124 FERC ¶ 61,272
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Joseph T. Kelliher, Chairman;
Suedeen G. Kelly, Marc Spitzer,
Philip D. Moeller, and Jon Wellinghoff.

PJM Interconnection, L.L.C. — Docket Nos. ER05-1410-000, EL05-148-000

ORDER ON MOTION FOR TECHNICAL CONFERENCE

(Issued September 19, 2008)

1. On March 19, 2008, RPM Buyers[1] filed a motion (Motion) requesting the Commission to convene a technical conference to examine the performance of the Reliability Pricing Model (RPM) capacity market construct recently implemented by PJM Interconnection, L.L.C. (PJM). In an order issued on April 17, 2008, the Commission required PJM to provide information in response to the issues raised by RPM Buyers in a report to be filed with the Commission.[2] In this Order, the Commission addresses PJM's report, directs further proceedings, and grants RPM Buyers' motion for a technical conference.

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[1] RPM Buyers consist of: Blue Ridge Power Agency; the Maryland Public Service Commission; Office of the People's Counsel for the District of Columbia; Office of the Ohio Consumers' Counsel; the PJM Industrial Customer Coalition; United States Department of Defense and other affected Federal Executive Agencies; Delaware Public Service Commission; Public Service Commission of the District of Columbia; New Jersey Board of Public Utilities; the Pennsylvania Office of Consumer Advocate; Pennsylvania Public Utility Commission; the Public Power Association of New Jersey; Southern Maryland Electric Cooperative, Inc.; Commonwealth of Pennsylvania Department of Environmental Protection; Industrial Energy Users -- Ohio; Maryland Office of People's Counsel; American Forest & Paper Association; Illinois Municipal Electric Agency; American Municipal Power - Ohio, Inc.; Duquesne Light; and Portland Cement Association.

[2] *See PJM Interconnection, L.L.C.*, 123 FERC ¶ 61,037 (2008) (April 17 Order).

I. Background

2. As discussed in prior orders,[3] in December 2006, the Commission found that PJM's existing capacity market was unjust and unreasonable, because it failed to procure sufficient capacity to enable PJM to maintain a reliable transmission system. To address this upcoming capacity problem, the Commission accepted PJM's proposal to institute the RPM program: a capacity market under which PJM purchases capacity on a multi-year forward basis through an auction mechanism.[4] Prices for capacity are determined by these forward auctions. To date, PJM has conducted five base residual auctions, which have determined capacity prices for delivery years 2007-2012.

II. RPM Buyers' Motion and the Commission's April 17 Order

3. On March 19, 2008, pursuant to Rule 212 of the Commission's Rules of Practice and Procedure,[5] RPM Buyers filed a motion asking the Commission to convene a technical conference to examine the performance of RPM.[6] RPM Buyers expressed concern that RPM has resulted in increased prices without a commensurate increase in new capacity and reliability benefits. RPM Buyers submitted an analysis by James F. Wilson of the LECG Group (Wilson Report) of the first four base residual auctions conducted under RPM.[7] The Wilson Report concludes that the results of the first four

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[3] *See PJM Interconnection, L.L.C.*, 122 FERC ¶ 61,264 (2008).

[4] *PJM Interconnection, L.L.C.*, 117 FERC ¶ 61,331 (2006) (December 22 Order).

[5] 18 C.F.R. § 385.212 (2008).

[6] On May 30, 2008, RPM Buyers also submitted a complaint against PJM in Docket No. EL08-67-000, requesting the Commission to find that the implementation of RPM auctions during the transition period produced unjust and unreasonable capacity prices and to establish a refund effective date as of the date of the Complaint. The Commission's order on that complaint is being issued concurrently with this order.

[7] James F. Wilson, "Raising the Stakes on Capacity Incentives: PJM's Reliability Pricing Model (RPM)." March 14, 2008. Prepared for the American Public Power Association.

auctions "call into question" whether RPM is achieving its intended goals, and suggests that the Commission may need to effect changes in RPM to address design flaws.[8]

4. As a result, RPM Buyers requested the Commission to hold a technical conference to address eight specific issues: (1) whether the higher capacity prices in the first four base residual auctions relative to PJM's pre-auction simulations and reasonable expectations can be fully explained, and what changes a full understanding of these differences would suggest for RPM; (2) whether RPM prices have been instrumental in stimulating new generation, new demand response, or retention of capacity resources that would otherwise have deactivated, and how RPM can more effectively attract and retain capacity resources; (3) whether the "avoidable cost" offer mitigation mechanisms and other administrative mechanisms have been effective in preventing withholding, and what modifications to those mechanisms may be needed; (4) whether the higher prices in certain locations served a useful purpose in the first three base residual auctions and whether they will serve a useful purpose going forward; (5) whether the slopes of the Variable Resource Requirement (VRR) demand curves used to determine capacity prices provide inappropriate incentives to withhold capacity; (6) whether PJM's administrative mechanisms for setting reliability requirements within local delivery areas have appropriately reflected the need for new capacity, and what changes should be made to reflect needed capacity more accurately; (7) whether RPM's mechanism for determining the net Cost of New Entry (CONE), which uses historical energy and ancillary service revenues, produces prices that accurately reflect the need for new capacity, and whether there are more accurate ways to set capacity prices; and (8) whether RPM supports state initiatives for demand reduction, renewable energy resources, and base load generation, and what modifications may be necessary in light of these state initiatives.[9]

5. On April 2, PJM filed an answer to the motion, in which it asked the Commission to await the outcome of the broad review of RPM by PJM and its stakeholders that PJM had already initiated before ruling on the need for a technical conference. PJM stated that it had commissioned an independent assessment of the RPM auction results by an outside consultant, the Brattle Group, whose report was expected by June 30, 2008.[10]

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[8] Motion at 4.

[9] *Id*. at 14-15.

[10] In a February 28, 2008 letter to stakeholders, PJM stated that this analysis of RPM would include a review of the five RPM base residual auction results up to and including the 2011/2012 auction. The scope of this review included: (1) review of the shape of the VRR Curve and the CONE reference price; (2) review of the net energy and

(continued…)

6. PJM also stated that, if the Commission decides after the full PJM review of RPM that a technical conference would be useful, PJM "would not necessarily object."[11]

7. In its April 17 Order, the Commission, agreed to delay adopting further proceedings, stating:

> Given that PJM is engaged in an evaluation of RPM, which may provide some or all of the information that RPM Buyers are seeking, we believe PJM's RPM assessment could provide valuable information that could aid the Commission in its consideration of RPM Buyers' motion. Additionally, we agree with PJM that the outcome of the May 2008 auction should provide additional information that would assist the Commission in considering the issues raised by the RPM Buyers. We therefore consider it premature to convene a technical conference before PJM completes the evaluation and submits the outside consultant's report. We also note that the list of issues that PJM has already committed to examine is comprehensive and commend PJM for its effort. However, as the RPM Buyers have pointed out, this list does not cover all of the specific concerns that the

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ancillary services revenue offset methodology; (3) review of the Locational Delivery Area definitions and the procedures for establishing new Locational Delivery Areas; (4) review of the 3-year forward commitment period; (5) review of the ability of RPM to sustain infrastructure investment, and review of the capital expenditure and project investment provisions for upgrades to existing generation resources; (6) review of demand response participation rules to investigate potential barriers to entry; (7) review of the interaction between the ability of a resource to offer into RPM and to comply with the generation interconnection queue process in the PJM Regional Transmission Expansion Plan (RTEP) process; (8) review of generation and demand response performance requirements and non-compliance penalty structures to ensure that these resources have the appropriate incentive to perform based on their forward commitments; (9) review of the incentives for existing resources to participate in the RPM auctions; and (10) review of the incremental auction rules as they relate to incentives to participate in the RPM Base Residual Auctions. PJM's Market Monitoring Unit was also invited to participate in the analysis. *See* attachment to PJM Answer.

[11] PJM Answer at 2.

> RPM Buyers raise in their motion and seek to discuss in more detail. While PJM's proposed June 30 report may shed light on these issues, it does not provide the detail that RPM Buyers seek and that the Commission believes PJM should analyze.[12]

8. Therefore, the Commission ruled that:

> Pursuant to sections 304, 307(a) and 309 of the Federal Power Act (FPA),[13] we direct PJM to discuss in its analysis of RPM and proposed June 30 report the issues that RPM Buyers raise in their motion, and to specifically identify, in its report, what parts of that report respond to the issues identified by RPM Buyers above. We will also require PJM to file its report in this docket, upon issuance, as an informational filing.[14]

9. The Commission also required PJM to file, as an informational filing in this docket, a summary of the post-report stakeholder proceedings, within 15 days of the conclusion of those proceedings. Finally, the Commission noted that following receipt of PJM's report, the Commission might at that time convene a technical conference, or take other appropriate steps.

III. <u>PJM's June 30, 2008 Informational Filing</u>

10. As directed, on June 30, 2008, PJM filed with the Commission its informational report containing the study by PJM's consultant, the Brattle Group (the Brattle Report).[15]

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[12] April 17 Order at P 11.

[13] 16 U.S.C. § 825c (2000) (every public utility shall "file with the Commission such annual and other periodic or special reports as the Commission may . . . prescribe as necessary or appropriate to assist the Commission in the proper administration of" the FPA); 16 U.S.C. § 825f(a) (2000) (Commission "may investigate any . . . matters which it may find necessary or proper in order to . . . aid in the enforcement of the provision of this Act or in prescribing rules or regulations thereunder"); and 16 U.S.C. § 825h (2000) (Commission "shall have power to perform any and all acts . . . as it may find necessary or appropriate to carry out the provisions of" the FPA).

[14] April 17 Order at P 12.

[15] "Review of PJM's Reliability Pricing Model (RPM)," report by Brattle Group (Brattle Report), Attachment A to June 30, 2008 informational filing by PJM.

In its filing, PJM also submitted the response of PJM's Market Monitor, Joseph Bowring, to three of the eight issues raised by RPM Buyers in their motion for a technical conference, which were not covered by the Brattle Report.[16]

11. PJM states that the Brattle Report should not be seen as necessarily representing PJM's or any stakeholders' views on what changes, if any, are needed to RPM. Rather, it maintains that PJM's views will be informed by the stakeholder process along with the Brattle Group's analysis and discussions with the state commissions in the PJM footprint.

12. Generally, the Brattle Report recommends "maintaining the basic design elements, including the sloped VRR curve, the 3-year forward time frame, and the 1-year commitment periods" of the current RPM mechanism, and notes that its recommendations would "modify rather than fundamentally change the basic design elements of RPM."[17]

A. Brattle Report Findings Regarding RPM Buyers' Concerns

13. The Brattle Report expressed similar concerns about some of the issues raised by the RPM Buyers in the motion for the technical conference:

1. Net CONE

14. The Brattle Report agrees with RPM Buyers about the need to revise the framework for determining the energy and ancillary services revenue offsets to Gross CONE. RPM Buyers argued that RPM's mechanism for determining the Net CONE, which uses historical energy and ancillary services revenues, does not produce prices that accurately reflect the need for new capacity, and that there are more accurate ways to set capacity prices. The Brattle Report concludes that using averages of historical energy and ancillary services offsets to determine Net CONE and the VRR curve can (1) create uneconomic and inaccurate price signals; (2) potentially lead to substantial price volatility that can undermine investment incentives; and (3) when used in constrained capacity zones, can significantly exceed future energy and ancillary services offsets,

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[16] Joseph E. Bowring, "Response of Joseph E. Bowring, Market Monitor, PJM Interconnection, L.L.C" (Bowring Response), Attachment B to June 30, 2008 informational filing by PJM, *supra*.

[17] The report does not "specifically address the desirability of forward capacity markets in comparison to fundamentally different market designs, such as energy-only markets." Brattle Report at 1, 4.

which may reflect reduced congestion premiums caused by the construction of new generation in and transmission upgrades into the capacity zone.

15. The Brattle Report also recommends revision of the CONE and energy and ancillary services framework to: (1) reevaluate the chosen reference technology to verify that the chosen technology yields the lowest Net CONE value across a wide range of technology options, taking into account price variations among capacity zones (e.g., a combustion turbine generator may have the lowest Net CONE at an RTO[18]-wide level, but may not in specific capacity zones; a combined cycle generator may be a more appropriate technology); (2) determine the energy and ancillary services revenue offset to Gross CONE based on estimated future energy and ancillary services margins for the reference technology; (3) consider introducing an ex post true-up for actual energy and ancillary services margins earned by the reference technology during the delivery year; and (4) consider updating energy and ancillary services revenue offsets based on forward-looking market information, such as forward prices for natural gas.

2. Energy Efficiency and Demand Response Resources

16. The Brattle Report also agrees with RPM Buyers' concern about the need to provide for participation of energy efficiency resources and greater participation of demand-side resources in the auctions.[19] The Brattle Report recommends that PJM adopt measures that will allow energy efficiency programs to participate in RPM auctions, and be reflected in PJM's load forecast (thus reducing capacity requirements) until after the programs' load reductions appear in the historic data that form the basis for load forecasting. It therefore recommends adopting various measures that allow energy efficiency and price-responsive demand resources to be reflected in RPM on a more timely basis by: (1) reallocating the capacity obligations of individual load zones that were set during the base auction prior to the delivery year to reflect changes in the relative size of zonal peak loads; (2) considering an update to zonal and PJM-wide peak load forecasts prior to incremental auctions; (3) allowing energy efficiency resources to directly participate in the RPM auctions, thus allowing third parties to implement demand-side measures independently of LSEs; and (4) refining PJM's load forecasting process to more accurately project the future impact of demand-side initiatives and to

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[18] Regional Transmission Organization.

[19] However, the Brattle Report is silent on RPM Buyers' critique that the RPM is "seriously misaligned" with PJM states' initiatives within PJM with respect to renewable energy and base load generation resources.

mitigate the risk of overstating or double counting future loads in light of accelerated implementation of demand-side measures.

3. <u>Market Power and Mitigation</u>

17. While the Brattle Report does not specifically address whether current mitigation rules in RPM have been effective, it raises issues about some of the same tariff provisions addressed by the RPM Buyers. RPM Buyers argued that the "avoidable cost" offer mitigation mechanisms and other administrative mechanisms have been ineffective in preventing withholding, and that modifications to those mechanisms may be needed. The Brattle Report recommends consideration of the following options for addressing this issue: (1) including an investment cost adder to the calculation of avoidable cost for the first delivery year only instead of for the expected remaining life of the plant - a change that would be more consistent with competitive bidding behavior and the treatment of new units; (2) revising capital recovery factors to correspond more closely to realistic remaining facility lives; and (3) allowing exemptions to current offer caps if suppliers can document that a higher cap is justified by a shorter remaining life of the facility.

18. PJM's Market Monitor, Joseph Bowring, argues with regard to the auctions that have taken place to date that the Market Monitor "checked every MW of capacity in the PJM footprint and validated that the capacity was offered into each auction or that there was a valid reason for not offering. There was no physical withholding in any RPM auction to date." However, he also notes that "the must offer rules could be modified in several areas to ensure that all relevant capacity is offered into the RPM auctions," e.g., with respect to (a) the participation of Fixed Resource Requirement resources; and (b) offers of units for which ownership ends during a delivery year.

19. With regard to economic withholding, Bowring also argues that the Market Monitoring Unit conducted market power tests and market power mitigation appropriately in accordance with the RPM tariff:

> The Market Monitoring Unit verified the reasonableness of offer data and calculated the derived offer caps based on submitted data, calculated unit net revenues, verified capacity exports, verified the reasons for MW not offered, verified the maximum EFORd rates used, verified EFORd offer segments, verified clearing prices based on the demand curves and verified that the market structure tests were applied correctly. All participants in the RPM auction failed the market structure tests with the result that offer caps were applied to

> all sellers. Based on these facts, the Market Monitoring Unit has concluded that the results of the RPM auctions to date were competitive.[20]

20. Bowring also contends that the Wilson Report does not provide any evidence to support the claim of exercise of market power in the RPM auctions, stating that "Mr. Wilson's claim that market power was exercised by offers greater than avoided cost is not supported by the evidence. The Market Monitoring Unit reviewed the offers in detail and the offers were not above avoidable costs."[21]

4. Locational Delivery Areas and Reliability Requirements

21. RPM provides for the division of the PJM region into separate Locational Delivery Areas, or capacity zones, based on the constraints of those zones. As did the RPM Buyers, the Brattle Report raises issues about the criteria used to determine reliability requirements in those Locational Delivery Areas. The RPM Buyers argued that PJM utilizes an unreasonably high reliability standard (one occurrence of load loss in 25 years rather than the industry standard of one occurrence of load loss in 10 years) for individual Locational Delivery Areas.[22] The Brattle Report likewise expresses concern about the criteria used to determine reliability requirements, and states that "it is unclear whether the 1-in-25 year conditional loss of load expectation target [for Locational Delivery Areas] is at the optimal level." It therefore recommends a broad "re-evaluation of the level and application of current reliability criteria."

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[20] Bowring Response at 5.

[21] *Id.* at 6

[22] For each Locational Delivery Area, PJM performs a Load Deliverability Test to determine if the aggregate of both PJM available capacity and adjacent non-PJM available capacity can be imported to the Locational Delivery Area if that Locational Delivery Area experiences a capacity deficiency. In performing this test, PJM utilizes a loss of load expectation criterion of 1 day in 25 years. The 1-in-25 loss of load expectation refers to the probability of having to shed load due solely to insufficient transmission import capability. The transmission system is tested in this manner at a 1-in-25 loss of load expectation so that the transmission risk does not appreciably diminish the overall target of a 1-in-10 loss of load expectation for PJM. At issue here is whether the 1-in-25 loss of load expectation is an appropriate assigned risk level to use for the loss of transmission and how it applies in the RPM capacity market.

22. The report also recommends (1) defining Locational Delivery Areas electrically rather than on a service area basis; (2) eliminating the pre-auction screen (which can artificially eliminate price premiums in Locational Delivery Areas with adequate but expensive local capacity) or consider raising the threshold used in the pre-auction screen; and (3) allowing incremental auctions to address capacity shortfalls due to changes in Locational Delivery Area's import capability, as measured by the Capacity Emergency Transmission Limit (CETL),[23] relative to the assumptions in the base auction.[24]

B. <u>Other Issues Raised by RPM Buyers</u>

23. The Brattle Report, PJM and PJM's Market Monitor also address the remaining issues raised by the RPM Buyers in their motion for technical conference.

1. <u>Impact on Capacity Resources</u>

24. The Brattle Report does not agree with RPM Buyers' concerns with respect to claims that: (1) RPM has not been effective in stimulating new generation, new demand resources, or retention of capacity resources that would otherwise have deactivated; and (2) higher prices in certain locations have not served the intended purpose of attracting new capacity resources in those areas and are unlikely to do so going forward. On the contrary, the Brattle Report concludes that RPM has been effective in attracting and retaining capacity resources, but expresses a number of concerns relating to the RPM market design. According to the Brattle Report, "despite the very compressed time frame, the five base residual auctions conducted to date have been successful in achieving the stated reliability and economic objectives of RPM." The Brattle Report argues that since RPM was implemented: (1) at least 4,600 MW of capacity have been retained that otherwise would have retired; (2) almost 10,000 MW of incremental capacity have been committed; and (3) the volume of generation interconnection requests has grown to make an additional 33,000 MW of new generation projects that are already eligible to participate in future RPM auctions. More specifically, the Brattle Report states that

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[23] CETL is the amount of energy that can be transferred on an intact system such that no element would be overloaded under the single worst contingency.

[24] For example, under the current RPM rules, PJM assumes that the so-called "TrAIL line," a 240 mile long extra high voltage line that will extend from West Virginia to Northern Virginia, will be built on time for the 2011-2012 delivery year. However, if this line is not built by 2011, PJM's current tariff does not allow PJM to procure additional capacity in the incremental auctions to cover the loss of imports from western PJM into congested eastern zones, because there are no provisions allowing PJM to adjust the parameters of the zonal transmission import limits.

incremental commitments amounting to over 14,500 MW of resources – generation additions, uprates to existing generating capacity, demand-side resources, decreases in net exports, withdrawn requests to deactivate, planned retirements that were cancelled or deferred – that likely would not have been available in the absence of RPM have been made under RPM to date. Moreover, the Brattle Report argues that RPM is helping to retain over 20,000 MW of other existing resources that likely would not be financially viable in the absence of capacity payments.

25. The Brattle Report finds that auction clearing prices have largely followed the pattern set by reserve margins and moved toward the prices required to sustain new entry (Net CONE), and that RPM attracted and retained a substantial amount of resources in the RTO, including in the Locational Delivery Areas. However, the improvement in the Eastern Mid-Atlantic Area Council (EMAAC) and Southwestern Mid-Atlantic Area Council (SWMAAC) Locational Delivery Areas was partly due to the planned new transmission facilities that were projected to be operational in the 2010-2011 and 2011-2012 delivery years. The Brattle Report also notes that the relatively high prices in the SWMAAC and EMAAC Locational Delivery Areas in the first three auctions reflected initial capacity shortages. The highest price occurred in SWMAAC in 2009-2010 when reserve margins were lowest and several thousand megawatts of existing capacity were offered at price levels that reflected the cost of required investments in emissions controls. SWMAAC prices then decreased in the 2010-2011 auction when new demand resources, planned increases in Locational Delivery Area import capability (transmission facilities), and lower offers from existing generating plants eliminated the need to procure higher-cost capacity within the Locational Delivery Area. Also, due to the planned increases in Locational Delivery Area import capabilities, Locational Delivery Areas were not modeled separately in the 2011-2012 auction. New generation capacity was not added in significant amounts prior to the 2009-2010 delivery year. The most significant commitment of new generating capacity occurred for 2011-2012, the first year for which the base auction was conducted a full three years prior to delivery. The first auctions attracted less new generation capacity because they were part of the "transition period" in which auctions were held less than three years ahead of delivery, which likely was insufficient lead time to attract new generation.

2. Difference Between Simulation Results and Actual Auction Results

26. The Brattle Report does not address RPM Buyers' request for an explanation for the difference between the higher capacity prices in the first three base residual auctions and PJM's pre-auction simulation prices. However, the Report concluded that the prices

were reasonable—they “largely followed the pattern set by reserve margins and moved toward the price required to sustain new entry (i.e., Net CONE).”[25]

27. In its transmittal letter, PJM states that it had previously explained (in its answer to RPM Buyers’ motion) that it had made it very clear to stakeholders prior to implementation of the RPM that the pre-auction simulations were not intended to form the basis for any party’s expectations or predictions of actual clearing prices.[26]

3. VRR Curve and Incentives to Withhold Capacity

28. The Brattle Report does not directly address RPM Buyers’ concern that the slopes of the VRR demand curves provide inappropriate incentives to withhold capacity. RPM Buyers argued that sellers have strong incentives, and the ability, to exercise market power through physical and economic withholding, and that mitigation rules may be ineffective in preventing withholding. However, the Brattle Report explicitly states that a sloped VRR curve helps to mitigate the potential exercise of market power by reducing the incentive for suppliers to withhold capacity near target reserve margins. The Report also notes that its simulations showed that the settlement-based VRR curve can perform poorly if the Net CONE value used to anchor the VRR curve is below the true Net CONE value. Joseph Bowring, PJM’s Market Monitor, addresses this issue in his response as follows:

> The existence of structural market power and the associated incentives to exercise market power are part of the basic facts about capacity markets. While the shape of the VRR curve adds some elasticity compared to the vertical demand curve of the prior capacity market construct, it is not adequate to mitigate the existing structural market power. The inclusion of some elasticity is an improvement over the vertical demand curve but there are identifiable costs and benefits associated with the inclusion of elasticity. . . . In some cases, the introduction of elasticity resulted in a higher clearing price than would have occurred with a vertical demand curve. However, the shape of the VRR curve does not provide “inappropriate incentives to withhold capacity.”[27]

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[25] Brattle Report at 14.

[26] PJM’s Informational Filing at 2, n. 9.

[27] Bowring Response at 9-10.

C. Issues Covered in the Brattle Report that were not Raised by the RPM Buyers[28]

29. In addition to the issues raised by the RPM Buyers, the Brattle Report also examined other aspects of RPM.

1. Rules that Restrict Capacity Resource Participation

30. Under RPM rules, all existing capacity resources must offer their available capacity into the RPM capacity auctions unless this capacity is (1) exported to non-PJM entities; (2) committed to satisfy the reliability requirements of LSEs that have elected the Fixed Resource Requirement alternative to the market clearing mechanism; or (3) formally "excused" from participation in RPM auctions.[29]

31. The Brattle Report and PJM's Market Monitor argue that the current RPM rules regarding Fixed Resource Requirement and other excused capacity inefficiently exclude some of the available capacity from the market and recommend that PJM implement changes to reduce the amount of excused capacity, by removing certain restrictions on Fixed Resource Requirement entities and addressing the exclusion of capacity due to partial-year ownership and availability. Both recommend eliminating the "sales cap" imposed on the entities that opt out of RPM's VRR curve-based auctions for 5 years under the Fixed Resource Requirement option. The sales cap limits the total capacity that such entities may offer into the RPM auctions. Currently, the sales cap is equal to the lesser of 25 percent of each Fixed Resource Requirement entity's capacity obligation or 1,300 MW. The Brattle Report argues that elimination of the sales cap is likely to increase capacity available to RPM by close to 1,200 MW.

32. Participation in RPM auctions by Fixed Resource Requirement entities is also limited by a requirement that Fixed Resource Requirement entities with capacity in excess of their reliability requirements retain a "buffer," or a minimum amount of capacity above their capacity obligation before offering their excess capacity in RPM auctions. The threshold for this buffer is the lesser of: (1) three percent of the LSE's capacity obligation, or (2) 450 MW. The Brattle Report recommends that PJM reduce

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[28] While these are not explicitly listed among the eight issues of focus in RPM Buyers' motion, they are discussed in the Wilson Report.

[29] Excused capacity includes capacity that is excluded by an RPM sales cap and certain capacity that cannot currently participate in RPM due to ownership, contractual, environmental, and retirement issues affecting the availability of the resource during part or all of a delivery year.

this buffer to one percent of the LSE's capacity obligation, and require Fixed Resource Requirement entities to cover any deficiencies bilaterally or in the incremental auctions. The Brattle Report argues that setting the threshold at one percent for all Fixed Resource Requirement entities (and including a requirement to procure additional resources, if needed, bilaterally or in incremental auctions) would add approximately 240 MW of supply to RPM auctions. Joseph Bowring agrees with the Brattle Group and adds that if the sales caps on Fixed Resource Requirement entities are eliminated, these resources should be subject to the must offer requirement. According to Bowring, "in order to be consistent and to ensure that Fixed Resource Requirement participants cannot exercise market power by increasing or decreasing auction prices, both modifications are required."[30]

33. The Brattle Report and Bowring also state that while it has not been a significant level of capacity,[31] another source of exclusion of capacity from the RPM auctions relates to units for which ownership ends during a delivery year. They argue that resource owners face disincentives to offer into an auction due to the deficiency penalties they will be assessed if they decide to sell their capacity rights in the middle of a delivery year. Bowring also states that although it has not occurred to date, leaving this issue unaddressed could create a mechanism for physical withholding.

2. Penalties

34. The Brattle Report analyzed the deficiency penalties and found them to be excessive—potentially discouraging entry of new resources and creating unnecessarily high penalty risk for existing resources. Under RPM rules, the deficient supplier must pay the greater of: (1) two times the weighted average resource clearing price it received in the Locational Delivery Area; or (2) Net CONE in the Locational Delivery Area. The Brattle Report asserts that, at the current high level, the deficiency penalty imposes risks on participants that cannot easily be priced into their supply offers, which likely discourages participation in the RPM. The Brattle Report recommends reducing deficiency penalties to 1.2 times the higher of: (1) the auction resource clearing price in which the capacity was originally cleared; or (2) the third incremental auction resource clearing price.

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[30] Bowring Response at 3.

[31] Total capacity excused because of partial-year ownership or contract issues has increased over the first several auctions to more than 200 MW, followed by a decline in the last two auctions.

35. The Brattle Report also states that availability penalties may be insufficient to penalize certain types of resources for being unavailable during peak hours. Currently, penalties for the generators with a degradation of actual availability during the top 500 hours of the delivery year are capped at 50 percent of capacity deficiency. The Report suggests removing the 50 percent penalty cap for generators with poor peak hour performance and making resources at risk for 100 percent of their capacity payments.

36. Finally, the Brattle Report argues that some penalties are unnecessarily asymmetric across resource types. The Report expresses concern that the 20 percent penalty per load management event for non-performing demand resources does not put all of the demand resources' capacity revenues at stake, because there are typically only one or two load management events per year. As a result, with only one or two load management events per year, even entirely unresponsive demand resources would still receive up to 60-80 percent of their capacity payments. Therefore, the Brattle Report recommends requiring demand resources to return the fraction of their revenues corresponding to the fraction of annual load management events to which they did not respond. Under this proposal, a demand resource that responds to half of all load management events would lose half of its capacity payments, while an entirely unresponsive resource would lose 100 percent of its capacity payments.

3. <u>Incremental Auctions</u>

37. Under RPM, almost all capacity committed for a particular delivery year is cleared in the base auction conducted three years prior to the delivery year. A small fraction of capacity can be committed in three subsequent incremental auctions, which occur 23, 13 and 4 months before the start of the delivery year. The current purpose of the first and third incremental auctions is to allow suppliers to buy replacement capacity for capacity committed in prior auctions that has become deficient due to project cancellations, delays, deratings, or availability decreases. The purpose of the second incremental auction is to allow PJM to arrange procurement of additional capacity if its peak load forecast for the delivery year increases after the base auction.

38. The Brattle Report asserts that (1) incremental auctions do not address decreases in load forecasts or CETL after the base auction (as discussed above in the section on reliability requirements); (2) there is too little demand and supply in these auctions to provide sufficient liquidity to efficiently address substantial changes in demand, transmission, or supply availability; and (3) the incremental auctions are not fully consistent with the demand curve concept (for example, the demand curve in the second incremental auction is vertical at a quantity corresponding to the full increase in load forecast).

39. Therefore, the Brattle Report recommends: (1) addressing increases or decreases in Locational Delivery Area import capabilities, as measured by the CETL, similarly to

adjustments in load forecasts; (2) addressing decreases in load forecasts by either selling excess capacity in the incremental auctions or through a reduction in buy bids in redesigned incremental auctions; (3) introducing elements of the downward-sloping VRR curve into the incremental auctions; (4) eliminating the distinctions among the three incremental auctions; and (5) removing the ILR[32] option to encourage participation of these demand-side resources in the base and incremental auctions, which will improve pricing and procurement efficiency.

4. Generation Interconnection Queue

40. The Brattle Report recommends reforms to the interconnection process with respect to "factors that will make participation in the RPM more difficult and more risky for suppliers, which reduces the effectiveness of the RPM design," especially: (1) delays in the interconnection process and (2) interconnection cost uncertainty.

5. Longer-Term Commitment Period

41. The Brattle Report contends that, on an RTO-wide basis, (a) the single-year delivery period should offer sufficient price stability and predictability by virtue of the sloping VRR curve and other RPM design parameters; and (b) the RPM design based on a three-year forward timeframe is likely sufficient and more effective than longer-term forward commitments in attracting capacity to meet reliability requirements cost-effectively. However, it recommends that PJM should consider and further evaluate making a multi-year lock-in mechanism (or an auction product reflecting a multi-year commitment period) broadly available to new resources within Locational Delivery Areas. New resources could be allowed to lock-in the price for a three- to five-year delivery period that incorporates market fundamentals over the entire period (instead of just a single year's price).

IV. Discussion

42. The Commission finds that PJM's instant filing has satisfied, to date, its reporting requirement established in the April 17 Order. PJM plans to make another filing, after it completes the stakeholder review process, in time to implement changes to RPM prior to the next Base Residual Auction scheduled for May 2009.[33]

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[32] ILR (Interruptible Load for Reliability) resources are different from the other demand resources in that they do not participate in the auction and do not commit until three months prior to the delivery year.

[33] In its filing, PJM states (Informational Filing transmittal letter, p. 4) that it has

(continued…)

43. The Brattle Report identifies several important issues with respect to the effectiveness of RPM and makes suggestions for improving certain aspects of RPM. We support PJM's approach of instituting a stakeholder review process to develop proposals to address the issues raised by RPM Buyers and the Brattle Report.

44. Based on our evaluation of RPM Buyers' concerns and the findings made by the Brattle Report and by PJM's Market Monitor, we find that there is significant overlap among them with respect to the RPM issues that need to be addressed. PJM has recognized this need and thereby established the new Capacity Market Evolution Committee (CMEC), which is already addressing these issues and has stated its commitment to file proposals with the Commission to effect some changes by a date certain.[34] Therefore, we encourage PJM to examine the following aspects of RPM design and propose changes, where feasible, for implementation in time for the May 2009 auction: (1) use of historical averages of energy and ancillary services revenue offsets to determine Net CONE; (2) rules for the participation of energy efficiency and demand-side resources in the RPM auctions; (3) market power and mitigation rules; (4) reliability requirements/criteria and defining Locational Delivery Areas; (5) must-offer rules relating to the exclusion of capacity due to (i) the sales cap imposed on Fixed Resource Requirement entities and (ii) partial-year ownership and availability; (6) performance penalties; (7) incremental auctions; and (8) length of forward commitment for new capacity resources.

45. In particular, we expect that PJM and its stakeholders will evaluate in depth the RPM Buyers' concerns and the Brattle Report's suggested revisions with respect to Net CONE. Given the critical importance of Net CONE to RPM, PJM and its stakeholders need to thoroughly review and refine the methodology for determining energy and ancillary services revenue offsets, as well as consider the use of different types of

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scheduled stakeholder meetings at which stakeholders will discuss the Brattle Report. PJM states that this will commence a thorough review of RPM in all respects, with the goal of identifying any needed changes to RPM in time to be filed with the Commission and implemented prior to the next Base Residual Auction scheduled for May 2009.

[34] For instance, PJM and its stakeholders have committed to address energy efficiency issues by December 2008. The September 4, 2008 CMEC Action Plan can be found at: http://www.pjm.com/committees/cmec/downloads/20090904-item-04-action-plan.pdf.

generation technologies for different Locational Delivery Areas, as the Brattle Group has recommended.[35]

46. As RPM Buyers and the Brattle Report recommend, PJM should develop and implement provisions to enable energy efficiency resources to participate in the RPM auctions. Furthermore, as the Brattle Group also recommends, in addition to enabling energy efficiency and demand response resources to participate more directly in RPM, these capacity resources should also be appropriately reflected in PJM's load forecasts. The RPM Settlement, accepted by this Commission in December 2006,[36] committed the settling parties to establish an additional process for incorporating energy efficiency applications in RPM. We expect that PJM will complete this process by December 2008.

47. This Commission consistently has sought to ensure that market power mitigation rules adequately curb the potential to exercise market power. The Brattle Report's findings and recommendations, as well as RPM Buyers' analyses, suggest that PJM may need to reexamine its mitigation rules, particularly with respect to the calculation of avoidable costs and determination of offer caps to ensure that they are consistent with reasonably competitive bidding behavior. Joseph Bowring, PJM's Market Monitor, has also stated that RPM's "must offer rules could be modified in several areas to ensure that all relevant capacity is offered into the RPM auctions." PJM should take care to address specifically: (1) calculation of avoidable costs; (2) effectiveness of the RPM mitigation rules; and (3) application and enforcement of RPM mitigation rules.

48. We also expect that PJM and its stakeholders will review, in accordance with the Brattle Report's recommendations and RPM Buyers' concerns, the methodology for determining the Locational Delivery Areas and the specific reliability requirements, i.e., (1) loss of load expectation criteria; (2) the basis for defining Locational Delivery Areas electrically rather than on a service area basis; and (3) rules pertaining to incremental auctions and the need to address changes in Locational Delivery Area import capability.

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[35] We note that PJM is already in the process of considering changes to Gross CONE, to reflect higher construction prices (*see* http://www.pjm.com/committees/cmec/cmec.html), and we anticipate that as PJM considers changes to Gross CONE, it will also consider possible appropriate changes to the determination of energy and ancillary services revenues, so as to ensure that both Gross CONE and the energy and ancillary services revenue offset contribute as precisely as possible to the determination of Net CONE.

[36] December 22 Order, 117 FERC ¶ 61,331 at P 7, 32.

49. In addition, PJM and its stakeholders should examine whether the must-offer rules could be modified in several areas to ensure that all available capacity is offered into the RPM auctions. In particular, the stakeholders should address the rules governing the participation of Fixed Resource Requirement resources and rules excluding capacity due to a change in ownership. According to the Brattle Report, such changes are likely to reduce the magnitude of excluded capacity, lower RPM clearing prices and increase system reliability in the short-term.

50. PJM and its stakeholders should also examine the effectiveness of the existing deficiency and unavailability penalty provisions of RPM and ensure that penalties are closely matched to capacity resource performance.

51. Finally, PJM and its market participants should explore the structure and conduct of incremental auctions as well as the length of forward commitment by new resources and consider possible revisions.

52. We recognize that PJM's stakeholders are already addressing some of the issues discussed above as well as other issues raised by RPM Buyers and the Brattle Report.[37] We agree with PJM's stakeholder review approach and strongly encourage stakeholders to make efforts to achieve consensus on the issues discussed above in time for implementation prior to the May 2009 RPM auction. To the extent stakeholders are able to reach agreement on changes to RPM with respect to these issues, we strongly encourage PJM to file tariff sheets no later than December 15, 2008, with an effective date of February 1, 2009, in order for the changes to be implemented for the May 2009 RPM auction. In the event stakeholders are unable to reach consensus and/or PJM determines that it is unable, or it is infeasible, to file proposals to implement changes in time for the May 2009 auction, we will require PJM to file a report fifteen days after the completion of the stakeholder process (but no later than December 15).[38] This report

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[37] PJM has established a new Capacity Market Evolution Committee (CMEC) that is responsible for developing recommended changes to the RPM (for additional information about the CMEC, see http://www.pjm.com/committees/cmec/cmec.html). The CMEC is tasked with providing short-term recommendations (to be implemented for the May 2009 Base Residual Auction) to the MRC by December 2008 and to develop a process for discussing long term recommendations. The CMEC plans to meet several times within the next few months to implement a short-term action plan; it has so far held two meetings, on August 8, 2008, and September 4, 2008. Another meeting is scheduled for September 29, 2008.

[38] This report constitutes the second filing requirement of the April 17 Order.

should contain detailed explanations for why changes in the areas listed by the Commission were not made, or could not be made in time for the May 2009 auction, as well as its plans for how and when the outstanding identified changes will be implemented. Furthermore, if PJM and/or its stakeholders believe a change is unnecessary with respect to any of the issues discussed above, we will require PJM to include in its December 15, 2008 report a detailed explanation as to why any such identified issue does not need to be addressed.[39] Stakeholders will have 15 days to comment on PJM's report. At that time, the Commission will determine whether it would be appropriate for us to take action under section 206 of the FPA to require additional changes to RPM. If, at that time, we determine that such action would be appropriate, the Commission intends to take this action in time to ensure that any additional necessary changes take effect prior to the May 2009 auction, where feasible.

53. To supplement the record, pursuant to sections 304, 307(a) and 309 of the FPA[40], the Commission will hold a technical conference in February 2009. The dates of that technical conference and the specific issues will be provided in a separate order.

The Commission orders:

(A) PJM is hereby required to submit a filing no later than December 15, 2008 detailing the RPM issues identified by the Commission in the body of this order.

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[39] We recognize that the stakeholders are addressing longer-term issues that may not be resolved by December 15. We will expect PJM to file a separate report on those issues at a later date.

[40] 16 U.S.C. § 825c (2000) (every public utility shall "file with the Commission such annual and other periodic or special reports as the Commission may . . . prescribe as necessary or appropriate to assist the Commission in the proper administration of" the FPA); 16 U.S.C. § 825f(a) (2000) (Commission "may investigate any . . . matters which it may find necessary or proper in order to . . . aid in the enforcement of the provision of this Act or in prescribing rules or regulations thereunder"); and 16 U.S.C. § 825h (2000) (Commission "shall have power to perform any and all acts . . . as it may find necessary or appropriate to carry out the provisions of" the FPA).

(B) The Commission sets for staff technical conference the matters relating to PJM's RPM design as discussed in the body of this order.

By the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.