times the Balancing Ratio (i.e., Net CONE*B).³²

(ii) Planned Generation and Demand Resources

For Planned Generation Resources, PJM is proposing to use the higher of the resource’s costs (including a risk premium for the Capacity Performance obligation and net of projected PJM market revenues) or its opportunity costs to determine the Actionable Subsidy Reference Cost. Since ACR data is not available, PJM will employ the MOPR Unit-Specific Exception provisions for determining unit-specific costs. For the latter, the seller must submit to PJM and the IMM a request for unit specific offer

³¹ *Id.* at 87-88.

³² *Id.* at 88.

price that is consistent with the competitive, cost-based, fixed, net cost of new entry comparable to submissions made in the MOPR process and utilize specific modeling assumptions.³³

Once the unit-specific cost-based price is determined, PJM will compare that value to the resource's opportunity costs which will be determined using the same method as for existing generation, the Market Seller Offer Cap. If applicable information (resource specific ACR or a default value) for planned generation is not available, then the Actionable Subsidy Reference Price shall be Market Seller Offer Cap of net CONE*B.³⁴ For Demand Resources, the Actionable Subsidy Reference Price will also be Market Seller Offer Cap*B.³⁵

C. Option B-MOPR-Ex Option

PJM's alternative approach is to extend the MOPR to cover existing resources that may receive material state subsidies. Historically, MOPR has only applied to resources seeking to offer into PJM's capacity market for the first time ("new entry"). MOPR-Ex is mitigative in nature as opposed to accommodative as it proposes to alter the sellers' subsidized offers before PJM runs the auction and assigns capacity commitments.

Specifically, MOPR-Ex will:

- Only apply to new and existing resources;
- Only explicitly target those resources receiving a Material Subsidy that qualifies as a Capacity Resource with Actionable Subsidy;

³³ *Id.* at 89. Financial data include: (i) nominal levelization of gross costs; (ii) asset life of 20 years; (iii) no residual value; (iv) all project costs included, no sunk costs excluded; (v) first year revenues; (iv) weighted average cost of capital based on actual cost of capital of entity building the capacity resource.

³⁴ *Id.* 89-90.

³⁵ *Id.* 90.

- Apply to all types of Generation Capacity Resources except for Qualifying Facilities;³⁶

Other characteristics of MOPR-Ex are as follows:

- The Seller must receive a Material Subsidy as PJM defines the term for the Capacity Repricing option;³⁷
- Sellers must utilize the same self-certification process as proposed for Capacity Repricing to inform PJM whether the resources qualify as a Capacity Resource with Actionable Subsidy;³⁸
- The MOPR Floor Offer Price will no longer be based on Net Asset Class CONE Values but will be the Market Seller Offer Price for the LDA in which the resource is offered;³⁹ unless the Capacity Market Seller has obtained a Unit-Specific Exception,
- MOPR-Ex will retain the Self-Supply and Competitive Entry Exemption as well as the Unit Specific Exemption;⁴⁰
- MOPR-Ex proposes addition of the Public Entity Exemption and an RPS Exemption;⁴¹

³⁶ *Id.* at 96-99.

³⁷ *Id.* at 100-101.

³⁸ *Id.* at 102-103.

³⁹ *Id.* at 103-104.

⁴⁰ *Id.* at 105-109. Competitive Entry Exemption will be termed the Competitive Exemption to reflect the expended nature of MOPR-Ex.

⁴¹ *Id.* at 109-113. PJM proposes the Public Entity Exemption have two sub-categories: Public Power Entity and Electric Cooperative similar to the previous Self-Supply exemption. To receive this exemption, a resource must meet the net long threshold but not the net short threshold.

III. COMMENTS

A. PJM's Capacity Repricing and MOPR-Ex Proposals Should Be Rejected

The PAPUC recommends the Commission reject both the Capacity Repricing and MOPR-Ex proposals. These proposals fail on a number of accounts, including:

1. Both Capacity Repricing and MOPR-Ex were rejected in the Stakeholder process;
2. Capacity Repricing and MOPR-Ex adjust capacity markets bids which are not at a "competitive offer price", but at an administratively determined price bearing little resemblance to actual market offers;
3. Capacity Repricing should not apply to Demand Response;
4. Capacity Repricing would provide incentives to market sellers to underbid in first stage of the auction, causing further price volatility;
5. Capacity Repricing and MOPR-Ex could result in subsidized resources in one state, significantly increasing market prices in another state; and
6. MOPR-Ex can result in states paying twice for capacity, and further suppress energy prices.

(i) Both Capacity Repricing and MOPR-Ex Were Rejected in the Stakeholder Process

PJM's Capacity Repricing proposal was soundly rejected throughout the PJM task force and committee process. The designated group for examining the issues was the Capacity Construct/Public Policy Senior Task Force or CCppSTF. While PJM's Committee Rules permit PJM Staff, with Board of Manager support, to disregard the results of a committee recommendation, the PAPUC considers PJM's action in pushing

its Capacity Repricing proposal through on an issue as important a redesign of the MOPR to be unsupported and in opposition to the views and input of its stakeholders.⁴²

Similarly, the MOPR-Ex proposal received a higher level of support from 63% of the stakeholder body after working with stakeholders to accommodate a number of important exceptions for competitive, self-supply and state stakeholders.⁴³ However, criticisms remained, and the MOPR-Ex failed to garner the necessary support for adoption in the PJM Markets and Reliability Committee (“MRC”).

Importantly, when stakeholders were given the choice via non-binding poll question whether to make a change to the MOPR or retain the status quo, 64% of respondents chose to remain with the status quo.⁴⁴ The results were similar in a January 25, 2018 vote taken by the MRC where PJM’s proposal received just 21% support of the stakeholders.⁴⁵

The PAPUC has followed the PJM committee stakeholder process closely and cannot recall another instance when the PJM Board of Managers overrode the express terms of a voting constituency. PJM’s determination to bring Capacity Repricing and MOPR-Ex to fruition is inconsistent with the views of stakeholders who had opportunity to weigh the benefits, costs and risks of the various alternatives and independently

⁴² PJM’s proposal received only 26.1%. <http://www.pjm.com/-/media/committees-groups/task-forces/ccpstf/20170926/20170926-ccpstf-package-poll-results.ashx>

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

concluded that either MOPR-Ex or the status quo were preferred alternatives. On this basis, PJM's Capacity Repricing and MOPR-Ex proposals should be rejected.

(ii) Capacity Repricing and MOPR-Ex Adjust Capacity Markets Bids Which Are not at a "Competitive Offer Price," but at an Administratively Determined Price Bearing Little Resemblance to Actual Market Offers

PJM states that the reference price substitution will be done "to approximate what would have occurred had all offers been competitive."⁴⁶ There is little reason to believe, however, that the reference price substitution accurately represents offers that the impacted units would have submitted into the auction absent the "actionable" state policies. Available evidence suggests that offers in past auctions were submitted at prices lower than the reference prices that PJM now proposes to apply to targeted unit offers in Stage 2.⁴⁷ This suggests that, in instances where the repriced unit is setting the clearing price, the proposed reference price substitution is likely to overstate the "competitive" price level that PJM is intending to simulate, with the result being unnecessarily higher auction clearing prices.

Under Capacity Repricing for existing Generation Capacity Resources, PJM proposes to use the "higher of": (1) the resource's Avoidable Cost Rate ("ACR"), whether determined on a resource-specific basis or as a default for that resource type; and (2) the resource's opportunity cost of committing as Capacity Performance.⁴⁸ In

⁴⁶ Ott Letter at 3

⁴⁷ For example, past auctions have cleared at prices substantially lower than Net CONE x B (a reference price under the Repricing Proposal), meaning that all cleared offers were submitted at prices less than Net CONE x B.

⁴⁸ PJM Filing at 82.

determining the resource's opportunity cost, seller must use actual values for "the availability ratio, the number of Performance Assessment Hours ("PAH"), the Balancing Ratio, and the Capacity Performance bonus payment rate".⁴⁹ However, in the event that there is no Avoidable Cost Rate obtainable for a resource (i.e., the resource-specific Avoidable Cost Rate cannot be determined and there is no default value for that resource type), then the Actionable Subsidy Reference Price for the resource will be PJM's default Market Seller Offer Cap, which is the Net CONE times the Balancing Ratio (i.e., Net CONE*B).⁵⁰

For Planned Generation Resources, as above, PJM is proposing to use "higher of" the resource's costs, which includes a risk premium for assuming a Capacity Performance obligation and net of Projected PJM Market Revenues, or its opportunity costs to determine a resource's Actionable Subsidy Reference Price. However, because the cost data for determining the ACR is not available, PJM is proposing to employ the FERC-approved MOPR unit-specific exception provisions for determining a planned resource's unit-specific costs.⁵¹ For Demand Resources, because the determination of an ACR generally is not feasible due to the inherent nature of the resource type, the Actionable Subsidy Reference Price shall be the Market Seller Offer Cap, i.e., Net CONE*B.⁵²

The MOPR-Ex proposal also employs many of these same methods to reprice seller offers with actionable subsidies. PJM proposes that the MOPR Floor Offer Price

⁴⁹ *Id.* at 87.

⁵⁰ *Id.* at 88.

⁵¹ *Id.* at 88.

⁵² *Id.* at 90.

shall be the product of the Net CONE (applicable for the Delivery Year and LDA for which such Capacity Performance Resource is offered) times the average of the Balancing Ratios during the PAH in the three consecutive calendar years that precede the BRA for such Delivery Year⁵³, absent an application to offer below the MOPR Floor Offer Price by obtaining a unit-specific exception.⁵⁴

At the outset, it should be noted that none of these artificial price adjustment mechanisms reflect actual competitive market outcomes. Even where unit specific pricing mechanisms are permitted, PJM imposes limitations on allowable financial modeling assumptions.⁵⁵ These modeling assumptions can depart significantly from reality. For example, project lives can extend longer than 20 years, and residual values after 20 years can also be substantial. Secondly, the ACR of the actual unit receiving the out-of-market payments may bear no relationship to the competitive market price of the marginal technology, for example, a natural gas fired combined cycle unit, that might otherwise enter the market, but chose not due to the influence and presence of the subsidized unit. Third, market-price based estimates of opportunity costs are also imprecise, and perilous at best, based on actual market outcomes in the first years of Capacity Performance (“CP”). Ironically, the non-performance penalty provisions of CP, improved operational cold-weather procedures, and over-procurement of capacity resources in PJM, have rendered the estimate of performance assessment hours as clearly

⁵³ *Id.* at 104.

⁵⁴ *Id.* at 99.

⁵⁵ *Id.* at 89.

unjustified for the purposes used to establish Net CONE*B as the default market power price cap used in RPM. The derivation of Net CONE*B assumes that the actual number of PAHs is the same number used to calculate the non-performance penalty.⁵⁶ Since the number of PAHs has been zero over the past three years, there is no opportunity cost applicable to the market. Thus, Net CONE*B has proven to be a falsely-derived pricing mechanism based on actual market performance. Moreover, PJM has not provided any information regarding how “actual values” for the availability ratio, the number of PAHs, the Balancing Ratio and the Capacity Performance bonus payment rate are computed. In theory, the proper values of PAHs are the true future projections of performance hours. Obviously, these cannot be determined with any accuracy – they are mere guesses. Using guesses as a means of setting prices is dubious at best and has proven so to date.

Finally, Net CONE, has never been a realistic estimate of capacity market prices. A recent Brattle Report provides sound basis for this fact, when it summarized that, on average, the six auctions since the 2015/16 BRA have cleared at prices **60% below** the Net CONE parameter.⁵⁷ The drivers for this overstatement of estimated market prices by RPM are many and will be further discussed later in these comments.

Thus, by applying the principle of “higher of” pricing on theoretically derived or estimated prices, PJM is likely to impose significant costs on the market that has been documented to be *well above* competitive levels. The PAPUC does not recommend that

⁵⁶ PJM initially used 30 hours as the projected number of PAHs.

⁵⁷ Brattle Group, *PJM Cost of New Entry - Combustion Turbines and Combined-Cycle Plants with June 1, 2022 Online Date*, p. 4.

RPM reprice units to reflect theoretically derived prices, or prices for units that individual states have selected for the value of attributes not valued in PJM markets. Rather, RPM should seek to set prices that reflect *actual* competitive market outcomes.

(iii) Capacity Repricing Should not Apply to Demand Response

As noted above, PJM has proposed that Demand Response resources receiving out of market payments should be repriced a Net CONE*B. Beyond the arguments articulated above that prove that Net CONE*B does not reflect a competitive market outcome, PJM should not subject Pennsylvania demand response programs to seller offer repricing provisions. Pennsylvania Act 129 demand response programs are subject to strict total resource costs tests that ensure that these programs are cost effective, and clearly are not administered for the purposes of suppressing capacity and energy market prices.

(iv) Capacity Repricing Would Provide Incentives to Market Sellers to Underbid in the First Stage of the Auction, Causing Further Price Volatility

The PAPUC's analysis of PJM's Capacity Repricing proposal demonstrates the very real potential of increased system-wide volatility in capacity costs in the future. Interestingly, PJM's filing fails to acknowledge this possibility in its various modelling simulations. The basis for the PAPUC's concern is one of simple economic principles. All markets share a fundamental characteristic- a seller's offer price determines whether the seller will make a sale, and the offer price also puts a lower bound on what the seller will be paid if chosen to make a sale. A seller offering at a lower price increases the

chance of making a sale, but allows clearing at a lower price, which may reduce profits or may even result in a loss. Conversely, offering at a higher price ensures there won't be a loss and may be higher profit, but increases the chance of not making a sale. Under "ideal" market conditions (or perfect competition)⁵⁸, seller's offer prices will match the marginal cost of production, resulting in competitive market prices. Even under "non-ideal" market conditions (or imperfect competition)⁵⁹, the interplay of seller offer prices and potential price, unit cost of production and unit profit will still create an equilibrium that disciplines sellers' offers — offering too low reduces potential price and unit profit, while offering too high likely reduces the quantity that will be sold.

PJM's Capacity Repricing proposal removes this equilibrium and the resulting offer price discipline by segregating the determination of whether a sale is made from the determination of the price to be paid. Under PJM's proposal, sellers' offer prices determine whether they will be selected in the auction. However, the price the chosen sellers will be paid is determined in a separate, algorithmic process that utilizes a different set of offer prices. Using different offer prices to determine who makes a sale, and what they will be paid, results in two problems:

- If sellers expect the price to be paid will be above their cost, they have incentives to offer below cost, to increase their chance of being chosen to make a sale in the first stage of the auction. This form of behavior has been characterized as a "race to the bottom" in economic theory. Low-balling prices results in larger quantities

⁵⁸ See Andreu Mas-Colell, *On the Theory of Imperfect Competition* at 18. (1984); Ideal market conditions are defined to be one of many sellers, standardized products, perfect resource mobility into and out of the market, perfect knowledge of prices and technology.

⁵⁹ *Id.* Non-ideal market conditions are defined as a situation of fewer sellers, heterogeneous products, imperfect knowledge of prices and technology and the presence of market power.

clearing at a lower price due to the downward sloping capacity demand curve.

- For sellers that do not expect to make a sale for at least a portion of their portfolio, they have incentives to offer the resources that will not be chosen at the highest allowed price, to increase the administratively-determined price to be paid. This behavior will tend to increase the administrative price that will be paid to the cleared resources.

These two problems have two undesirable impacts:

1. The cleared quantity may be larger (due to "race to the bottom"), and the capacity price may be artificially depressed initially. These prices will not correspond to any true market-clearing result.
2. The supply curve built from sellers' offers will become relatively "thin" and steep in the intermediate price range that normally would be determining the market-clearing prices and quantities. This could potentially lead to volatile pricing, if resulting artificially depressed capacity prices lead to market exit, and if residual market participants subsequently exert market power.

At the bottom end, lower clearing prices could result in more resources seeking subsidies to make up their true costs should they bid too aggressively to clear in Stage 1. At the top end, knowing that if sufficient numbers of resources receiving subsidies will push the price up toward Net CONE * B provides additional incentive for resources to seek subsidies and for non-subsidized resources to potentially bid higher than they might have otherwise, particularly within smaller LDAs. While the purpose of PJM's capacity repricing initiative is to anticipate and counteract potential price suppression in the capacity auction from subsidized resources, the PAPUC is concerned, based on fundamental economic theory, that capacity repricing will likely lead to volatile, lower

prices, and/or potentially higher capacity prices, as compared to the current single-stage auction clearing mechanism.

In the second stage of the auction process, PJM proposes to administratively adjust the price offers of targeted units that are committed in Stage 1, based on reference price levels for those targeted units. The clearing price in Stage 2 would then be paid to all resources that were committed in Stage 1 and charged to all load serving entities. The Stage 2 clearing price remaining below the repriced units' reference price level depends upon offers of non-repriced units in Stage 1. However, the level of those non-repriced unit offers is impacted by many factors, including the competitiveness, or lack thereof, in capacity supply.⁶⁰ Moreover, PJM's proposed price substitution to approximate a competitive capacity price offer, as discussed in the previous section above, may overstate reasonable pricing impacts resulting in Stage 2.

The PAPUC is also concerned that the low-price offer incentives created in Stage 1 may lead to more LDA binding, and resulting zonal price separation, than would occur under the current single-stage auction design. Zonal price separation provides additional market power to resource owners within the constrained zone, particularly those with large portfolios of generating units. Analyses provided in the PJM filing do not provide the needed "real world" two-stage simulation modelling to predict how frequent zonal price separations will be under the proposed two-stage auction process.

⁶⁰ In constrained locational delivery areas, competition is more limited, increasing the concern about high Stage 2 auction clearing prices in those areas.

(v) Capacity Repricing and MOPR-Ex Could Result in Subsidized Resources in One State Significantly Increasing Market Prices in Another State

To the extent above-market, administratively determined capacity prices, which bear little resemblance to historical lower, competitively based capacity prices, set capacity market prices under Capacity Repricing or MOPR-Ex, such prices could be exported to neighboring state LDAs. Thus, one state’s policies could impact an adjacent state’s capacity market prices to a substantial degree in transmission constrained zones where the lack of or a “thin” market for competitive generation offers cannot adequately mitigate capacity market power. The PAPUC is particularly concerned about the impact of these proposals to capacity pricing in its more constrained Eastern Mid-Atlantic Area Council (“EMAAC”) LDA.

(vi) MOPR-Ex Can Result in a State’s Customers Paying Twice for Capacity and Further Suppressing Energy Prices.

As noted by PJM, if the resource can remain in service without PJM capacity market revenues, then loads bearing the cost of the subsidy will effectively pay twice for the same increment of capacity—once through the PJM capacity market, and once through the subsidy payments.⁶¹ MOPR-Ex, when applied, would require a state’s customers to pay twice for capacity related to the mitigated resource that did not clear in the BRA. Thus, while the MOPR-Ex provides a strong incentive not to provide non-market payments to a resource, it is not accommodative of some state policies. Such

⁶¹ PJM Filing at 43.

state policies may value environmental attributes, for example carbon, that are not valued in PJM markets.

Importantly, forcing load to pay twice for capacity, or essentially, over-procuring capacity, also has an energy price suppression effect on the PJM market. This effect was properly identified by PJM as a legitimate market distortion related to over-procurement of capacity resources in general.⁶² Of course, to the extent PJM's Capacity Repricing results in capacity prices above competitive levels, that too will depress energy prices, since resources which should otherwise leave the market, are sustained in the market through such high capacity prices. As will be discussed later, energy price suppression has a particularly negative impact to low-marginal cost, base load resources, such as nuclear units, which underlie one of the most pressing issues before us, as articulated by PJM.⁶³

B. PJM Should Examine More Holistic Solutions and Allow Current Energy, Ancillary, Fuel Security and Capacity Market Reforms to Work Their Way Through the Stakeholder Process

PJM has focused exclusively on the alleged need to adjust capacity prices upward to reflect the impact of out-of-market payments to, essentially RPS and nuclear units. However, if capacity market price suppression was the issue, one would be led to the efficient market conclusion that the market should be short of capacity. However, just the opposite is the case. PJM is flush with capacity. PJM commented that recent

⁶² *Id.* at 57.

⁶³ *Id.* at 25-28.

capacity market auctions have seen tens of thousands of megawatts of new combined cycle gas enter in the face of historically low wholesale energy prices and very robust reserve margins, over 23% from capacity commitments in the most recent BRA.⁶⁴

If capacity market prices appear to be attracting sufficient capacity, then what other issues could be driving the need to provide out-of-market revenues to renewable energy resources and nuclear units? Perhaps a parallel question might be, where do these relatively low or no fuel cost units get most of their revenues? The answer would be energy markets. Therefore, the logical conclusion would be to consider a more market-based solution to the market interventions experienced more recently in the PJM markets including a discussion of what is suppressing energy prices.

PJM has already noted that a MOPR-Ex approach would suppress energy prices through the duplicative capacity procurement identified above. However, Capacity Repricing would also compound the retention of unneeded capacity in excess of reserve requirements by increasing capacity prices, which, over the long term, attracts more capacity, resulting in more energy price suppression.⁶⁵

The causes of over procurement of capacity resources in PJM markets is very complex and has many causes. It is these causes that should be examined prior to making further administrative pricing adjustments to RPM.

⁶⁴ *Id.* at 10-11.

⁶⁵ In PJM markets, generation resources receive revenues from energy, capacity and ancillary service markets. If one source of revenues increases, then, in the long run, other sources of revenues will decrease in a market characterized by efficient entry and exit of generation resources with fixed costs.

The first of these causes is persistent PJM demand over-forecasting in the BRA. As noted in a recent IMM report, an analysis of the RPM auctions for the 2013/2014 through 2017/2018 delivery years shows that the peak load forecast for the Third Incremental Auction has been, on average, 6.2 percent lower than the peak load forecast for the corresponding BRA. If the peak load forecast for the 2020/2021 RPM BRA had been 6.2 percent lower and everything else had remained the same, total RPM market revenues for the 2020/2021 RPM BRA would have been \$5,489,678,329, a decrease of \$1,475,001,419, or 21.2 percent, compared to the actual results. From another perspective, using PJM’s peak load forecast for the 2020/2021 BRA resulted in a 26.9 percent increase in RPM revenues for the 2020/2021 RPM BRA compared to what revenues would have been using a load forecast that is 6.2 percent below the PJM peak load forecast.⁶⁶ While PJM has made efforts to improve its forecasting, it should examine other methods, including reinstatement of some level of the short term resource procurement until PJM can affirmatively demonstrate correction of BRA over-forecasting error.

Secondly, PJM should examine and appropriately adjust the magnitude of the Net CONE values and the shape and position of Variable Resource Requirement (“VRR”) curves used to derive clearing capacity prices volumes in the BRA. Fortunately, on April 25, 2018, the first of several PJM Market Implementation Committee (“MIC”) Special Sessions met to discuss the tariff required RPM Quadrennial Review performed

⁶⁶ Monitoring Analytics, Analysis of the 2020/2021 RPM Base Residual Auction, p. 11.

by the Brattle Group (beginning in August 2017), that estimates Cost of New Entry (CONE) and reviews PJM’s method for estimating the net energy and ancillary services (E&AS) revenue offset (to calculate Net CONE) and the VRR curve shape. The updated 2022/2023 CONE estimates provided by the Brattle Group compared to the 2021/2022 values, have decreased sharply by 22-28% for Simple-Cycle Combustion Turbines (“CTs”)⁶⁷ and by 40-41% for Combined Cycles (“CCs”)⁶⁸ driven by economies of scale on larger turbines, a reduced Federal corporate tax rate and lower cost of capital. Brattle also recommended that PJM adopt a CC as the reference technology⁶⁹, but also acknowledged the argument for a CT-based curve if PJM and stakeholders *are highly risk averse* about ever procuring less than the target reserve margin.⁷⁰ Lastly, Brattle recommended some technical shifts and changes in pricing points on the VRR curve.

While the PAPUC appreciates the reliability objectives of RPM, it is also important that we fully understand and evaluate the interrelated impacts to capacity costs, the impact to energy prices and the resultant viability of baseload resources, and the layers of conservatism that are imbedded in the Installed Reserve Margin (“IRM”), the BRA demand forecast, and the RPM VRR.

PJM has also initiated an effort to improve energy and ancillary market pricing provisions. This multi-pronged effort includes modifications to the Synchronized

⁶⁷ PJM has traditionally estimated CONE and Net CONE based on a gas-fired simple-cycle combustion turbine (CT) as the reference resource. Brattle Group, PJM Cost of New Entry - Combustion Turbines and Combined-Cycle Plants with June 1, 2022 Online Date, p. 1

⁶⁸ Brattle at iv-vi.

⁶⁹ The Brattle Group, Fourth Review of PJM’s Variable Resource Requirement Curve, April 19, 2018, p. 32.

⁷⁰ Brattle at iv.

Reserve Market, Dynamic Reserve Zone Modeling changes, Simplified Operating Reserve Demand Curve (“ORDC”) Enhancements, and Fast-Start Pricing compliance filings in the short term, and 30-Minute Reserve Market, Complete ORDC Modeling, perhaps continuation of the Fast-Start Pricing changes in the medium term.⁷¹

Beyond energy and ancillary market reforms, PJM has also recently initiated a process to define and establish fuel security criteria to use market forces to allow all resources to compete to meet those criteria, if future circumstances necessitate. The objective, according to PJM, is to identify triggering thresholds (such as a simulated loss of load) that indicate locations on the system where additional fuel security assurance is needed. PJM could then model those locations as constraints in the capacity market, just as PJM models transmission constraints today when determining the parameters that form the locational requirements in the capacity auction, with a goal of implementation by the May 2019 Base Residual Auction.⁷²

The determinations of the potential impacts of these energy, ancillary and fuel security market proposals, as well as review of forecast errors and VRR parameters in the Quadrennial Review process, should be permitted to work their way through the stakeholder process, and the pricing improvements resulting therefrom should be observed prior to adding further administrative complexities to RPM.

⁷¹ <http://www.pjm.com/-/media/committees-groups/task-forces/epfstf/20180418/20180418-item-04-epfstf-pjm-proposed-goals.ashx>.

⁷² <http://www.pjm.com/-/media/library/reports-notice/special-reports/2018/20180430-valuing-fuel-security.ashx>

C. To The Extent The Commission Finds Merit To Move Forward With A Capacity Repricing Or MOPR-Ex Proposal, The Commission Should Direct PJM And Stakeholders To Resolve Certain Defects Inherent In Its Proposals

The PAPUC appreciates the gravity of the potential threat presented by state sponsored out-of-market subsidies. In fact, Pennsylvania was a strong advocate for the original MOPR as it applied to new gas fired generation entry that had a clear effect on the marginal price of capacity.⁷³ However, the proposed tariff modifications to RPM herein are not sufficiently accommodative of state energy policy and the solutions proposed do not advance competitive market pricing principles. If the Commission should consider it necessary to further consider a modified provision of MOPR-Ex or Capacity Repricing, the PAPUC recommends FERC direct the parties to address the following infirmities of its proposals:

- Market outcomes should reflect competitive market outcomes, not repricing based on theoretical concepts, inappropriate limits on financial modeling assumptions, or non-marginal unit reference pricing;
- Stakeholders should develop mechanisms to ensure that state programs do not unreasonably impact capacity pricing in other states;
- State demand response and energy efficiency programs that are firmly economically grounded in total resource costs tests performed by the states should not have seller offers adjusted;
- Stakeholders should ensure solutions do not result in unintended consequences of incenting lower bidding in any two-stage proposal, or otherwise result in greater capacity market price volatility;

⁷³ See PAPUC Comments in response to the February 1, 2011 *Complaint and Request For Clarification Requesting Fast Track Processing filed by PJM Power Producers* (“P3 Complaint”) in Docket No. EL11-20-000, and the February 11, 2011 Federal Power Act (“FPA”) *Section 205 filing by PJM Interconnection, L.L.C. (“PJM”) to amend its Minimum Offer Price Rule (“MOPR”)* in Docket No. ER11-2875-000 (“PJM 205 Filing”).

- Solutions should not result in paying for capacity twice, or otherwise cause over-procurement of capacity, at the expense of further suppressing energy prices;
- The FERC should seek to avoid, to the extent possible, collision between its FPA authority and the authority Congress reserved for the states over retail rates and over policies intended to foster retail competition, renewable generation, demand response, and energy conservation.

IV. CONCLUSION

For all the foregoing reasons, the PAPUC respectfully requests the FERC reject PJM's Capacity Repricing Proposal *and* PJM's MOPR-Ex Proposal as submitted, and direct PJM to improve its BRA forecasting and RPM parameters. The PAPUC further requests that FERC require PJM to continue its stakeholder process on energy and ancillary markets to reduce over-procurement of capacity resources. Over procurement of capacity resources contributes substantially to the suppression of energy prices in the PJM markets. In the alternative, if FERC finds some merit in PJM's proposals, the PAPUC requests that FERC assign whatever is its preferred alternative to an expedited paper hearing and/or settlement judge proceeding to allow interested parties to better examine either or both proposals.

Respectfully submitted,

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Dated: May 7, 2018

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I am on this date serving a copy of the foregoing document upon each person designated on the official service list compiled by the Federal Energy Regulatory Commission in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure.

Dated at Harrisburg, PA this 7th day of May 2018.

Respectfully submitted,

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