

105 FERC ¶ 61,123  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Pat Wood, III, Chairman;  
William L. Massey, and Nora Mead Brownell.

PJM Interconnection, LLC

Docket Nos. RT01-2-009,  
RT01-2-010 and  
ER03-738-001

ORDER ON REHEARING AND COMPLIANCE FILING REGARDING  
TRANSMISSION EXPANSION PROJECTS NEEDED  
TO PROMOTE COMPETITION

(Issued October 24, 2003)

1. This order addresses requests for rehearing and a compliance filing regarding tariff provisions filed by PJM Interconnection, LLC (PJM) regarding the process by which PJM designates transmission expansions required for competition. The Commission accepts PJM's compliance filing, subject to further modifications and explanations. This order benefits customers by moving forward the process by which PJM will ensure the construction of sufficient transmission capacity to support robust competition in the PJM market.

**BACKGROUND**

2. By order dated December 20, 2002, the Commission granted PJM full Regional Transmission Organization (RTO) status.<sup>1</sup> The Commission found, however, that PJM had not demonstrated that its planning process properly identified expansions that were necessary to support competition as well as reliability, and therefore required a further compliance filing. PJM made a compliance filing on March 20, 2003, which the Commission accepted by order dated July 24, 2003.<sup>2</sup>

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<sup>1</sup> PJM Interconnection, LLC, 101 FERC ¶ 61,345 (2002) (December 20 Order).

<sup>2</sup> PJM Interconnection, LLC, 104 FERC ¶ 61,124 (2003) (July 24 Order).

3. In its March 20 compliance filing,<sup>3</sup> PJM set forth the Regional Transmission Expansion Planning Protocol (RTEPP) by which it would ensure that its Regional Transmission Expansion Plan (RTEP) would identify transmission upgrades that are needed to support competition and provide a mechanism for transmission owners to establish charges to recover the costs of transmission upgrades that they build as a result of PJM's RTEP process. PJM stated it would identify transmission upgrades that it considers necessary to address "unhedgeable" congestion, and if market forces do not resolve such congestion within an appropriate period, PJM will order construction of the transmission upgrade needed to resolve it. PJM stated that this proposal would be sufficient to relieve customers in load pockets from having to tolerate the costs of congestion indefinitely when no realistic competitive alternatives are forthcoming.

4. PJM stated that once it had identified an area that is experiencing unhedgeable congestion, it would initially permit the market a year to provide a solution to unhedgeable congestion (such as, for example, a merchant developer offering to construct an upgrade). If the market window passes without a market solution having been proposed, and PJM has determined that the benefits of an upgrade will outweigh its costs, PJM will propose construction of a transmission upgrade. PJM's proposed tariff changes provide that the RTEP will designate the party or intervenors responsible for constructing, owning and/or financing each transmission upgrade, and that, except with regard to merchant transmission facilities, that responsibility will generally be allocated to the PJM transmission owner(s) that own facilities in the zone(s) where the new facilities will be built. The RTEP will also designate the market participants who will bear the costs of each upgrade.

5. PJM also proposed a new Section 12 of its tariff, which set out a framework for transmission owners to establish a fixed monthly Transmission Enhancement Charge (TEC) for each required upgrade, which PJM would incorporate into its tariff to enable transmission owners to recover the costs of building an upgrade from those customers for whose benefit it is built.

6. In its July 24 Order, the Commission approved PJM's proposed tariff provisions, effective March 20, 2003. We stated:

PJM proposes to create a screening mechanism for congested areas to determine whether the area is sufficiently congested to require intervention. Once PJM has determined that an area is sufficiently congested, it then performs a cost/benefit analysis as to whether new transmission expansion would provide net benefits. If the answer to this question is yes, then PJM announces the beginning of the one-

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<sup>3</sup> PJM made further compliance filings on March 27 and April 17, 2003. July 24 Order at P 6.

year (or other appropriate) period for the market to produce a solution to the congestion in question. And if, at the end of that period there is no solution, at that point PJM will require a transmission owner to construct an upgrade.<sup>4</sup>

7. In the July 24 Order, the Commission accepted PJM's March and April 2003 compliance filings, but required PJM to modify its filing by clarifying who will receive any Financial Transmission Rights (FTRs) or Auction Revenue Rights (ARRs) that are created as a result of the building of an upgrade, and other clarifications. We also required PJM to place all procedures, standards, and requirements for proposing that a transmission owner construct a specific upgrade, and all procedures for charging customers, in its tariff, as well as a provision that, on each occasion when it requires a transmission owner to construct an economic upgrade through the RTEP process, PJM must file a report with the Commission identifying the upgrade, the projected cost of the upgrade, and identifying who will be responsible for paying for the upgrade.

8. The Commission also rejected a cost recovery mechanism filed by the PJM Transmission Owners (PJM TOs) in Docket No. ER03-738-000. We found that the PJM TOs had incorporated a single carrying charge for all of PJM in the tariff that would apply to future expansions regardless of the zone in which the facilities are constructed, which we found to be unjust and unreasonable. We noted that the carrying charge was developed by averaging nearly all costs across the region to develop a carrying charge that would apply only to new construction. We found this inappropriate, in light of wide variety in both the capital structure and the cost factors among the PJM TOs. We therefore rejected this recovery mechanism. We noted, however, with regard to the proposed 50-basis point RTO Membership Adder, that we had accepted a similar adder for the Midwest Independent Transmission System Operator (MISO), and that a similar adjustment would be allowed for the PJM TOs.<sup>5</sup>

### **PJM'S AUGUST 25 COMPLIANCE FILING**

9. In its August 25 compliance filing, which PJM proposes to make effective as of July 24, 2003, PJM has added new Section 1.5.7 to Schedule 6 of its Operating Agreement that further describes its planning process for the addition of economic transmission upgrades. It clarifies the procedure set forth in its March 20 compliance filing, and states that it will analyze all congestion on its system on an ongoing basis, and will determine transmission solutions for unhedgeable congestion that is not addressed by market solutions. PJM notes that it is continuing to develop the tools by which it will

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<sup>4</sup> July 24 Order at P 55.

<sup>5</sup> July 24 Order at P 74.

measure unhedgeable congestion and is working through the process with its stakeholders.

10. In response to specific Commission questions on whether FTRs obtainable at high prices would be considered hedgeable congestion, PJM answered that the prices of FTRs do not enter into PJM's analysis. According to PJM, ARR are allocated annually to LSEs in each PJM zone at no cost, and that LSEs may convert such ARRs into FTRs at no cost. The price at which those FTRs may be sold in secondary or short-term markets does not affect the determination of whether congestion on the paths of such FTRs is hedgeable or unhedgeable. PJM also argues that available third-party FTRs are also properly included in the calculation since these FTRs are viable hedges for affected load. According to PJM, disregarding third-party FTRs would distort economic incentives for merchant transmission investment.

11. PJM would compare monthly cumulative unhedgeable congestion associated with a constraint with an applicable Market Threshold (that is published in its Manuals, not its Tariff). When the Market Threshold is exceeded, PJM will (a) provide notification that a one-year market window has opened, during which a merchant transmission provider may offer to provide an upgrade, and (b) initiate a cost-benefit study of transmission upgrades. If no market-based solution is proposed within the Market window, PJM will finalize its cost-benefit study and propose to include the transmission enhancement or expansion that is the most cost-effective solution in PJM's Regional Transmission Expansion Plan. PJM will then meet with stakeholders to review the cost-benefit study, and make a filing with FERC that includes the proposed economic upgrade. If the transmission owner declines to construct, PJM will file with the Commission a report on the results of the pertinent economic planning process in order to permit the Commission to determine what action, if any, it should take.

12. PJM also states that it recognizes that particular concerns may exist with regard to congestion on the Delmarva peninsula, and states that, since the Commission's investigation regarding Delmarva congestion is continuing in Docket No. PA03-12-000, PJM will make such further filings as directed by the Commission as a result of that proceeding.

### **REQUESTS FOR REHEARING AND PROTESTS OF COMPLIANCE FILING**

13. Requests for rehearing and/or clarification of the July 24 Order were filed by Jersey Central Power and Light Company, Metropolitan Edison Company, and Pennsylvania Electric Company (FirstEnergy), PSEG Companies (PSEG), the Delaware Municipal Electric Corporation (DEMEC) and the Maryland People's Counsel, Pennsylvania Office of Consumer Advocate, Ohio Consumers Counsel, and the District of Columbia People's Counsel (Joint Consumer Advocates).

14. Timely protests of PJM's August 25 compliance filing were filed by DEMEC, Joint Consumer Advocates, PSEG, National Grid USA (National Grid), the Virginia State Corporation Commission (Virginia Commission), Reliant Resources, Inc. (Reliant), NRG Companies (NRG), and the Coalition of Municipal and Cooperative Users of New PJM Companies' Transmission (Muni-Coop Coalition). The Illinois Commerce Commission (Illinois Commission) filed a timely motion to intervene. A motion for leave to file a protest out of time and protest was filed by Constellation Power Source, Inc. (Constellation), and a motion for leave to make a late filing and protest, comments and request for hearing was filed by the Delaware Public Service Commission (Delaware Commission). PJM submitted an answer to the protests out of time.

## **DISCUSSION**

15. The Commission grants in part and denies in part the requests for clarification and/or rehearing. The Commission also accepts PJM's August 25 compliance filing, but requires additional modifications, effective as of July 24, 2003.

### **I. Procedural Matters**

16. The timely motion to intervene of the Illinois Commission in Docket No. RT01-2-010 makes it a party to this proceeding. Given the early stage of this proceeding and the absence of undue delay or prejudice, we find good cause to grant the unopposed motions of Constellation and the Delaware Commission to file late protests in Docket No. RT01-2-010.

17. Under Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2)(2003), an answer may not be made to a protest absent authorization by the decisional authority. We will accept the answer filed by PJM because it has provided additional material that has assisted us in considering this matter.

### **II. Requests for Rehearing and/or Clarification in RT01-2-009**

18. FirstEnergy in its request for clarification has pointed to ambiguities in the language of the July 24 Order, and asked the Commission to clarify that PJM cannot compel transmission owners to construct upgrades to relieve congestion. PSEG in its request for rehearing and clarification states that the Commission failed to provide sufficient detail of the process by which it will address expansions that are identified by the RTEP process, but that the transmission owner in question is not willing to build.

PSEG asks the Commission clarify that it can only order an economic expansion under its Section 206 power, to remedy undue discrimination.<sup>6</sup>

19. Joint Consumer Advocates in their rehearing request ask the Commission to clarify that it was not in any way extending the period for the market to produce solutions. Joint Consumer Advocates allege that, in PJM's March 20 compliance filing, PJM proposed that it would first screen for congestion, then open a one-year window for market solutions, but the Commission's description of the process at P 55 of its July 24 Order provided that PJM would perform a cost-benefit analysis as to whether the cost of an upgrade would provide a net economic benefit, and then open a market window. Joint Consumer Advocates argue that the market window should open when PJM publishes notice that a congestion event has caused a level of congestion that exceeds the trigger point, and should run concurrently with PJM's performance of a cost-benefit analysis. DEMEC argues in its rehearing request that the Commission erred by approving a plan by which PJM will not propose construction of a new upgrade until the possibility that the market will produce a solution is exhausted. DEMEC also argues that the Commission should not have delayed resolution of Delmarva issues pending resolution of the Delmarva Transmission Proceeding, Docket No. PA03-12-000: DEMEC asserts that, since market forces have not provided relief to Delmarva for the past five years, there is no reason to believe they would do so now, and asks the Commission to modify the RTEP process so as to require PJM to prioritize transmission expansion on Delmarva, without waiting a year for a market solution.

20. Commission Response. The Commission grants the clarification requested by FirstEnergy. As stated in the July 24 Order, if at the end of PJM's RTEP process PJM has determined that an upgrade is necessary, but the transmission owner in question has not agreed to build it, PJM must make a filing with the Commission, and the Commission will then "determine whether to institute an individual proceeding to determine whether to require enlargement of facilities under the FPA, or take other steps."<sup>7</sup>

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<sup>6</sup> PSEG also argues, as to the question of whether the Commission has the authority to require PJM to compel transmission owners to construct economic upgrades, that the Commission should not have dismissed the request for rehearing by New York Transmission Owners (NYTOs) of the December 20 Order on this question as unripe, while treating PSEG's protest of PJM's compliance filing on this same question as an untimely request for rehearing. Since in the July 24 Order the Commission granted the NYTOs' request for rehearing, and gave the requested relief to PSEG, as to this issue, PSEG's request for rehearing here is moot, and the Commission will therefore not address it.

<sup>7</sup> July 24 Order at P 31.

21. The Commission will deny PSEG's request for clarification regarding the process it will follow if the PJM RTEP process identifies a necessary expansion, but the transmission owner in question does not build it. The Commission will not at this time set forth the process by which it will act, or state categorically that it will act only under Section 206. Once PJM has determined that an upgrade is necessary, the Commission has a wide variety of regulatory tools at its disposal, and particularly at this point in a completely new process, we decline to specify what actions we may be required to take to fulfill our regulatory duties under the Federal Power Act.

22. As to the other possibilities for delay raised by the parties, we deny the request for rehearing of Joint Consumer Advocates regarding the process described in our July 24 Order at P 55. In P 55 of the July 24 Order, the Commission noted that PJM had proposed that, once it determined that an area was sufficiently congested, it would then perform a cost-benefit analysis before opening the market window. Joint Consumer Advocates argue that requiring the cost-benefit study before allowing the opening of the market window will create excessive delay.

23. In its August 25 compliance filing, PJM proposes to open the market window and perform its cost-benefit analysis during the market window. We reject this proposal. We require PJM to amend its Operating Agreement, within 30 days of the date of this order, to provide that, once PJM has determined that unhedgeable congestion exists, PJM must complete its cost-benefit analysis prior to the opening of the market window, in order to give the parties necessary information to explore alternatives during that market window. However, we recognize the validity of Joint Consumer Advocates' concerns regarding the potential for delay if PJM must receive information from its stakeholders and then submit its analysis to the PJM Board before completing its cost-benefit analysis. We therefore will require PJM to complete its cost-benefit analysis expeditiously. In its compliance filing, PJM may either propose a 60-day timeframe to perform the cost-benefit analysis, or else must explain why a longer period is necessary.

24. DEMEC contends that the Commission should modify the procedures adopted in this proceeding to deal with the issues raised by the Delmarva Peninsula. The tariff provisions adopted in this proceeding establishes a general process for identifying needed transmission construction, applicable to all of PJM, including the Delmarva Peninsula. The Commission has already established a separate proceeding in Docket No. PA03-12-000 with respect to the Delmarva Peninsula,<sup>8</sup> and any specific procedures applicable

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<sup>8</sup> Transmission Congestion on the Delmarva Peninsula, 104 FERC ¶ 61,241 (2003).

solely to Delmarva must be developed in that proceeding.<sup>9</sup> Accordingly, the Commission denies the rehearing request that the procedures adopted in this proceeding be specially tailored for the Delmarva Peninsula.

### **III. Requests for Rehearing and/or Clarification in Docket No. ER03-738-001**

25. PSEG, in its petition for rehearing, states that the Commission has failed to take into account the effect of its recent decision eliminating Regional Through and Out Rates (RTOR) between PJM and MISO<sup>10</sup> on PJM's ability to charge parties outside of PJM for benefits they receive from an economic upgrade. It asks the Commission to clarify the July 4 Order to provide that PJM will exclude through-and-out transactions from the economic expansion process, so that PJM load will not have to bear the costs of upgrades that primarily benefit through-and-out customers. PSEG also points out in its petition for rehearing that cost overruns during the construction of an economic transmission upgrade could result in the ultimate cost of an upgrade exceeding the costs of transmission congestion, and asks the Commission to clarify its July 24 Order to create a mechanism that would discourage cost overruns and encourage efficiencies in the construction of economic transmission upgrades. DEMEC and Joint Consumer Advocates, in their requests for rehearing, state that the Commission erred in permitting the PJM TOs to include a 50-basis point RTO Membership Adder in their mechanism for recovering the costs of any upgrades that PJM requires them to build.

26. Commission response. The Commission will deny rehearing with regard to the RTOR issue raised by PSEG. As PSEG states, PJM committed at the August 19, 2003 meeting of its Tariff Advisory Committee to exclude through-and-out transactions from its economic expansion regime. Since PJM's stakeholder process is already addressing this question, we encourage PSEG to work through that process to obtain resolution of its concerns.

27. The Commission will also deny PSEG's rehearing request regarding a cost overrun mechanism. As PSEG acknowledges, cost overruns are often "an unavoidable result of a

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<sup>9</sup> PJM notes in its filing that if the Commission concludes, as a result of the Delmarva Transmission Proceeding or otherwise, that economic transmission upgrades are required for Delmarva "on a timetable different from the schedule that otherwise applies" under the RTEP process, PJM "is prepared to make such further filings with the Commission as may be necessary to ensure timely completion of such transmission improvements for the Delmarva area." PJM transmittal letter at 6-7.

<sup>10</sup> Midwest Independent Transmission System Operator, Inc., et al., 104 FERC ¶ 61,105 (2003), rehearing pending (RTOR Order).

necessarily imperfect" estimating process.<sup>11</sup> At the time that PJM analyzes the costs and benefits of building an upgrade, it works with the best cost estimates available to it. The Commission will not impose a vague requirement to "ensure cost efficiency" on PJM's estimating process, when PSEG has not pointed to any specific inefficiencies now existing.

28. The Commission also denies rehearing with respect to the parties' requests related to the 50-basis point adder approved in the July 24 Order. As noted there,<sup>12</sup> the Commission has added a 50-basis point adder to companies within MISO. When the PJM TOs file a new cost recovery mechanism to replace the mechanism rejected in Docket No. ER03-738-000, they can seek a 50-basis point adder at that time, and parties seeking to challenge that provision can do so in that proceeding.

#### **IV. Issues Relating to PJM's Compliance Filing in Docket No. RT01-2-010**

##### **A. PJM'S CALCULATION OF UNHEDGEABLE CONGESTION**

###### **i. PJM's Proposal**

29. PJM proposed a several step process to calculate unhedgeable congestion. First, PJM would monitor congestion and calculate hourly gross congestion costs associated with each constraint on its transmission system. Gross congestion costs would be calculated as the market value (which PJM calls the "shadow price") of the transmission constraint, multiplied by the actual flow of power over the constrained line. Hourly gross congestion costs would be accumulated monthly for each constraint and compared to Initial Thresholds of gross congestion costs. Different Initial Thresholds would be established for different facilities, depending on their voltages.

30. When gross congestion costs exceed the applicable Initial Threshold, PJM would begin to determine the extent to which the load affected by that constraint is unhedgeable. According to PJM, unhedgeable congestion is the portion of gross congestion cost represented by the proportion of unhedgeable affected load to total affected load subject to a transmission constraint. Unhedgeable affected load equals the Total Affected Load for the particular constraint, less the sum of (a) annual FTRs that were allocated to the

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<sup>11</sup> PSEG request for rehearing at 8.

<sup>12</sup> July 24 Order at P 74: "With regard to the 50-basis point RTO Membership Adder, we have accepted a similar adder in the MISO proceeding. In that proceeding, the return on equity was based on the midpoint of the range of returns plus 50 basis points. Since our acceptance in that proceeding was based on a policy justification for recognizing the value of independent operation of transmission facilities, a similar adjustment would be allowed for the PJM TOs"

Constrained Bus Load as ARR in the most recent annual ARR allocation under the PJM Tariff; (b) any additional FTRs that could have been available to the Constrained Bus Load as ARR in the most recent annual ARR allocation, but which were not requested; (c) other long-term FTRs available to the Constrained Bus Load as ARRs or FTRs from third parties, including merchant transmission providers; and (d) the product of the economic local generation and the appropriate powerflow distribution factor. Economic local generation is the generation capacity (in MW) that is online at the time of the constraint and available to Constrained Bus Load at each bus on the transmission system at prices no greater than the PJM system marginal price.

## ii. Protests

31. National Grid, in its protest, argues that PJM's method will fail to measure what National Grid considers the "true cost" of congestion, namely, the actual redispatch cost differential between the transmission constrained area (load pocket) and the areas outside the constrained area. National Grid is also concerned that the proposed calculation does not address congestion within a load pocket, in that, while the prices customers pay to generators inside this load pocket will likely be driven up by the transmission constraint, those MW do not flow across the constrained interface, and as a result are not counted by PJM's formula. Thus, National Grid argues, PJM's gross congestion cost threshold may never be met.

32. Some parties state that PJM's methodology will exclude some instances of hedgeable congestion. DEMEC, Joint Consumer Advocates and the Virginia Commission state that PJM assumes that parties can hedge congestion with FTRs, but that in fact, FTRs may be unavailable or prohibitively expensive, and National Grid argues that the availability of third-party FTRs simply offers load the opportunity to pay congestion costs in a lump sum, rather than a little at a time, rather than being a true hedge.

33. National Grid asserts that PJM assumes that the Economic Local Generation (the generation capacity available to constrained load on the transmission system at a price no greater than the PJM system marginal price) can also serve as a hedge, but that in practice, Economic Local Generation will not exist. National Grid alleges that no generator can be expected to sell energy for less than the LMP applicable to it, regardless of what the generator may have bid into the market,<sup>13</sup> and that such LMP is likely to be higher than the system marginal price since it is in a constrained area. DEMEC argues that in its experience, no generation owner would sell power or energy through a bilateral

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<sup>13</sup> National Grid asserts that "[f]or instance, generators who self-schedule by bidding zero may be considered by PJM as 'economic' but there is no basis for the assertion that such generators stand ready to sell power for nothing." National Grid Protest at 10 n.16.

contract that did not already include congestion costs, and the Muni-Coop Coalition and the Delaware Commission additionally state if there is generation available in a constrained area at a price lower than the PJM system marginal price, it is likely that it would already have been dispatched; thus, these parties argue, it is inaccurate to consider this a hedge.

34. National Grid further states that PJM is improperly disqualifying certain congestion from its definition as "non-recurring," since frequent but dissimilar congestion events in the same location would be considered non-recurring, but could still be evidence of insufficient transmission capacity. National Grid also claims that PJM is biasing its process by requiring that both the Initial Threshold and the Market Threshold are exceeded in the same month.

35. By contrast, other parties assert that PJM's methodology will identify congestion as unhedgeable when that is not the case. NRG states that PJM has improperly excluded partial bilateral hedges and demand response, both of which can provide significant hedges against congestion costs, from the calculation for unhedgeable congestion. PSEG argues that PJM improperly excluded generation available from cost-capped units. Constellation asserts that PJM does not propose to monitor whether congestion observed in a single month is sustained beyond that month.

36. PJM responded to the protests about the calculation of unhedgeable congestion in its answer. In response to National Grid's protest that the actual redispatch differential be used to measure congestion, PJM provided the following response:

The total "redispatch cost differential" which National Grid advocates reflects the effect on LMP of all simultaneous constraints that affect prices in the constrained area. If multiple constraints occur during a particular hour and each of those constraints has some effect on LMP in the constrained area, National Grid's approach would preclude differentiating the effects of each transmission constraint. While total gross congestion costs may be determined by the "redispatch cost differential," PJM's economic planning process requires assessing the gross hourly congestion cost associated with each particular constraint in order to conduct a meaningful cost-benefit analysis of potential solutions to such constraints. PJM's more refined approach is further necessary in the event that a potential transmission upgrade will not resolve all of the constraints affecting load in a particular area. In such cases, it is essential to know the effect that an upgrade will have on each operative constraint in order to be able to assess accurately the benefits to be weighed against the costs of the upgrade.<sup>14</sup>

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<sup>14</sup> PJM Answer at page 13.

Furthermore, PJM states that “the shadow price takes into account the incremental benefit of reducing congestion to all affected load, i.e., all load that pays the congestion price when a constraint occurs. Shadow prices do not necessarily correlate directly to differences in LMPs across a constraint when multiple constraints are binding.”<sup>15</sup>

37. PJM states in its answer that it believes that it is appropriate to regard as a potential hedge against congestion local generation capacity that is available at reasonable cost to affected load. PJM also believes that it has “struck a reasonable balance in its approach.”<sup>16</sup> PJM states that it ensures a conservative analysis by including as available hedges only local generation capacity that is available and that is online at prices no greater than the PJM System Marginal Price.

38. In response to the protests about what should be considered as hedges, PJM answers that it has considered hedging in its calculations. PJM’s analysis assumes bilateral hedges to be available for resources bid at prices equal to or less than the PJM System Marginal Price, i.e., the system-wide unconstrained price of energy. PJM is also not apprised of the prices of partial hedges, and is unclear on how to measure whether they are uneconomic.

39. PJM answers the protests about whether the proposed process may initiate a Market Window after too short a period of congestion by noting that the cost-benefit study will ultimately reflect the economics of a needed upgrade. For example, if the Market Threshold is never again exceeded during any month in a year, a cost-effective solution proposed by the market or identified through a cost-benefit analysis by PJM will be unlikely. However, if a cost-effective solution is identified, the fact that the Market Threshold is breached for only single month should not provide a reason to not proceed with the upgrade.

### **iii. Commission Response**

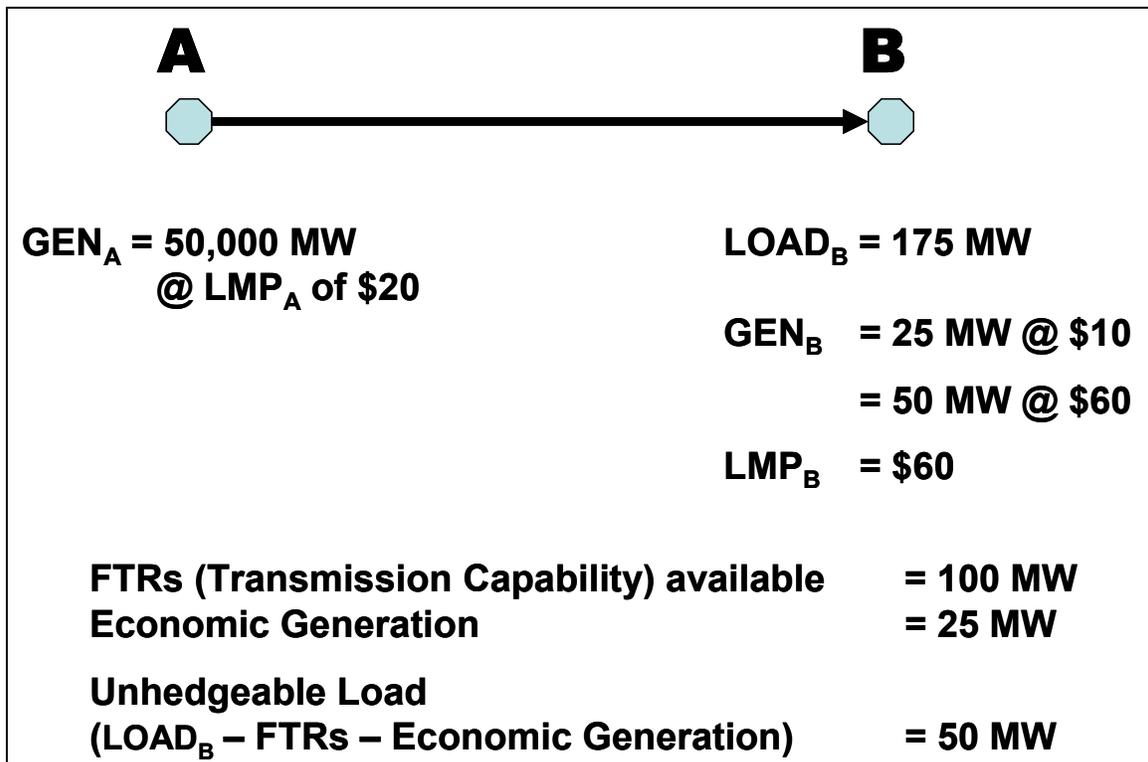
40. While the Commission is supportive of the general concepts of measuring unhedgeable congestion, we, as well as many of the parties, have concerns about the way in which PJM measures unhedgeable congestion and applies its thresholds. The following describes the Commission’s understanding of the underlying concept in this proposed methodology, using a stylized, two-node example illustrated in the figure below.

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<sup>15</sup> PJM Answer at page 14.

<sup>16</sup> PJM Answer at page 22.

41. In this figure, B represents a congested area and A represents the rest of the PJM region. The total generation within this area is insufficient to meet total load, and load cannot also be served solely from generation from outside of the region due to transmission constraints. Consequently, the LMP within the region is \$60, i.e., the bid of the higher cost generator, instead of the PJM system-wide clearing price of \$20. In addition, 25 MW of generation that bid at levels lower than the system-wide clearing price serves a portion of the load in region B. Under PJM’s approach, gross congestion cost is calculated by multiplying the shadow price of the constraint (\$40 in our hypothetical example)<sup>17</sup> times the actual flow of power over the constrained line (which would equal the full amount of FTRs of 100 MW in the example), or \$4,000. Unhedged congestion would be calculated in the filing by multiplying \$4,000 by the ratio of unhedged affected load to total affected load (50 MW divided by 175 MW in the example), or approximately \$1,145.



42. Our concern as to PJM's measurement of unhedgeable congestion principally relates to PJM’s definition of gross congestion cost and unhedgeable congestion.

<sup>17</sup> While the shadow price of a single radial line is measured by the difference in LMPs at the two end points, the Commission is cognizant that the shadow price of a transmission line is not necessarily equal to the difference in LMPs at the line’s endpoints in multi-node transmission networks such as that operated by PJM.

PJM proposes to measure the gross congestion cost as the market cost of the amount of power that is actually transmitted over the constrained line. But the value of a transmission expansion depends on the market value of the power that could be transmitted if the line were expanded; this latter value is related to the redispatch costs that arise due to the transmission constraint, not to the gross congestion costs definition proposed by PJM. Put another way, the problem with PJM's proposal is that it multiplies the throughput on the path times the congestion cost. But this measure calculates only the amount paid by those that use the congested path (in this case 100 MW); it fails to measure the cost of congestion to those parties not using the path. According to PJM's filing, congestion cost is measured by the capacity of the line. Thus, holding other things equal, the smaller the line in question, the lower the gross congestion costs, regardless of the impact of congestion on the affected load. In the example, if the capacity of the line were reduced to 50 MWs from 100MWs, PJM would calculate a total congestion cost of only \$2,000 (as opposed to \$4,000 with a 100 MW capacity), even though a greater number of parties would be subject to paying congestion (the unhedgeable load, those buying the more expensive \$60/MW power, will have increased from 50 MW to 100 MWs).<sup>18</sup>

43. As National Grid suggests, the true measure of congestion is to take the full load and subtract the total capacity (as measured by the FTRs), resulting in the amount of unhedgeable load. It is, after all, that load which must pay for the congestion cost, not those that are already hedged (which is what PJM seems to be measuring). In the example, the total cost of congestion would be the product of the shadow price times the unhedged load (\$40 times 50 MW), or \$2,000, rather than \$1,145 calculated by PJM's measure.

44. Under this approach, PJM would not need two market screens (the initial and market thresholds). It would simply create a single market screen for the cost of unhedgeable congestion.<sup>19</sup> If PJM finds that two market screens are valuable, there may be alternative ways of doing the calculation to preserve both screens. PJM, for example, could calculate gross congestion costs as the total affected load times the LMP congestion cost (\$7,000 = 175 \* \$40). It could then apply this value to the ratio of

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<sup>18</sup> In a more extreme example, under PJM's calculation, if there was no throughput on the line or no line exists between two points, there would be 0 congestion costs, even though the affected load could be paying significantly higher prices at one node than the other. Yet, PJM would not even examine whether transmission construction would be beneficial in such a circumstance.

<sup>19</sup> If the direction of energy flows (and thus, the direction in which congestion occurs) were to change over the period examined, the market screen would be compared to the combined congestion costs in each direction.

unhedged to hedged congestion (50/175) to determine unhedgeable congestion costs. ( $\$2000 = \$7000 *^{50}/_{175}$ ).

45. PJM contends in its answer that its definition of gross congestion costs is correct, because the shadow price may be reflective of multiple constraints rather than the congestion caused by individual facilities. It also maintains that it is essential to know how an upgrade will affect congestion on particular facilities, rather than across multiple facilities. But PJM's answer does not address the concern described above that congestion on small lines, may under its approach, be undervalued even though transmission enhancements on such lines may result in large decreases in congestion. Moreover, PJM has failed to explain why the analysis should focus on congestion on a facility-by-facility basis, rather than on a more comprehensive basis. A facility-by-facility analysis may underestimate total unhedgeable congestion. Also, when multiple constraints into an area exist, a more comprehensive analysis could better examine which potential transmission enhancement plan would provide the greatest reduction in congestion at the lowest cost.

46. Some parties contend that certain FTRs should not be included in the calculation, because the FTRs may be expensive to buy, while others suggest additional hedging mechanisms should be included. But these comments fail to recognize that the use of FTRs in the formula provided by PJM is basically a way of measuring the total capacity of the path, not whether any particular party is hedged or not. As discussed above, in the example, the transmission line in question can transport only the 100 MWs of transmission. If demand at B were less than 100 MWs, there would be no congestion costs. Thus, the appropriate measure of congestion costs is to determine the costs imposed by the lack of transmission on all demand above the 100 MWs. Those parties with FTRs are hedged, and those without FTRs must pay the congestion cost. But, as long as the total cost of congestion is properly measured, it should not matter whether any one party is hedged, or what the price of obtaining the hedge is. Indeed, in the example above, no party would pay more than \$40 to obtain an FTR, so the impact on unhedged parties is measured, whether they choose to buy an FTR or not.

47. Other parties question why in-merit local generation reduces the total affected load, claiming that the price for such generation equals the higher LMP resulting from congestion. But such load (the \$20 generation in the example) is properly excluded from the total affected load, because it represents capacity that alleviates congestion. If the demand equaled the capacity of the transmission line, plus the in-merit generation, there would be no congestion on the line. Thus, to determine the cost of congestion, one should exclude the load that can be served by in-merit generation. On the other hand, we agree that the out-of-merit cost-capped generation should not reduce the unhedgeable load, because they may be an uneconomic generator, which would contribute to

congestion costs.<sup>20</sup> Finally, the Commission disagrees with Constellation's assertion that PJM's methodology will pick up excessive amounts of congestion (by not examining whether congestion observed in a single month is sustained beyond that month). Congestion occurring in only one month could produce significantly high total congestion costs so as to warrant construction to alleviate the congestion. As PJM points out in its answer, the use of these thresholds only determines whether to initiate the review process. PJM's decision as to whether to recommend construction will ultimately be the result of the cost-benefit studies it conducts. Thus, to the extent congestion is non-recurring, it will be considered and potentially rejected as uneconomic during the cost-benefit stage in the process.

48. National Grid argues that PJM's process may fail to pick up sufficient congestion (by defining certain congestion as "non-recurring" and requiring that both the Initial Threshold and the Market Threshold are exceeded in the same month). The Commission agrees that PJM's process may miss significant congestion that does not trigger the thresholds in a single month, but reaches high levels over the course of a year or season. PJM is directed to address this concern in its 30-day compliance filing, or to make necessary revisions to its process.

49. Due to the concerns expressed above, we direct PJM to respond in a compliance filing due within 30 days. First, PJM is directed to respond to the accuracy of our interpretation of gross congestion cost and unhedged congestion, and to the specific concerns raised above. Second, if PJM believes we are in error in our interpretation, we direct PJM to (a) provide a detailed assessment of our alternative formulation and interpretation, (b) address why it believes that its proposed definitions of gross congestion costs, shadow prices and unhedged congestion are useful for examining where to expand transmission capacity, and (c) respond to National Grid's proposed alternative definition of congestion cost as the cost of redispatch (with a focus on whether facility-by-facility analysis will correctly measure total congestion cost). Third, PJM is directed to file revised tariff language, if necessary.

## **B. NECESSITY OF PUTTING TERMS IN TARIFF**

50. In response to Commission direction in the July 24 order, PJM provided additional information on its proposed economic expansion process in the compliance filing. However, PJM did not provide information on the thresholds and criteria that will be used to determine economic expansions. PJM asserts that, to the extent that details of its analysis are not stated in Schedule 6 of its Operating Agreement, they will be in the PJM manuals. PJM states that, while it believes its present methodology for analyzing unhedgeable congestion is sound, the analysis is new and will evolve as PJM evaluates it,

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<sup>20</sup> If a cost-capped unit's bid is dispatched in-merit, it should be treated like all other in-merit economic generation.

in part through a stakeholder process. PJM states that it is important for it to retain flexibility to make changes in its approach, and that stating all aspects of its analytical methodology in its tariff will not permit that flexibility.

51. All of the protesters disagree with the relegation of terms, conditions, and criteria to PJM manuals. The Muni-Coop Coalition, Constellation, DEMEC, National Grid, Reliant, and the Virginia Commission argue that these components should be filed with the Commission, and that PJM should use the PJM manuals solely to make refinements and improvements to the process established in the tariff. Constellation argues further that PJM has not provided any details on the criteria that it will use to conduct cost-benefit studies, and recommends that these criteria be included in its Tariff.

52. DEMEC, National Grid, and the Virginia Commission are troubled by PJM's vagueness on the details on the Initial and Market Thresholds in the filing. DEMEC requests that the Commission direct PJM to place both the full determination and justification for the thresholds in its tariff. The Virginia Commission argues that the filing does not provide adequate information on how many thresholds will be used, the criteria on how the thresholds will be developed, and the interrelationship between the Initial Thresholds and Market Thresholds. The Virginia Commission and National Grid recommend that the Commission direct PJM to clarify this aspect of its compliance filing.

53. The Virginia Commission argues that the calculation of unhedgeable congestion goes to the heart of economic expansion, and that the calculation should be included explicitly in Schedule 6 of the tariff, requiring any amendments to the methodology to be reviewed by the Commission.

54. Commission Response: Although PJM did provide additional information on the economic expansion process in its compliance filing, the level of detail provided falls short of the level required by the July 24 Order. The Commission agrees with the protesters that the process can be assured of an adequate level of regulatory oversight only if the Commission is able to review key specifics of the expansion process.

55. Nevertheless, the Commission is cognizant of the need to provide PJM sufficient flexibility to engage in the economic expansion process without undue delays. Consequently, as an initial matter, the Commission will limit the level of additional information that will need to be placed in the tariff to (a) the calculation methodology used to arrive at unhedgeable congestion, (b) Initial and Market Thresholds for all facilities (assuming that PJM concludes that more than one threshold is necessary), and (c) the criteria to be used in cost-benefit analyses. The Commission directs PJM to make a compliance filing within 180 days of the date of this order that includes those items in Schedule 6 of its Operating Agreement, effective as of the date of that filing. The Commission recognizes that, as the RTEP process evolves, PJM and/or other parties may propose and implement changes to the process. If any of these changes affect the four

components listed above, PJM must make a filing with the Commission to amend its tariff.

### **C. CHALLENGES TO THE TIMING OF PJM'S PROCESS**

56. Multiple protestors have raised concerns about the potential for gaming and delay in the proposed PJM economic expansion process. DEMEC, National Grid and the Delaware Commission are concerned that a market participant (particularly market participants with an economic interest in preventing the construction of upgrades) could game the system by offering a solution during the one-year market window, entering the PJM queue and then removing itself from the queue before the completion of the promised project. National Grid points out that a generator could propose to locate a facility within a load pocket and then, under the Commission's Large Generator Interconnection rule, suspend further RTEP activities for the period allowed for processing of that interconnection request.

57. Even absent gaming, protesters are concerned that the entire economic expansion process provides multiple opportunities for delay. National Grid suggests that the whole process comprises a “gauntlet of eight obstacles.” DEMEC is concerned that the amorphous nature of the cost-benefit analysis could extend the expansion process past the one-year market window, and argues for more explicit procedures and timing for these cost-benefit analyses. DEMEC suggests that after a customer petitions PJM to examine a particular congestion location, a cost-benefit analysis should be undertaken immediately, and the one-year window should immediately be reduced to three months or even eliminated. The Virginia Commission also objects to the length of the one-year market window, especially in the case of already known load pockets, and requests that there be a specified time period for each of the actions taken after the Market Window opens. National Grid is concerned that allowing merchant developers this one-year window will serve to delay needed transmission upgrades.

58. Finally, the Delmarva parties and the Muni-Coop Coalition raise the issue of whether, once unhedgeable congestion has been identified, the load affected by that congestion should receive relief for the period between the identification of unhedgeable congestion, and the date on which an upgrade to address the problem goes into service.

59. Commission Response. The Commission views the potential for gaming raised by the protestors as a significant and difficult problem. We will therefore direct PJM to work with its stakeholders and its Market Monitoring Unit to develop a solution to this problem. One possibility would be for PJM to develop new rules to prevent gaming; another might be for PJM to propose to assess penalties against those entities that are identified as gaming the system. Whatever solution PJM develops, it must make a filing within 180 days of this order adding the solution to its tariff or Operating Agreement.

60. As to the question regarding relief for the gap between the time that PJM determines that unhedgeable congestion exists, and the time that an upgrade to address that unhedgeable congestion goes into service, we will deny rehearing. Any such gap relief would require that, in order to grant transitional relief to customers in a congested area, PJM would be required to surcharge other customers. Such a surcharge to other customers, who did not contribute to the congestion costs experienced by the customers in the congested area, would be inappropriate.

#### **D. COST ALLOCATION DETERMINATION**

61. Reliant, in its comments, states that PJM's cost allocation methodology is insufficiently defined to facilitate market-based solutions prior to the ordering of regulated transmission expansions. Reliant first states that PJM's plan is deficient in not ensuring that the cost allocation procedures for upgrades are not defined and understood by market participants prior to the opening of the market window. Reliant further states:

[T]he desire to enter into cost-effective bilateral transactions or make additional investment in a given local area, both of which can reduce congestion and the total costs to customers, is thwarted until market participants understand how any future cost allocation procedure will ultimately affect their specific interests. For example, market participants serving load may be reluctant to enter into a bilateral contract that provides an economic hedge to congestion if there is hope that a "favorable" cost allocation methodology will result in a lower costs. Likewise, investors will be unable to determine the wisdom of investing in a particular local area until they fully understand the competing alternatives and the corresponding impact on the market. The proposal that PJM has put forth has the potential to undermine the very market solutions that PJM is attempting to facilitate by creating a market window.<sup>21</sup>

62. Commission Response. The Commission agrees with Reliant that the lack of precise and timely information regarding the eventual allocation of the costs of upgrades could inhibit the development of market solutions to congestion problems. Because all parties are uncertain as to how the costs will be allocated if a transmission upgrade is ultimately constructed through the PJM RTEP process to assist a particular area— *i.e.*, whether those costs will be allocated to the load in the load pocket alone, or to a broader group of PJM participants – those parties who could best bring about a market solution that would eliminate the necessity of requiring an upgrade have been unwilling to step forward and do so. If the load in the load pocket could know in advance that it alone

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<sup>21</sup> Reliant comments at 2, 5-6.

would be liable for the costs of an RTEP upgrade, it would be able to negotiate for bilateral contracts and/or with merchant transmission providers with a clear understanding of its ultimate liability, should it fail successfully to complete such negotiations. If, on the other hand, a broader group of PJM participants are aware that they will share in those costs, that fact would also inform and influence the parties' motivation and ability to negotiate and invest. Absent such timely information, however, market participants both within and outside of the load pocket cannot make the business calculations necessary to initiate the process of developing a market solution.

63. The Commission therefore finds that the process and timeline proposed by PJM in its RTEP process will not provide market participants with necessary cost allocation information on a timely basis, and we require PJM to amend that process to ensure that cost allocation is in place before the market window opens. We will require PJM to amend its RTEP procedure, as set out in Schedule 6, within 30 days of the date of this order, to provide that at the time that PJM makes a finding of unhedgeable congestion as to any area or facility, it will also make a preliminary finding as to what parties, if no market solution is found and an upgrade is ultimately required through the RTEP process, would be the beneficiaries of that upgrade, and would therefore be likely to be allocated the costs of the upgrade.

#### **E. PROCEDURAL ISSUES**

64. Constellation, in its protest to the compliance filing, asks the Commission to require that, when PJM files a report finding that an economic upgrade is necessary, it makes that filing under Section 205. The Muni-Coop Coalition states in its protest that PJM's August 25 compliance filing goes beyond what may be filed as part of a compliance filing, and presents new procedures, requirements and standards which are substantive new tariff provisions, and must be filed under Section 205.

65. Commission Response. We do not agree with Constellation that, when PJM makes a filing that an economic upgrade is necessary, it must do so under Section 205. PJM is required to make an informational filing of the results of its RTEP process. If the Commission then initiates action based on that filing, it will do so in a manner allowing the participation of affected parties, consistent with due process.

66. We do not agree with the Muni-Coop Coalition that PJM has exceeded the parameters of what may be filed in a compliance filing. In the July 24 Order, we directed PJM to address deficiencies in its previously-filed Operating Agreement provisions. If, in order to do so, PJM was required to file new tariff provisions, that is within the parameters of responding to our request.

67. Finally, we order PJM to make the provisions of its RTEP process effective as of the date of this order. Despite the fact that we are requiring certain information and

revisions from PJM, we find PJM's process as it is stated now to be sufficiently just and reasonable that PJM may begin the RTEP process.

The Commission orders:

(A) The requests for rehearing and clarification are denied in part and granted in part, as discussed above.

(B) PJM's compliance filing is hereby accepted effective as of the date of this order, as discussed above.

(C) PJM must make compliance filings in 30 days and 180 days of the date of this order, as discussed above.

By the Commission.

( S E A L )

Magalie R. Salas,  
Secretary.