

I. ANSWER

A. PJM Claims to Measure Primary Reserves, but Provides No Evidence that such Measurements Are Anything More Than Periodic Approximations That Are Inadequate to Serve as Part of Five-Minute Dispatch Instructions or for Triggering Scarcity Prices.

PJM asserts that the Market Monitor made the claim that Primary Reserves cannot be measured as part of the basis for the Market Monitor's argument against incorporating Primary Reserves as a constraint in the joint optimization. PJM states (at 23): "The IMM further alleges Primary Reserves cannot be measured." PJM is incorrect in its assertion. The Market Monitor did not indicate that it was impossible to measure Primary Reserves. The Market Monitor was clear that the issue is that currently PJM cannot accurately or meaningfully measure Primary Reserves in such a way as to justify incorporating them as part of the 5 minute dispatch solution. The Market Monitor stated:

Accurate measurement of available resources is an essential element of a reserve requirement based scarcity pricing mechanism. Any mechanism that attempts to internalize the dispatch of reserves will only be as good as the measurement of those reserves. Without accurate measurement of available reserves, any mechanism designed to dispatch the system to maintain reserves will be compromised in both efficiency and effectiveness. PJM does not currently have accurate real-time measurements of available operating reserves that are required for an improved approach to scarcity pricing.³ PJM needs to develop better measurements of available primary reserves prior to

³ UPDATED: PJM Proposal for Price Formation during Operating Reserve Shortages, December 4, 2009 SPWG, at 7-8: <<http://www.pjm.com/~media/committees-groups/working-groups/spwg/20091204/20091204-item-04-updated-pjm-sp-proposal.ashx>>.

implementing a resource constraint based scarcity pricing mechanism.⁴

PJM does not address the relevant issue raised by the Market Monitor. PJM does not provide evidence that it can accurately measure Primary Reserves on a 5 minute basis or even on an hourly basis.

PJM and the PJM Witness Bryson cite Manual 12 as evidence that PJM measures and tracks Primary Reserve. However, Manual 12 does not provide evidence that PJM can measure Primary Reserve in an accurate way on the five minute basis needed to incorporate it as a constraint as part of a 5-minute optimization. Instead, Manual 12 clearly indicates that PJM relies on manual periodic Instantaneous Reserve Checks (IRC) that query members for information regarding their available reserves:

On a daily basis the PJM dispatcher performs an Instantaneous Reserve Check (IRC) prior to each peak or more often as system conditions require to determine if adequate reserves exist to meet the PJM Reserve Requirements. An IRC may be taken more frequently if system conditions dictate. When the PJM Generation dispatcher requests an IRC, member dispatchers report the information via eDART. If eDART is unavailable, member dispatchers report the information directly to the PJM Generation dispatcher.⁵

In other words, PJM's systems are not measuring, on a 5 minute basis, Primary Reserves. An IRC check represents a request by PJM to member dispatchers to submit their estimates of their available reserves at a given point in time. A manual IRC check provides

⁴ Amended Proposal (filed July 19, 2010), Supporting Statement Docket No. ER09-1063-004 Scarcity Pricing at 7.

⁵ PJM Manual 12 (Balancing Operations)§ 4.1.1 at 33.

a snap shot estimate of available reserves, and these estimates, taken at discrete points in time, are used to estimate reserve levels between IRC checks:

An IRC provides PJM dispatcher with an indication of the actual reserves that are available at that point in time. By conducting an IRC at strategic points during the day, PJM dispatcher establishes benchmarks between which the actual reserve can be estimated.⁶

The IRC checks represent only estimates. Between checks, as the system changes, the estimates are no longer even accurate estimates. PJM recognizes this shortcoming in its measurement of reserves in Manual 12 when it states, “Since system conditions can change very rapidly, the IRC is only an indication of the actual reported reserves at that point in time.”⁷ Further, as outlined in Manual 12, system conditions complicate the use of IRC check as even a rough measure of available reserves:

When the PJM Net Tie Deviation indicates undergeneration, the Synchronized Reserve total is adjusted downward by the amount of the Net Tie Deviation to reflect the PJM Balancing area’s generation deficiency. Conversely, when the PJM Net Tie Deviation indicates overgeneration, the Synchronized Reserve total is adjusted upward by the amount of the Net Tie Deviation to reflect the PJM Balancing area’s generation excess. Therefore, when possible PJM dispatcher requests an IRC when the ACE and Net Tie Deviation is close to zero MW.⁸

Despite these recognized shortcomings, PJM currently relies on IRC as its measure of reserve levels and for making its determinations of reserve shortages: “PJM dispatcher uses the results of the IRC to determine if reserve shortages exist and what, if any, Emergency

⁶ *Id.*

⁷ *Id.*

⁸ *Id.*

procedures should be declared to supplement the electronic reporting of reserves through the EMS systems.”⁹

Based on the evidence, which is uncontradicted by the affidavit of Witness Bryson, PJM does not currently have the accurate real-time measurements of available operating reserves that are required for an improved approach to scarcity pricing.¹⁰ PJM needs to develop better measurements of available primary reserves prior to implementing a resource constraint based scarcity pricing mechanism. Without accurate measurement of available reserves, any mechanism designed to dispatch the system to maintain reserves will be compromised in both efficiency and effectiveness. Based on the direction of the error at any given time, the system could be buying too many reserves or too few, the system could be in a state of unrecognized scarcity or unrecognized surplus. Spot checking with IRC is not good enough. A scarcity pricing mechanism should not be implemented based on the assertion that better measurement will be forthcoming just in time, or what measurement exists today is good enough. There is no reason not to pursue a gradual approach to implementing scarcity pricing, learning from each step and using that information to inform the appropriate next steps.

⁹ *Id.*

¹⁰ UPDATED: PJM Proposal for Price Formation during Operating Reserve Shortages, December 4, 2009 SPWG, pp. 7–8. <<http://www.pjm.com/~media/committees-groups/working-groups/spwg/20091204/20091204-item-04-updated-pjm-sp-proposal.ashx>>.

B. PJM claims, citing Manual 12, that it actively maintains Primary Reserves, but does not provide evidence to that effect.

PJM states that the Market Monitor incorrectly asserts that “PJM does not operate to any Primary Reserve Requirement.” The Market Monitor did not make that statement. The Market Monitor did state that “PJM does not currently actively dispatch to maintain primary reserves.” Witness Bryson states that “actions are routinely taken to maintain Primary Reserves at or above the Primary Reserve Requirement.”¹¹ Witness Bryson then outlines the actions from Manual 12 that he believes support the claim that PJM maintains Primary Reserves:

“These actions are detailed in PJM Manual-12, Balancing Operations; Section 4.2.2 Restoring Reserves and include:

- a. Bringing a unit into hot standby (i.e. put combustion turbine on turning gear, staff facility)
- b. Bringing on synchronous condenser units which would increase Synchronized Reserves and by definition also increase Primary Reserves
- c. Bringing on additional generation online in order to reduce other generation to provide reserves.”¹²

That PJM has a Primary Reserve requirement is not in question. The question is the relevance of this requirement in PJM’s actual active, five minute dispatch and to the idea that there needs to be a market for non-synchronized primary reserves to maintain it. More specifically, given the measurement issues with Primary Reserves, what actions, if any it takes to maintain Primary Reserves, the nature of those actions and the time scale in which

¹¹ Bryson Affidavit at 19.

¹² Bryson Affidavit at 19.

these actions take place and whether any of this is germane to the idea that Primary Reserve is or should be “actively controlled for” as part of a 5 minute optimization along with Synchronized Reserves.

In addition to the measurement issues, the actions that PJM does take, as outlined in Manual 12 and Manual 13, do not support the argument that PJM is actively dispatching to simultaneously maintain Primary Reserves and Synchronized Reserves. They are consistent with the view that PJM is actively dispatching to maintain Synchronized Reserves, which, in turn, support Primary Reserves. However, this is not the same as actively dispatching to maintain Primary Reserves.

Manual 12 then indicates that after Synchronized Reserves are restored, the PJM dispatcher will then attempt to eliminate Primary Reserve deficiency:

- “Primary Reserve Deficiency — When PJM dispatcher is assured that the Synchronized Reserve objective is covered, PJM dispatcher attempts to eliminate any Primary Reserve deficiency. Restoration is accomplished by any combination of the following actions:
 - loading Supplemental Reserve to Primary Reserve status or providing additional Primary Reserve on other equipment.
 - bringing additional equipment which is available but not scheduled to operate into the Primary Reserve status.”¹³

Manual 12 further qualifies this effort when it states:

¹³ PJM Manual 12 (Balancing Operations) at. 37.

- “That portion of the Primary Reserve deficiency that is due to an adjustment to the internal PJM Primary Reserve as a result of a net non-capacity interchange scheduled into PJM can be tolerated provided system reliability is not degraded. On these occasions, PJM dispatcher ensures that sufficient shutdown CT and/or hydro capability are readily available to cover the amount of the deficiency.”¹⁴

Manual 12 is vague as to the time frame for the restoration effort, except it is after Synchronized Reserves are rebuilt. In addition, “provided system reliability is not degraded,” PJM does not need to completely rebuild its Primary Reserve requirement. In addition, Manual 12 does not indicate that there is some level of non-synchronized reserves that the dispatcher is trying to build up or maintain to make up for a shortfall of Primary Reserves.

Manual 13 contradicts the assertion that any specific dispatch action is taken to maintain or restore Primary Reserves as PJM encounters Primary Reserve Alerts and any subsequent Primary Reserve Warnings.

As the PJM system starts to go short of Primary Reserves, PJM dispatch releases a Primary Reserve Alert:

“The purpose of the Primary Reserve Alert is to alert members of the anticipated shortage of operating reserve capacity for a future critical period. It is implemented when estimated operating

¹⁴ *Id.* at 36–37.

reserve capacity is less than the forecast primary reserve requirement.”¹⁵

Manual 13 outlines the actions that PJM takes as the system approaches a Primary Reserve Shortage, none of which indicate an effort to dispatch to maintain Primary Reserve targets. Rather, a series of notices are circulated within PJM and to the membership regarding the situation, and PJM dispatch watches reserve levels more closely:

“PJM Actions:

- PJM dispatcher notifies PJM management and members.
- PJM dispatcher issues alert to members, stating the amount of estimated operating reserve capacity and the requirement. An Alert can be issued for the entire PJM RTO or for specific Control Zone(s) based on the projected location of transmission constraints and should be issued 1 or more days prior to the operating day.
- PJM dispatcher reports significant changes in the estimated operating reserve capacity.
- PJM dispatcher will consider the need to obtain a temporary variance from environmental regulators for specific generators to assist in preventing load shedding in accordance with Attachment N.
- PJM dispatcher cancels the alert, when appropriate.”¹⁶

¹⁵ PJM Manual 13 (Emergency Operations) at 16

¹⁶ *Id.* at 16–17.

As the system actually goes short Primary Reserves, PJM issues a Primary Reserve Warning. Manual 13 states:

“The purpose of the Primary Reserve Warning is to warn members that the available primary reserve is less than required and present operations are becoming critical. It is implemented when available primary reserve capacity is less than the primary reserve requirement, but greater than the synchronized reserve requirement, after all available secondary reserve capacity (except restricted maximum emergency capacity) is brought to a primary reserve status and emergency operating capacity is scheduled from adjacent systems.”¹⁷

As the PJM system goes short Primary Reserves, PJM dispatch releases a Primary Reserve Warning, putting its members on notice that they may be needed to take action:¹⁸

- “PJM dispatcher issues a warning to members and PJM management stating the amount of adjusted primary reserve capacity and the requirement. A Warning can be issued for the entire PJM RTO or for specific Control Zone(s) based on the projected location of transmission constraints.
- PJM dispatcher notifies PJM public information personnel.
- PJM dispatcher rechecks with members to assure that all available equipment is scheduled and that requested secondary reserve is brought to primary reserve status.
- PJM dispatcher ensures that all deferrable maintenance or testing on the control and communications systems has halted at PJM Control Center. PJM dispatcher

¹⁷ *Id.* at 59.

¹⁸ *Id.* At 31.

should provide as much advance notification as possible to ensure maintenance/testing does not impact operations. This notification may occur prior to declaration of Primary Reserve Warning.

- PJM dispatcher will obtain a temporary variance from environmental regulators for specific generators to assist in preventing load shedding in accordance with Attachment N.
- PJM dispatcher cancels the warning, when appropriate.”

In response to the warning, PJM members are expected to take the following actions:

- Transmission / Generation dispatchers notify management of the warning.
- Transmission / Generation dispatchers advise all stations and key personnel.
- Generation dispatchers prepare to load all available primary reserve, if requested.
- Transmission / Generation dispatchers ensure that all deferrable maintenance or testing affecting capacity or critical transmission is halted. Any monitoring or control maintenance work that may impact operation of the system is halted.
- PJM marketers remain on heightened awareness regarding PJM system conditions and the potential need for Emergency Energy Purchases.¹⁹

Nowhere in manual 13 is it mentioned that PJM is actively maintaining Primary Reserves, prior to or during a Primary Reserve shortage. Warnings are given.

¹⁹ *Id.* at 59.

Based on its own determination, PJM appears to have suffered what it considers to be extreme system conditions on seven separate occasions over the last five years, all seven of which involved unquantified levels of primary reserve shortages.²⁰ PJM does not present any evidence that it accurately measured Primary Reserve levels or actively dispatched to control for Primary Reserves requirements during these events. PJM cites only Primary Reserve Warnings, not related actions or market effects, as evidence that PJM was short primary reserves. All activity and price effects cited were based on the maintenance of synchronized reserve requirements.

C. The June 18th Proposal Risks Unduly High and Disruptive Prices in the Energy Market to Address a Non-Existent Reliability Problem.

1. No Evidence Supports Removing the \$1,000 MWh Overall System Offer Cap, Nor Does Order No. 719 Require This.

PJM argues that Order No. 719 requires PJM to discard that offer cap in times of scarcity for fear that reliability would be compromised if prices exceeding \$1,000 MWh are unavailable to attract demand response.²¹ PJM identifies the \$1,000 MWh over system cap as a threat to reliability, confusing this measure that has been in effect for over ten years with the Market Monitor's proposal.²² PJM accuses the Market Monitor (at 12–13) of “a dogmatic belief that price risk must be mitigated in all circumstances (including in shortage

²⁰ Sotkiewicz Answer Affidavit at 2; Sotkiewicz Affidavit at 9–18.

²¹ August 23rd Answer at 10–11 (“[T]he IMM Alternative Market Design Proposal is essentially a collateral attack on Order No. 719’s findings that shortage pricing should not be constrained by the present price caps in effect. What the IMM proposes leads to reduced reliability and inefficient market outcomes..., all in the name of keeping prices at \$1,000 or lower...”).

²² *Id.*

conditions) through market design rather than through contract arrangements that would hedge this price risk.”

Order No. 719 does not require the elimination of offer caps or price caps, and the Commission specifically went out of its way (at P 238) to require each organized market to preserve an effective mitigation program. The fact that all-in prices including capacity market prices exceed \$1,000 per MWh is also responsive to the Commission’s concern.

2. The June 18th Proposal Will Result in Much Higher Prices.

PJM asserts that Market Monitor’s comparison of maximum prices between the June 18th and Amended Proposals is not relevant, as the June 18th Proposal would only lead to prices of \$2,700 when all reserves had been exhausted. PJM also asserts that the Amended Proposal would set the price at \$1,000 per MWh in any reserve shortage condition, regardless of the severity of the reserve shortage.²³

It is not really clear what PJM’s point is. PJM cannot credibly claim that the Amended Proposal would result in higher scarcity prices than the June 18th Proposal. PJM elsewhere criticizes the Amended Proposal for not letting prices get high enough.

PJM does not compare what the price signal would be under its proposal for the scarcity conditions as defined in the Amended Proposal. It is clear that under the scarcity conditions defined in the Amended Proposal, prices under the June 18th Proposal would always be higher. Under the PJM proposal, prices would be expected to be well in excess of \$1,700 per MWh whenever there is a shortage, of even one MW, of synchronized reserves,

²³ August 23rd Answer at 12.

which would also mean that PJM is short primary reserves. PJM's proposal would result in \$1,700 of scarcity adders in addition to the unadjusted energy price, which would reasonably be expected to be \$1,000 under these system conditions. The PJM price would be \$1,700 even if the unadjusted energy price were zero. It is also clear that prices would be inappropriately higher under the June 18th Proposal when scarcity conditions do not exist, e.g. prior to a shortage of synchronized reserves. Under conditions of even a one MW Primary Reserve shortage and prior to a shortage of synchronized reserves, prices under the June 18th Proposal would include an \$850 per MWh adder. This adder would result in prices greater than \$1,000 per MWh whenever unadjusted energy prices were greater than \$150 per MWh, which would certainly be the case, especially if PJM's characterization of system conditions in such a case were correct.

PJM argues that prices would never go to \$2,700 except under the most extreme cases under its approach. If that were true, it is not clear why PJM focuses so much attention on defending the positive attributes of the \$2,700 price. The meaning of the assertion also turns on the definition of extreme. PJM concludes that there were extreme system conditions on seven separate occasions over the last five years, all seven of which involved unquantified levels of primary reserve shortages.²⁴

In the absence of administrative scarcity adders and in the absence of scarcity conditions, zonal prices in PJM can be in excess of \$450 on a summer day. Individual buses in these zones exceed this value on an hourly basis. Both were true in the summer of 2010

²⁴ Sotkiewicz Answer Affidavit at 2; Sotkiewicz Affidavit at 9–18.

despite an economic down turn and relative moderate fuel prices. In an actual scarcity event, prices would be expected to be at or close to \$1,000 per MWh, prior to an administrative scarcity adder. Adding \$850 or \$1,700 in adders to marginal bus prices would result in prices in excess of the \$1,000 offer cap. With only a single \$850 adder, marginal units with offers in excess of \$150 will provide for prices in excess of \$1,000 at their bus, which will result in prices well in excess of \$1,000 at specific buses in a congested system.

Further, PJM's criticism that "IMM's proposal would set the maximum energy price of \$1000/MWh in any reserve shortage condition regardless of the severity of the reserve shortage" is hard to understand. Under exactly the same reserve shortage conditions where PJM criticizes the Market Monitor for setting a scarcity price of \$1,000 per MWh, the PJM approach would result in a price guaranteed to be greater than \$1,700 and likely to be \$2,700 per MWh.

While the Market Monitor is recommending a fixed price target, the mechanics of the Market Monitor's approach are flexible and can be set up in stages based on the level of reserve shortage. If a staged, more gradual scarcity price signal were desired, a series of price targets could be used to reflect stages of worsening reserve shortage.

D. PJM Arguments That the Prices Capped at \$1,000 Will Lead to Market Inefficiency and Unreliable Operation are Based on Stylized Examples that Assume Their Result, Incorrectly Model Emergency Demand Response, Mischaracterize the Amended Proposal and Fail to Acknowledge the Role of the Capacity Market in Providing for Demand Response.

PJM argues that the Market Monitor's position on emergency demand response and maximum emergency generation segments, and the Market Monitor's proposed \$1,000 price cap will lead to market inefficiencies and unreliable operation.²⁵ PJM's assertions are based on stylized examples that assume their result, incorrectly model emergency demand response, mischaracterize the Amended Proposal and fail to recognize the role of the capacity market in PJM market design.

1. PJM Fails to Support its Claim that Prices Over \$1,000 Are Needed for Demand Response.

PJM claims (at 13) that prices in excess of \$1,000 are needed to "allow demand to reveal its willingness to pay." PJM further argues that "PJM's proposal uses market price signals to incent demand response and additional resources to maintain energy balance and maintain some level of reserves to meet potential system contingencies."²⁶

PJM, in asserting the alleged impact on incentives for demand side resources has failed to address the capacity market incentives for demand side and failed to explain why energy market incentives are superior to capacity market incentives. If there is a functional scarcity pricing revenue true up and if there are no wealth transfers, the total price of power will not increase as a result of any scarcity pricing proposal. Therefore, the incentives to

²⁵ Sotkiewicz Answer Affidavit at 13–14.

²⁶ Sotkiewicz Answer Affidavit at 4.

engage in demand response will not increase. There will simply be a change in the mix of incentives between the capacity market and the energy market.

PJM presents a number of examples that show only how carefully crafted assumptions lead to desired results. Witness Sotkiewicz assumes, for example: that demand is only responsive to prices above \$1,000;²⁷ and that demand is responsive enough to avoid “involuntary load shedding” at a price of \$2,000.²⁸ PJM’s examples show only that the assumptions about the price at which demand responds and the degree of that response result in a definition of the right price. The examples prove nothing about the right price.

PJM provides no evidence that demand response only occurs at prices above \$1,000, nor does PJM explain why demand would be unresponsive at prices below \$1,000. Most load clears in the day ahead market and therefore does not pay real time prices. Further, based on actual market performance, and recognized regulatory barriers to demand response, the evidence shows that there is a significant amount of actual, as well as potential, demand response at prices of \$1,000 or less. The performance of PJM’s economic demand response program shows that economic demand response occurs at prices well below \$1,000. The greatest barriers to the development of demand response are not insufficient prices but regulatory barriers that prevent retail customers from being able to see prices, and in responding to the price, benefit from the response.²⁹

²⁷ *Id.* at 8.

²⁸ *Id.* at 8.

²⁹ See Barriers to Demand Side Response in PJM filed in Docket No. RM07-19-000 (July 1, 2009), which can be accessed at: <http://website/reports/Reports/2009/Barriers_to_Demand_Side_Response_in_PJM_20090701.pdf>.

The PJM argument and examples ignore the role of RPM in providing incentives for demand response, and the large and growing amounts of demand response made available through RPM. There is so much emergency demand response available under RPM on the PJM system that PJM is currently proposing ways to limit the amount of Emergency Demand Response that can clear as part of the RPM auction.

Given the role of RPM in the PJM market, the argument that prices must exceed \$1,000 per MWh ignores the fact that the all-in price of electricity during peak demand hours is already well in excess of \$1,000 per MWh when the price of capacity is accounted for.

2. No Evidence Supports the Proposition that Scarcity Prices Above \$1,000 or at \$2,700 MWh in the Energy Markets Are Needed to Maintain Reliability.

PJM argues that prices in excess of \$1,000 are needed to maintain reliability. However, PJM has not provided evidence that the current market design results, or is expected to result, in unreliable operation. PJM has not provided evidence that its current market design is preventing it from meeting NERC reliability requirements. In fact, PJM reported that it expected reliable operation in the summer of 2010, exactly as it has reported since the formation of markets in 1999. PJM has provided no evidence that increasing the maximum price is required for either the resource adequacy or operational aspects of reliability. PJM has no provided no evidence that, given an RPM construct that purchases a surplus of capacity well in excess of what is needed to meet system planning requirements, additional resources are needed to make PJM's system reliable. No party has made the case that the PJM system is currently, or will become, unreliable as a result of current offer caps. No party has provided evidence that energy prices in excess of \$1,000 are needed to incent

demand response. No party has provided evidence that any additional theoretically available demand response, available only at energy prices in excess of \$1,000, will make the difference between a reliable or unreliable system.

3. PJM's Arguments that the Market Monitor's Approach Will Lead to Price Discontinuity is Based on Stylized Examples that Incorrectly Model Emergency Demand Response and Mischaracterize the Amended Proposal.

PJM argues that the Market Monitor's approach to emergency demand response, maximum emergency generation segments, and emergency purchases will lead to discontinuous and counterintuitive price transitions. In other words, the argument is that the Market Monitor's approach would result in lower energy prices during times of scarcity, when prices should be higher.

PJM is incorrect in its assertion that the Amended Position is that max emergency generation cannot be marginal. The Amended Proposal calls for max emergency generation, to the extent that it qualifies to be marginal, to set price during an emergency. This is not an area of dispute. Emergency generation can represent discrete, measurably dispatchable resources with specific locations on the system.

Witness Sotkiewicz references the events of July 7, 2010, when PJM deployed an unknown amount of Emergency Demand Response and LMP fell, in support of the argument that the not allowing Emergency Demand Response to set price leads to inefficient price decreases.³⁰ "In spite of more expensive resources being called upon, the

³⁰ Sotkiewicz Answer Affidavit at 22.

energy price was allowed to drop because of the price taking treatment of Emergency Demand Response.”³¹

PJM fails to address the question of why the dispatch of Emergency Demand Response was not managed on a more granular, locational basis.

The PJM criteria used to determine whether a resource can be marginal preclude Emergency Demand Response from setting price. Emergency Demand Response is not made up of discrete, measurably dispatchable resources with specific locations on the system. PJM cannot measure Emergency Demand Response.

The events of July 7, 2010, illustrate PJM’s inability to measure Emergency Demand Response in real time or in any reasonable time frame. PJM did not know at the time and still does not know how much Emergency Demand Response responded on the day in question.³² Load reductions from Emergency Demand Response were estimated on July 7, 2010, and will not be “finalized until 3 months after the event.” At the time of its reply filing on August 23, 2010, PJM still did not know how much Emergency Demand Response response it got in any hour, let alone any five minute intervals, on July 7, 2010. Emergency Demand Response is not metered, it is not discretely dispatchable and specific locations of all the response MW are not known. Based on these facts alone, Emergency Demand Response should not set price. PJM would not allow generation with the same

³² Sotkiewicz Answer Affidavit at 23 (Figure “Estimated Demand Response in PJM July 7, 2010”).

characteristics to set price. Accurate locational marginal prices depend on having all these required elements.

PJM proposes (at 18) that the price of Emergency Demand Response “is the capacity weighted average offer of all Full Program Option Emergency Demand Response.” Thus, the offers are clearly not based on the individual offers of Emergency Demand providers. PJM also proposes (*id.*) that “This Demand Response will be considered to be dispatched at a zonal or sub-zonal aggregate bus as appropriate for the purpose of price setting.” In other words, PJM does not know where in a zone the Emergency Demand Response is located.

PJM’s examples do not support its conclusion that Emergency DR, or demand response in general, should be eligible to set price without metering, without discrete dispatchability and without bus specific locations of the MWs of response. Nonetheless, PJM states (at 19) that it intends to include this approach “in its business rules,” and would include it in the Operating Agreement, if directed by the Commission.

PJM’s examples address the measurement and dispatchability problems by assuming that Emergency Demand Response is discretely measurable and dispatchable at specific prices.³³ In addition, PJM’s examples assume that the location of Emergency Demand Response MW is irrelevant to its contribution to “supply”. PJM’s market is assumed to be free of transmission constraints in the example. Under these conditions, not knowing bus specific locations of resources, any resources, is irrelevant as location does not matter in a market without transmission limitations. However, PJM’s actual system does have

³³ Sotkiewicz Answer Affidavit at 9–22.

transmission limitations and the location of resources does matter in least cost security constrained dispatch in PJM.

PJM is incorrect, on economic principle, that the use of Emergency Demand Response should set price or cause prices, all else held equal, to increase. Emergency Demand Response is not supply, as PJM's examples suggest. Emergency Demand Response sales by load in the RPM market represent a commitment to reduce load during emergency conditions, thereby reducing the amount of capacity required to serve the load in a given delivery year. Emergency Demand Response represents non-firm load that does not have a right to the capacity that it has chosen not to pay for and is, in the case of an emergency, under an obligation to cut. Ignoring measurement and location issues, Emergency Demand Response is correctly modeled as a prearranged, pre-purchased, callable leftward shift in the demand curve. This shift in the demand curve will reduce price, as it should. The July 7, 2010 calling of Emergency Demand Response and its impact on prices, is not an indication of a market failure. A price reduction in this case is the efficient market outcome, and it is the outcome of the "valuation of energy" that was expressed, three years earlier, in the capacity market.

E. PJM Draws the Wrong Conclusion from the Complementary Relationship between RPM Markets and Scarcity Pricing.

PJM argues (at 43) that "[t]he repeated assertions that shortage pricing revenues are directly duplicative of capacity revenues does not hold up; RPM is based on forecast expected conditions and so does not procure and compensate capacity for the unexpected conditions that result in operating reserve shortages;" PJM goes on to argue (at 44) that shortage pricing revenue and capacity market revenue "are better viewed as complements, not substitutes." Based on this Witness Sotkiewicz argues, "Given the complementary

relationship between RPM and shortage pricing in maintaining reliability, and that in a single year in which there may be shortage events, the “double recovery of scarcity rents” claimed by the IMM do not exist.”³⁴ PJM asserts (at 44–45) that “RPM secures capacity to ensure a loss of load expectation of one day in ten years, but is not designed to prevent reserve shortages or reduce their probability to the same expectation as a loss of load.”

The Market Monitor agrees that there is a complementary relationship between RPM and scarcity pricing in maintaining reliability. It is exactly this complementarity that requires the Market Monitor’s Scarcity Pricing Revenue True Up Mechanism to prevent the double recovery of scarcity rents. PJM has itself proposed a true up mechanism, albeit a more attenuated one. PJM’s proposal for a true up mechanism is not consistent with PJM’s assertion that shortage pricing revenue and capacity market revenue “are better viewed as complements, not substitutes.” If scarcity revenues represented “complements” to RPM revenue, PJM’s true up mechanism would not be appropriate.

The fact that PJM could make this argument illustrates PJM’s inconsistent views on a fundamental issue in the scarcity pricing discussion.

PJM has not made it clear whether it believes that scarcity pricing in the energy market should increase the total revenues received by capacity resources. This lack of clarity has led to PJM’s poorly designed offset proposal that creates timing mismatches, uncertainty and pricing distortions in the RPM auctions. This lack of clarity has also confused the already complex discussion about an appropriate offset mechanism.

³⁴ Sotkiewicz Answer Affidavit at 3.

If PJM believes that scarcity pricing should increase the revenues to capacity resources, PJM should state this clearly.

If PJM believes that scarcity pricing should not increase the revenues to capacity resources, PJM should state this clearly.

Because capacity resources are appropriately compensated under RPM, payment of scarcity revenues in addition would represent a double payment to capacity resources except when scarcity pricing revenues exceed the capacity revenues for the year. The purpose of the true up mechanism is to prevent double recovery of scarcity revenues.

PJM appears to have forgotten that the rationale for RPM was that there was “missing money” in the PJM markets and that RPM was necessary to provide that missing money. RPM has done exactly that. PJM fails to explain why there should now be the addition of found money, given that it is PJM’s design of RPM that provided the missing money. If any party believes that RPM has not done that, the issue should be addressed in the RPM design and not here.

PJM appears to be asserting a new definition of reliability. PJM is not asserting that RPM does not provide for reliability. Such an assertion would not be credible and is contradicted by PJM’s own statements over the past 10 years.

However, PJM appears to assert that there is now a new element of reliability, not previously accounted for, based on unexpected conditions that lead to reserve shortages rather than loss of load. The reserve margin calculations clearly do account for unexpected conditions. It is a probabilistic calculation. Thus, PJM is not correct in its assertion that RPM does not account for unexpected conditions. That leaves reserve shortages as the asserted planning parameter which should be added to loss of load. If reducing the probability of

reserve shortages were the goal, the reserve margin and the RPM construct could be modified to incorporate that goal. If reducing the probability of loss of load to one in twenty years were the goal, the reserve margin and the RPM construct could be modified to incorporate that goal also.

Nowhere does PJM assert that RPM does not procure adequate capacity to address all reliability requirements including the need to maintain operating reserves. The issue appears to be whether RPM compensation is adequate to ensure that capacity resources are available in scarcity conditions up to their stated capacity. The RPM construct is designed with exactly that result as the goal. The RPM construct is designed to provide adequate resources for all the capacity necessary to provide a fully reliable system. The RPM construct, in practice, procures substantially more capacity than required for reliability, as defined by PJM and incorporated in the reserve margin.

Based on this, the argument that a scarcity mechanism, without a true up, “is a more cost-effective means of accounting for low probability, extreme realizations than maintaining capacity adequacy at levels that would avoid reserve shortage conditions even for the most extreme realizations of weather” than the current capacity construct is insupportable.

The reliability goal is not to avoid reserve shortages, the goal is to avoid loss of load events. Reserve shortages are an expected precursor to loss of load events. By avoiding loss of load events, reserve shortages that lead to loss of load events are also avoided. The goal of scarcity pricing is more modest, but important. The goal of scarcity pricing is to manage the dispatch of resources during times of reserve shortages in an effective and market-based manner.

Any capacity needed in addition to the 20.2 percent reserves to address a potential loss of load is by definition not a capacity resource. These are the resources that would be attracted and paid for by scarcity pricing. It is the non-RPM resources that should get the scarcity revenues from the energy market mechanism, not the RPM capacity resources that are already paid for.

F. PJM Argues that the Market Monitor Is Making a Collateral Attack on the Three Year Average Energy and Ancillary Service Offset.

In addition to the complementarity argument, PJM suggests that the Market Monitor's criticism of PJM's proposed use of the three year average energy and ancillary service offset is a collateral attack on the current offset mechanism. According to PJM, since the three year average method may include periods with high energy market prices, it should also be used for scarcity pricing.

The Market Monitor has not challenged the use of the three year average approach for routine energy market revenues, which is not at issue in this proceeding.

PJM's characterization of the Market Monitor's argument is incorrect, but PJM's conclusion that the current offset methodology can result in counter intuitive forward marginal capacity price signals is correct, and consistent with the Market Monitor's position.

The issues with the three year average method are well known. The net revenues assumed in the RPM auctions may not match actual revenues in a given delivery year.

This is an acceptable, although imperfect, approach to calculating expected net energy market revenues based on the normal functioning of the energy market, which is expected to experience regular cycles. However, the same cannot be said of PJM's proposal

to apply the three year average method to scarcity revenues. Scarcity pricing will irregularly, and unpredictably, generate significant amounts of extra normal net revenues. Including these sporadic surges in net revenue in the three year average net revenue offset would be disruptive to the long term price signal and purpose of the RPM market, would result in double recovery for RPM resources in the delivery year and would generate unnecessary wealth transfers among participants.

The role of scarcity pricing, under any of the new proposals, is small in PJM markets compared to the role of the capacity markets. The capacity market pricing signal is much more critical to new entry than is the scarcity pricing signal. PJM's proposed offset mechanism puts that capacity market pricing signal at risk. The Amended Proposal would retain the capacity market pricing signal while providing a practical, effective true up for scarcity pricing revenues.

G. It is Not Just and Reasonable to Allow Transient Events to Trigger Scarcity Pricing.

PJM's attempt to counter concerns that the scarcity triggers proposed in the June 18th Filing will inappropriately include "transient events" hardly assuages those concerns. PJM explains (at 30–31):

... [W]ithout operational experience there is no certainty as to the optimal look-ahead time to determine whether the reserve shortage condition is or is not transient. PJM should be afforded some flexibility here to put in place a facially reasonable rule to exclude "transient" shortage conditions, while allowing the system operator opportunity to establish the necessary operational experience over time to inform all parties whether the rule should be revisited or refined.

PJM's response recognizes that transient events are a real issue and that PJM has no current plan to define or address such events or to ensure that such events do not result in

false positive scarcity pricing events. Such transient events must be defined in the tariff prior to the implementation of any scarcity pricing approach.

II. MOTION FOR LEAVE TO ANSWER

The Commission's Rules of Practice and Procedure, 18 CFR § 385.213(a)(2), do not permit answer to answers or protests unless otherwise ordered by the decisional authority. The Commission has made exceptions, however, where an answer clarifies the issues or assists in creating a complete record.³⁵ In this answer, the Market Monitor provides the Commission with information useful to the Commission's decision-making process and which provides a more complete record. Therefore, this answer should be permitted.

³⁵ See, e.g., *PJM Interconnection, L.L.C.*, 119 FERC ¶61,318 at P 36 (2007) (accepted answer to answer that "provided information that assisted ... decision-making process"); *California Independent System Operator Corporation*, 110 FERC ¶61,007 (2005) (answer to answer permitted to assist Commission in decision-making process); *New Power Company v. PJM Interconnection, L.L.C.*, 98 FERC ¶ 61,208 (2002) (answer accepted to provide new factual and legal material to assist the Commission in decision-making process).

III. CONCLUSION

The Market Monitor respectfully requests that the Commission grant the Market Monitor leave to answer and afford this answer due consideration as it resolves the issues raised in this proceeding.

Respectfully submitted,



Joseph E. Bowring
Independent Market Monitor for PJM
President
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleville, Pennsylvania 19403
(610) 271-8051
joseph.bowring@monitoringanalytics.com

Jeffrey W. Mayes
General Counsel
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleville, Pennsylvania 19403
(610) 271-8053
jeffrey.mayes@monitoringanalytics.com

Howard J. Haas
Chief Economist
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleville, Pennsylvania 19403
(610) 271-8054
howard.haas@monitoringanalytics.com

Dated: September 7, 2010

CERTIFICATE OF SERVICE

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

Dated at Eagleville, Pennsylvania,
this 7th day of September, 2010.



Jeffrey W. Mayes
General Counsel
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleville, Pennsylvania 19403
(610) 271-8053
jeffrey.mayes@monitoringanalytics.com