

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Maryland Public Service Commission,  
et al.,

Complainants,  
v.

Docket No. EL08-67-000

PJM Interconnection, L.L.C.,  
Respondent

DECLARATION OF JOSEPH E. BOWRING  
MARKET MONITOR, PJM INTERCONNECTION, L.L.C.

JULY 11, 2008

1. My name is Joseph E. Bowring and I am the PJM Market Monitor. My business address is 955 Jefferson Avenue, Valley Forge Corporate Center, Norristown, Pennsylvania 19403. Since March 1999, I have been responsible for the market monitoring activities of PJM, as defined by the PJM Market Monitoring Plan, Attachment M to the PJM Open Access Transmission Tariff (OATT). I am a Ph.D. economist and have substantial experience in applied energy and regulatory economics. I have taught economics as a member of the faculty at Bucknell University and at Villanova University. I have served as a senior staff economist for the New Jersey Board of Public Utilities and as Chief Economist for the New Jersey Department of the Public Advocate's Division of Rate Counsel. I have also worked as an independent consulting economist.
2. The May 30, 2008 complaint by the RPM Buyers raises the issue of whether there was market power exercised in the RPM auctions to date. I address that issue in this declaration.
3. In the capacity market, as in other markets, market power is the ability of a market participant to increase the market price above the competitive level or to decrease the market price below the competitive level. In order to evaluate whether actual prices reflect the exercise of market power, it is necessary to evaluate the competitive market offers.

Market power may be exercised by withholding. Withholding can take two forms, physical withholding and economic withholding. Physical withholding in the capacity market would be implemented by failing to offer available capacity into the auctions. Economic withholding in the capacity market would be implemented by offering capacity at a price greater than a competitive offer.

The market design for capacity leads, almost unavoidably, to structural market power in the capacity market. The capacity market is unlikely ever to approach a competitive market structure in the absence of a substantial and unlikely structural change that results in much greater diversity of ownership. Nonetheless a competitive outcome can be assured by appropriate market power mitigation rules. Detailed market power mitigation rules are included in the RPM tariff. This represents a significant advance over the prior capacity market design. Reliance on the RPM design for competitive outcomes means reliance on the market power mitigation rules. Attenuation of those rules will mean that market participants will not be able to rely on the competitiveness of the market outcomes. Ongoing review of those rules to ensure their efficacy is appropriate.

4. The RPM tariff addresses the issue of physical withholding with a must offer requirement that obligates the owners of capacity to offer capacity into the RPM auctions. The Market Monitoring Unit (MMU) 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.<sup>1</sup> For example, a valid reason for not offering a unit is that the unit was not expected to be in operation for the delivery year and that such unavailability could be documented. Another valid reason for not offering a unit is a documented, externally imposed environmental restriction. There was no physical withholding in any RPM auction to date.

5. The RPM tariff addresses the issue of economic withholding with clear market power mitigation rules governing the offers of existing units. The RPM tariff rules also provide for a broad review of the offers of new units.<sup>2</sup> The RPM tariff provides for a market power test.<sup>3</sup> If an owner fails the market power test, the owner's units are subject to offer capping in order to ensure that competitive offers are made, i.e. that there is no economic withholding. To date, the MMU has had responsibility for calculating default offer caps, offer caps based on ACR levels and offer caps based on a combination of ACR and APIR levels (defined below) including detailed discussions with unit owners and the review of supporting data and documentation.<sup>4</sup>

Only those participants that fail the market power test are subject to offer capping. All participants in the total PJM market as well as all LDA RPM markets failed the three pivotal supplier (TPS) market structure test in each base residual auction, but not all participants failed the TPS test in the 2008 - 2009 Incremental Auction. The result was that offer caps were applied to all sell offers in the base residual auctions, except sell offers for new units. The offer caps are designed to reflect the marginal cost of capacity. The marginal cost of capacity is termed the avoidable cost rate (ACR).

6. Avoidable costs are the costs that a generation owner would not incur if the generating unit did not operate for one year, in particular the delivery year (ACR).<sup>5</sup>

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<sup>1</sup> Reports analyzing each of the RPM auctions are posted under "RPM Materials" at <http://www.pjm.com/markets/market-monitor/messages.html>.

<sup>2</sup> See PJM Open Access Transmission Tariff (OATT), "Attachment DD: Reliability Pricing Model," First Revised Sheet No. 607 (Effective April 1, 2008) and Second Revised Sheet No. 608 (Effective April 8, 2008), section 6.5 (a)(ii).

<sup>3</sup> See the 2007 *State of the Market Report*, Volume II, Section 2, "Energy Market, Part 1," and Volume II, Appendix L, "Three Pivotal Supplier Test" for a more detailed discussion of market structure tests.

<sup>4</sup> 122 FERC ¶ 61,264 (2008).

<sup>5</sup> See PJM Open Access Transmission Tariff (OATT), "Attachment DD: Reliability Pricing Model," First Revised Sheet No. 617 (Effective January 19, 2008), section 6.8 (b).

In effect, avoidable costs are the costs that a generation owner would not incur if the generating unit were mothballed for the year. In the calculation of avoidable costs, there is no presumption that the unit would retire as the alternative to operating, although that possibility could be reflected if the owner documented that retirement was the alternative. Avoidable costs, as defined in the tariff, also include annual capital recovery associated with investments required to maintain a unit as a capacity resource (APIR). Avoidable costs are defined to be net of net revenues from all other PJM markets and unit-specific bilateral contracts. The specific components of avoidable costs are defined in the PJM Tariff.

7. Capacity resource owners could provide ACR data by providing their own unit-specific data, by selecting the default ACR values, by submitting an opportunity cost for a possible export, by inputting a transition adder or by using permitted combinations of these options. The default ACR values were calculated by the MMU based on available unit data and posted to the PJM Web site in order to provide an alternative for owners that did not wish to calculate unit-specific ACR values or who believed that the default ACR values exceeded their unit-specific ACR values. The opportunity cost option allows resource owners to input a documented export opportunity cost as the offer for the unit. If the relevant RPM market clears above the opportunity cost, the unit's capacity is sold in the RPM market. If the opportunity cost is greater than the clearing price, the unit's capacity does not clear in the RPM market and it is available for export.
8. In general, unit-specific offer caps were calculated for less than 20 percent of all units. As an example, 1,104 generating units submitted offers in the 2010 - 2011 RPM auction. Unit-specific offer caps were calculated for 154 units (13.9 percent) including 134 units (12.1 percent of all offered units) with an Avoidable Project Investment Recovery Rate (APIR) component and 20 units (1.8 percent of all offered units) without an APIR component. Owners submitted unit-specific cost data and net revenue data for these units and the MMU calculated the unit-specific offer caps based on that data. Offer caps of all kinds were used by 532 units (48.1 percent), of which 370 (33.5 percent) were the default ("proxy") offer caps calculated and posted by the MMU. Of the 1,104 generating units, 15 new units had uncapped offers while the remaining 557 units were price takers, of which the offers for 546 units were zero and the offers for 11 units were set to zero because no data were submitted.<sup>6</sup>
9. The MMU 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

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<sup>6</sup> Comparable information for each auction is presented in the MMU reports on each auction.

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 MMU has concluded that the results of the RPM auctions to date were competitive.<sup>7</sup>

10. The affidavit of James Wilson (Attachment A, dated May 30, 2008) makes various assertions regarding market power in the RPM auctions.<sup>8</sup> After a discussion of incentives, Mr. Wilson describes the evidence supporting his statement that sellers were able to “significantly raise RPM prices above the levels that would have been obtained under reasonably competitive circumstances.”<sup>9</sup> Mr. Wilson’s claims of physical and economic withholding are limited to three areas: offer behavior in the SWMAAC LDA in the 2009-2010 BRA; offer behavior in the EMAAC LDA in the 2008-2009 BRA; and offer behavior associated with capacity in the interconnection queues. In no case does the evidence support Mr. Wilson’s claim that market power was exercised in the RPM auctions.
11. The evidence about behavior in the SWMAAC LDA in the 2009-2010 BRA consists of a brief statement about forced outage rates and a discussion of offer prices. In support of his first point, Mr. Wilson provides a recitation of facts about the relevant supply offers and the statement that increased forced outage rates and a reduction of offered MW are “consistent with the incentives” to withhold.<sup>10</sup> This does not constitute evidence of the exercise of market power. The deratings of units were consistent with the physical facts at the units. The forced outage rates of units were based on the actual forced outage rates.<sup>11</sup> Such mechanisms were not used to physically withhold. The MMU report on the 2009-2010 base residual auction explains the exact reasons for the 431.9 MW reduction in unforced capacity in SWMAAC for this auction:<sup>12</sup>

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<sup>7</sup> The MMU has analyzed each auction and prepared a report evaluating the competitiveness of each auction.

<sup>8</sup> Maryland Public Utility Commission, et al. v. PJM Interconnection, L.L.C., Complaint of RPM Buyers, Docket No. EL08-67-000 (May 30, 2008), “Affidavit of James F. Wilson in Support of Complaint of The RPM Buyers.” (“Wilson Affidavit”)

<sup>9</sup> *Id* at P 84.

<sup>10</sup> *Id* at P 85.

<sup>11</sup> All generating facilities qualifying as PJM capacity resources are required to submit outage data to PJM, following NERC guidelines, using the eGADS system. See “PJM Manual 23: eGADS User Manual,” Revision 4 (Effective June 1, 2007).

<sup>12</sup> See “Analysis of the 2009 – 2010 RPM Auction” posted under “RPM Materials” at <http://www.pjm.com/markets/market-monitor/messages.html> , pp. 24-25.

Total internal SWMAAC unforced capacity, which includes all generating units and demand resources that qualified as a PJM capacity resource, excluding external units, and also includes owners' modifications to ICAP ratings (Table 6), decreased 431.9 MW from 10,777.1 MW in the 2008-2009 auction to 10,345.2 MW. This decrease was due to upgrades to existing generation and increases in demand resources, net of derations to existing generation and demand capacity resources. Multiple owners submitted both positive and negative capacity modifications, which resulted in a net decrease of 420.0 MW of ICAP and 255.9 MW of UCAP in SWMAAC. Of the 431.9 MW decrease in total internal SWMAAC unforced capacity, 176.0 MW were due to higher sell offer EFORds in the 2009-2010 auction resulting from updated EFORds (footnote omitted). Of the remaining 255.9 MW decrease in unforced capacity, 298.2 MW (116.5 percent) were generation capmods and -42.3 MW (-16.5 percent) were DR capmods. Since there were no imports from outside PJM into SWMAAC, RPM capacity was 10,345.2 MW. This amount was reduced by 33.5 MW which were excused from the RPM must-offer requirement as a result of planned reductions due to environmental regulations, resulting in 10,311.7 MW that were available to be offered into the auction, a decrease of 314.4 MW. After accounting for the above exception, all capacity resources were offered into the RPM auction, with offered volumes decreasing by 314.4 MW from 10,626.1 MW to 10,311.7 MW.

12. In support of his second point about the SWMAAC LDA, Mr. Wilson states that the fact that the supply curve shifted from the 2008-2009 BRA to the 2009-2010 BRA to the 2010-2011 BRA shows that "suppliers had flexibility within the RPM rules to substantially vary their offer prices from year to year, and to offer prices well in excess of avoidable cost."<sup>13</sup> The data do not support the claim that suppliers could offer prices well in excess of avoidable costs. The MMU reviewed the offers in detail and the offers were not above avoidable costs.

13. The MMU "Analysis of the 2009-2010 RPM Auction" stated:<sup>14</sup>

A combination of factors led to the increase in the clearing price. A 781.0 MW increase in CETL from 5,610.0 MW to 6,391.0 MW, which would normally lower LDA prices due to the import of more lower priced generation, was partially offset by a corresponding 220.0 MW increase in CETO from 5,940.0 MW to 6,160.0 MW. Unit derations, 144.3 MW of

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<sup>13</sup> Wilson Affidavit at P 86.

<sup>14</sup> See "Analysis of the 2009 - 2010 RPM Auction" posted under "RPM Materials" at <http://www.pjm.com/markets/market-monitor/messages.html>, pp. 25-26.

which were for environmental regulations, resulted in less available capacity, which when combined with increased offer prices due to higher APIR to meet environmental regulations and the higher CETO resulted in the higher clearing price.

14. Mr. Wilson focuses on the definition of APIR in the RPM tariff. Mr. Wilson asserts that the APIR provisions “deviate from the concept of avoidable cost.”<sup>15</sup> Mr. Wilson also states: “The fact that for a large quantity of capacity, offer prices were raised significantly one year and lowered significantly the next, suggests that RPM’s mitigation is not successfully containing offer prices to the “avoidable cost.”<sup>16</sup> Mr. Wilson’s logic is flawed. The essence of Mr. Wilson’s argument is that the APIR provisions of the RPM tariff “allow suppliers to raise RPM clearing prices and costs by enormous amounts.”<sup>17</sup>
15. The APIR provisions of the tariff permit owners to add to offer caps an amount based on investments required to maintain units as capacity resources and a capital recovery factor which translates the total investment into an annual recoverable amount. This is equivalent to the treatment of the costs of new entry for a new unit and provides the ability for older units to make required investments and reflect the associated costs in RPM offers. The APIR provisions of the tariff permit this recovery over relatively short periods of time when the investment is at units above specific age thresholds and when other specific criteria are met. The shorter the time period, the higher the adder to the offer caps.
16. If the treatment of offers associated with APIR investments were identical to the treatment of offers associated with new entry, the ability to add the associated investment recovery would be limited to one year for APIR. The tariff reflects the explicit decision to permit such recovery over a defined number of years in order to reduce the uncertainty associated with such recovery and to increase the incentives to make such investments. This is consistent with the tariff provisions that permit such treatment for new investments under defined circumstances and is in fact consistent with Mr. Wilson’s recommendation regarding new entry pricing.<sup>18</sup> The tariff reflects policy decisions regarding the appropriate way to provide incentives to investments in existing generation and in new entry. While it is appropriate to revisit

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<sup>15</sup> Wilson Affidavit at P 90.

<sup>16</sup> *Id* at P 92.

<sup>17</sup> *Id* at P 96.

<sup>18</sup> PJM Interconnection, L.L.C., RPM Buyers’ Motion for Technical Conference, Docket Nos. ER05-1410-000 and EL05-148-000 (March 19, 2008), Exhibit D, “Raising the Stakes on Capacity Incentives: PJM’s Reliability Pricing Model (RPM),” James F. Wilson, Section II, P 41, p. 12.

those decisions on a forward looking basis, it is not accurate to state that they permit the exercise of market power.

17. In fact, the behavior described by Mr. Wilson is entirely consistent with his own description of the appropriate underlying economic logic.<sup>19</sup> Mr. Wilson states that a competitive supplier would include the costs of new investments for an existing unit in one year and after that treat the costs as sunk. Mr. Wilson's description of the behavior, in which he asserts that APIR was added in one year and not included in the next year, is entirely consistent with his own description of competitive behavior and, if true, does not mean that market power was exercised.<sup>20</sup>
18. With regard to behavior in the EMAAC LDA in the 2008-2009 BRA Mr. Wilson discusses offer prices and compares offer behavior in the 2008-2009 BRA to what Mr. Wilson assumes is the offer behavior for the same units in the incremental auction for 2008-2009 and in the 2009-2010 BRA.<sup>21</sup> Mr. Wilson's claim is: "The fact that so much EMAAC capacity was offered at prices well above its apparent avoidable cost calls into question whether RPM's mitigation is effective in holding capacity offers to the avoidable cost levels at which resources would be offered under competitive circumstances."<sup>22</sup> Mr. Wilson bases the statement that offers were above competitive offers entirely on his assumption that owners reduced offers in subsequent auctions. Even if true, this does not mean that market power was exercised.
19. Mr. Wilson's claim that market power was exercised by the submission of offers greater than avoidable cost is not supported by the evidence. The MMU reviewed the offers in detail and the offers were not above avoidable costs.

The MMU "Analysis of the 2008-2009 Auction Revised" stated:<sup>23</sup>

Of the 30,231.3 MW cleared in EMAAC, which was a decrease of 566.5 MW from the 2007-2008 auction, 28,829.9 MW were cleared in the RTO before EMAAC became constrained. Once the constraint was binding, based on the 7,930.0 MW capacity emergency transfer limit (CETL) value, only the incremental supply located in EMAAC was available to meet the incremental demand in the LDA. Of the 1,549.5 MW of incremental

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<sup>19</sup> Wilson Affidavit at P 90.

<sup>20</sup> *Id* at P 92.

<sup>21</sup> *Id* at P 93-96.

<sup>22</sup> *Id* at P 96.

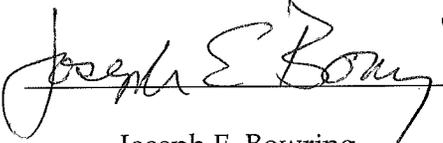
<sup>23</sup> See "Analysis of the 2008 – 2009 RPM Auction Revised" under "RPM Materials" at <http://www.pjm.com/markets/market-monitor/messages.html>, p 19. . . .

supply, 401.4 MW cleared, which resulted in a resource clearing price of \$148.80 per MW-day, as shown in Figure 6. The price was determined by the intersection of the incremental supply and demand curves. On the horizontal section of the supply curve, 1,098.3 MW were offered at the net CONE price of \$148.80 per MW-day. Of this amount, 660.6 MW were base offers with APIR from existing generation and 437.7 MW were EFORD offer segments. The 1,148.1 MW of uncleared volumes, which increased 1,118.7 MW from 29.4 MW, were the result of offer prices which exceeded the clearing price. Offers with APIR accounted for 690.0 MW of the uncleared volumes while uncleared demand side offers totaled 174.7 MW.

20. Again, even if Mr. Wilson's assertion were correct that APIR investment explains all the higher offers in the BRA, his own logic implies that competitive behavior would dictate the offer of the same capacity in subsequent auctions at levels excluding APIR.
21. Finally, Mr. Wilson offers as evidence of the exercise of market power the unsupported assertion that it is possible that some generation in the PJM interconnection queues was not offered in order to affect the price in the auction. Mr. Wilson's statement is: "It is quite possible that a significant amount of this capacity that was not offered will in fact be built for the upcoming delivery year, but its owner declined to offer the capacity into the BRA in order to not depress RPM prices."<sup>24</sup> Mr. Wilson's claim is unsupported speculation about the intent of potential sellers that are owners of existing generation. Mr. Wilson does not address the incentives of new entrants without substantial portfolios of existing generation. Mr. Wilson does not address any of the factors that govern actual offers of units in the interconnection queues.

I declare under penalty of perjury that the foregoing is true and correct.

Dated this 11<sup>th</sup> day of July, 2008.

  
Joseph E. Bowring

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<sup>24</sup> Wilson Affidavit at P 98.