UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

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

PJM Interconnection, L.L.C. Docket No. ER03-1101-000

ORDER ACCEPTING PROPOSED TARIFF
CHANGES FOR FILING, AS MODIFIED AND CONDITIONED,
SUBJECT TO ONE-DAY SUSPENSION AND REFUND

(Issued September 22, 2003)

1. On July 22, 2003, PJM Interconnection, L.L.C. (PJM) submitted proposed changes to the PJM open access transmission tariff (PJM OATT), pursuant to Section 205 of the Federal Power Act (FPA),[1] addressing PJM's credit requirements applicable to virtual bidding in PJM's day-ahead energy market. For the reasons discussed below, we will accept PJM's proposed revisions for filing, as modified and conditioned, subject to a one-day suspension and refund, to become effective September 20, 2003.

Background

2. PJM states that its proposed tariff changes are designed to respond to what it characterizes as an explosive increase in virtual bidding in its day-ahead energy market in recent months. PJM explains that certain market participants whose interests are purely financial (currently only a limited number) engage only in virtual bidding. The motive, PJM states, is to capture arbitrage opportunities by buying low in the day-ahead market and selling high in the real-time market (or conversely, by selling high in the day-ahead market and buying low in the real-time market).[2]

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[1] 16 U.S.C. § 824d (2000).

[2] As such, a virtual transaction can be distinguished from a physical trade that is actually scheduled to the extent that it involves no actual purchase (physical acquisition) or sale (physical disposition) of electricity.

3. To facilitate these arbitrage transactions, PJM states that virtual bidders place thousands of bids every day and that these bids are typically designed to capture the largest possible price differentials as between the day-ahead and real-time markets. Most of these bids do not clear the market. PJM states, however, that because its existing credit requirements apply only to settled transactions, i.e., to cleared bids, an enormous default risk has been created in connection with unaccepted bids made by virtual bidders in the day-ahead market. PJM states that the risks associated with these unsecured bids, which it now estimates is $25 to $50 million a day, is borne not by the virtual bidders alone but by all market participants, pursuant to Section 15.2 of the PJM Operating Agreement.[3] PJM asserts that this significant risk exposure is unjustified and must be minimized.

4. To achieve this objective, PJM proposes to assess new credit obligations on virtual bidders, which would be based on the total volume of bids and offers made, not just on cleared transactions (PJM's existing policy).[4] As revised, PJM's collateralization requirements would be based, first, on a market activity review. Pursuant to this analysis, PJM states that it would determine an uncleared bid exposure which would be equal to the sum of the not-cleared bids and offers, multiplied by the Nodal Reference Price summed over all nodes for the prior four days of actual bids.[5] This market activity review would show whether virtual bid screening is needed.

5. PJM states that if virtual bid screening is required, it would reject all bids and offers submitted if the participant's available credit (i.e., the participant's Working Credit

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[3] Pursuant to Section 15.2, all market participants are required to share in the unrecovered amounts resulting from defaults.

[4] PJM states that its current credit policy was designed in the context of conventional power trades prior to the advent of high volumes of virtual bidding. Under this existing policy, market participants have been required to establish creditworthiness for a level of activity corresponding to their "peak market activity," which is based on the total invoiced amounts of the market participant's highest level of activity during any consecutive two-month period in the prior 12 months. A portion of this amount (85 percent) constitutes a market participant's Working Credit Limit. When a market participant's activity exceeds this Working Credit Limit, PJM's existing rules require the market participant to post additional collateral or be precluded from further transactions.

[5] The Nodal Reference Price would be the 97th percentile of the difference between hourly day-ahead and real-time prices based on a corresponding period in the prior year. It would be calculated for each node and aggregated price point. If an uncleared bid and offer occur at the same node, PJM states that only the high value would be considered.

Limit less any unpaid billed and unbilled amounts owed to PJM, as adjusted by any credits owed by PJM to the participant) is exceeded by the participant's virtual credit exposure (i.e., the higher of the total MWh bid or the total MWh offered hourly at each node time the Nodal Reference Price times four days). PJM states that the virtual credit exposure would be calculated on a daily basis for all virtual bids submitted by the market participant for the next operating day.

6. PJM states that this would only occur, however, where the virtual bidding exposure completely depletes the market participant's existing financial security (i.e., an entire two month's worth of its peak market activity). Moreover, PJM states that rejected bids could be reduced and resubmitted the same day or that additional financial security could be provided to support the market participant's desired bid volume in the future.

7. In support of its filing, PJM states that with each virtual bid, additional credit risk is imposed on PJM's market participants and that because each virtual bid has the potential of being accepted, each carries with it the prospect that it will create a binding financial obligation. PJM further states that the financial risk that a day-ahead virtual bid or offer will be accepted (and must be performed or covered) arises as soon as the market participant makes its binding bid or offer and that this risk must be addressed by appropriate credit requirements. PJM submits that its proposed credit requirements are reasonable given the existing capabilities of its accounting and billing systems.

8. PJM further states that its revised credit requirements have been proven to be reasonable because they have been fully vetted by PJM's stakeholders whose work on this issue began last May. PJM states that its credit revisions were broadly endorsed by PJM's Members Committee, with only a single no vote recorded.

9. PJM requests that its filing be accepted on an expedited basis in order to prevent irreparable harm to PJM's market participants in the event any unsecured bid or offer made in its day ahead market results in a default.

Notice of Filing and Responsive Pleadings

10. Notice of PJM's filing was published in the Federal Register,[6] with interventions, comments and protests due on before August 5, 2003. Motions to intervene were timely filed by Outback Power Marketing, Inc., SESCO Enterprises L.L.C., and Black Oak Energy, L.L.C. (Outback, et al.), Cam Energy Products, L.P. (Cam Energy), Consumers

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[6] 68 Fed. Reg. 45,234 (2003).

Energy Company (CECo), Exelon Corporation[7] (Exelon), Reliant Resources, Inc. (Reliant), PSEG Energy Resources & Trade LLC and Public Service Electric and Gas Company (PSEG), Allegheny Energy Supply Company, LLC[8] (Allegheny), and American Municipal Power-Ohio, Inc. (AMP-Ohio). In addition, a motion to intervene out-of-time was filed by DC Energy, LLC (DC Energy) on August 8, 2003. Comments generally supportive of PJM's filing were submitted by DC Energy, PSEG, Reliant, Allegheny, and Exelon. Protests were filed by Outback, et al. and Cam Energy.

11. Outback, et al. argue that PJM has failed to accurately quantify and has otherwise exaggerated the risk of default associated with virtual bidding in PJM's day-ahead market. Outback, et al. further asserts that even assuming the validity of this risk assessment, PJM's proposal to use four day's of uncleared bids and offers in calculating its collateralization requirement is unjustified. Outback, et al. argues that whatever merit there may be to PJM's proposed method of identifying the risk presented by a past day's activity, there is no explanation for assuming that same day's risk will persist for four days.

12. Outback, et al. also challenges PJM's reliance on the volume of the bids or offers being made by virtual bidders without regard to price and objects to PJM's proposal to restrict bidders to bidding up to 85 percent of the financial security provided, i.e. 85 percent of the market participant's Working Credit Limit. Outback, et al. also challenges PJM's proposed methodology for deducting Total Net Obligations from a bidder's Working Credit Limit, to the extent this calculation would ignore credits PJM owes to the bidder. Finally, Outback, et al. argues that PJM's proposed credit requirements are unduly discriminatory because PJM's filing targets only financial bidders with no analysis of the comparative risk posed to PJM in the financial transmission rights (FTR) auction or the physical market.[9]

13. Outback, et al. submit that while they do not object to reasonable credit requirements associated with the practice of virtual bidding, the Commission should require PJM to adopt the model currently relied upon in the security and commodity markets or, alternatively, apply the model currently used by ISO New England, Inc.

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[7] Joined by its subsidiaries, Commonwealth Edison Company, PECO Energy Company, and Exelon Generation Company, L.L.C.

[8] Joined by Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company.

[9] Outback, et al. points out, for example, that the monthly FTR auction has approximately 384-off-peak hours and 336 on-peak hours as compared to the day ahead market which has 16 on-peak hours and 8 off-peak hours during the weekday.

(ISO-NE). Outback, et al. note that the Chicago Mercantile Exchange uses a daily settlement process to minimize risk and avoid the need for prohibitive security deposits. Alternatively, it is pointed out, ISO-NE avoids over collateralization by differentiating between the uncleared bidding risk and the clearing risk (the latter risk always being lower because cleared bids and offers cannot exceed the uncleared bids and offers). In sum, Outback, et al. argues that the preferred alternative to PJM's proposal would require PJM to measure one day of "submission" risk plus one day of "clearing" risk minus net obligations against 100 percent of the bidder's posted security.

14. Cam Energy, in its protest, raises many of the concerns presented by Outback, et al. in their protest. Specifically, Cam Energy asserts that PJM has overestimated the risk it attributes to virtual bidding in the day-ahead market and that the methodology proposed by PJM is unduly discriminatory. Cam Energy also argues that PJM should model its credit policies on the margin requirements used in the security and commodity markets and that it should limit these requirements to a one-day exposure period.

15. With respect to PJM's proposed screen, Cam Energy challenges PJM's proposed use of a Nodal Reference Price in calculating its risk exposure. Cam Energy asserts, in this regard, that PJM has provided no quantitative analysis to justify its use of the 97th percentile of the actually experienced price differentials for the same time period last year at a given location. Cam Energy points out that the net result of this provision would be to require as collateral between 100 percent to 400 percent of the face value of each potential transaction. Cam Energy also objects to PJM's proposal to apply the Nodal Reference Price to an arbitrary four-day period.

16. On August 13, 2003, Outback, et al. submitted a supplement to its protest consisting of a affidavit submitted by Outback, et al. in Docket No. ER03-694-001 (discussing, among other things, the asserted pro-competitive benefits of virtual bidding). On August 20, 2003, PJM filed an answer to protests. On August 28, 2003 and September 3, 2003, respectively, Outback, et al. and Cam Energy filed answers to PJM's answer.

Discussion

Procedural Matters

17. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure,[10] the timely unopposed motions to intervene filed by Outback, et al., Cam Energy, CECo, Exelon, Reliant, PSEG, Allegheny, and AMP-Ohio serve to make these entities parties to

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[10] 18 C.F.R. § 385.214 (2003).

this proceeding. We will also grant the unopposed motion to intervene out-of-time filed by DC Energy for good cause shown.

18. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure[11] prohibits an answer to a protest and an answer to an answer unless otherwise permitted by the decisional authority. Given the complicated issues presented here and our reliance on the answers submitted by PJM , Outback, et al., and Cam Energy (as discussed below), we will accept these answers for good cause shown. For this same reasons, we will also accept the supplemental protest filed by Outback, et al.

Analysis

19. We note that this filing is one of several that have recently been filed by ISOs and RTOs to revise the credit or collateral requirements for participation in the markes run by these organizations. While we recognize that the RTOs and ISOs have approved these filings through their stakeholder processes and will give such approval due deference, we nevertheless must address each filing on its merits and be able to find the proposal just and reasonable. In reviewing these filings, we must balance the goals of allowing the ISOs and RTOs to reduce their risk of exposure in the event of default while at the same time ensuring that the credit or collateral requirements are not so stringent that they unnecessarily inhibit access to the marketplace. To permit the Commission to balance these interests, it is incumbent for the ISOs and RTOs to include in their filings support for their proposals, including a full justification for their proposed credit or collateral provisions, including an explanation of why they reflect an appropriate balance. As discussed below, we find that PJM has not adequately provided such a justification here.

20. Based on this balancing of interests, we will accept PJM's proposed tariff revisions for filing subject to a one-day suspension and modifications, to become effective on September 20, 2003. Generally speaking, we agree that virtual bidding can provide market benefits such as increased market liquidity and price convergence between the day ahead and real time markets.[12] We also agree that PJM's existing credit requirements, which are based primarily on physical trades, fail to adequately protect PJM's market participants from the default risks presented by entities that primarily engage in virtual bidding. Thus, it is appropriate that PJM's existing collateralization requirements be increased from their existing levels. The more difficult set of issues, as discussed below, concerns the "how" and "to what extent."

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[11] Id. at § 385.213(a)(2).

[12] See, e.g., Comments of PSEG at 5 ('[V]irtual bidding will encourage trading and create a more robust, liquid market.").

A. PJM's Credit Risk Exposure

21. At least one financial trader operating in PJM's day ahead market (DC Energy) indicates that it can live with PJM's increased collateralization requirements, as proposed.[13] Others, however (i.e., the protesters herein) contend that PJM's requirements will be onerous and may even threaten their ability to participate in PJM's virtual bidding. Based on this evidence and our interest in accommodating virtual bidding to the greatest extent possible, we cannot agree that PJM's proposed revisions to its credit policy appropriately responds to the risk exposure PJM identifies in its filing.

22. In particular, we agree with Outback, et al., and Cam Energy that PJM has failed to support its reliance on an aggregated four-day risk assessment and the four-day multiplier to determine a participant's virtual credit exposure. PJM has not shown that it requires collateral equal to the greater of a bid or offer on each node, summed across all nodes, times four. Within a four-day period, PJM will know whether all bids and offers on day one and day two were or were not accepted.[14]

23. Accordingly, we find that PJM has failed to justify its proposal to require its market participants to post collateral for more than the current day's bids and offers and preceding day's bids and offers.[15] We therefore direct PJM to revise its OATT to limit the number of days involved in PJM's initial risk assessment (i.e., its pre-screening analysis) and the number of days subsequently included by PJM in its determination of a participant's virtual credit exposure. The assessment period applicable to both screens should not exceed two days (i.e., the current day and the prior day).

24. While we will accept PJM's proposed tariff revisions for filing, subject to this revision, it remains unclear whether PJM's risk exposure may in fact be even less, i.e., whether the two-day collateralization need we are accepting herein could be reduced to one day. When a participant submits a bid or offer on day one, PJM should be able to determine relatively soon after the close of the bidding session whether these bids or

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[13] See Comments of DC Energy at 3 ("Despite the anticipated added cost to its business resulting from PJM's proposed revised creditworthiness requirements, if implemented as DC Energy anticipates, DC Energy intends to remain actively involved in the virtual energy markets.").

[14] For example, by the time bids are submitted on the fourth day, PJM will know, at a minimum, the number of bids submitted on day one and day two that have been accepted.

[15] Our rejection of this aspect of PJM's filing is without prejudice to PJM refilling its proposal should it be able to provide adequate justification.

offers have been accepted.[16] Thus, it is not clear why PJM should maintain a collateral requirement on day two for bids that have not been accepted on day one. Therefore, within 15 days of the date of this order, PJM is required to make a filing that either reduces the collateral requirement to one day, as discussed herein, or to explain why maintaining the collateral requirement for two full days is necessary.

25. Moreover, we are interested in exploring whether there are additional ways of decreasing PJM's proposed upfront collateral requirements through the use of more flexible settlement options. Such options could include faster procedures for clearing bids, the use of prepayment options, or the option of more frequent billing and payment by customers that do not have investment grade debt as well as any other proposals that would improve credit exposure protection while enhancing non-discriminatory market access. We direct PJM to explore through its stakeholder process whether additional changes should be made to the settlement or credit procedures and file revised tariff provisions or a report on the results of these discussions within 180 day of the date of this order.

B. PJM's Accounting and Billing Systems

26. In its filing, PJM describes the credit risks associated with pure virtual trading as new, relatively dynamic and, in comparison to physical trades, essentially unique. In its answer, moreover, PJM states that its operational capabilities in response to virtual trading is also subject to change and reassessment and that it may be capable, in the future, of shortening the settlement period applicable to virtual bids, pending the restructuring of PJM's accounting and billing systems. Given these anticipated changing circumstances, we will require PJM to file with the Commission every six months for the next two years a report analyzing the effect of its virtual bidding and collateralization requirements. Such report should include information such as the level of financial trading activity, number of suspensions of virtual bidders under the collateral requirements, bad debts incurred by PJM, changes in both the number of financial traders and volume of financial trades, the effect of financial trading on convergence between the day ahead and real time markets and other information relevant to assessing the effect of the collateral requirements.

C. Other Tariff Requirements

27. **Calculation of the Working Credit Limit.** Outback, et al., argues that PJM's existing Working Credit Limit (see note 4, supra) is set too low and that market

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[16] PJM may not know the actual real-time price associated with these bids and offers, but it should know that not all bids and offers have been accepted. Thus, PJM could apply its pre-screening analysis to accepted bids and offers only.

participants, in fact, should be allowed to use 100 percent of their posted security when that security consists of depository accounts or letters of credit. Given the significantly increased collaterization that will result from the tariff revisions we are accepting herein, we are concerned that not permitting financial traders to utilize their full collateral may no longer be reasonable. Pursuant to Section 206 of the FPA,[17] therefore, we will require PJM, in a compliance filing, to explain why financial assurance in the form of depository accounts or letters of credit, which meet PJM's requirements, should not be honored in the full amount.

28. **Time Period for Holding and Providing Increased Collateral.** Although PJM proposes to calculate collateral requirements based on daily bids and offers, its proposed tariff requires that any additional financial security provided by the participant will not be available for use until the second business day after confirmation of receipt and that such additional security must be maintained for a minimum of three months. Such requirements could operate to inhibit financial traders' ability to submit bids on a single day even though they are willing to post the necessary collateral. PJM fails to explain why such provisions are necessary and why these requirements can not be shortened to provide financial traders with additional flexibility in providing collateral. Accordingly, we will require PJM, in a compliance filing, to either modify these provisions or explain why they are necessary.

29. **Uncleared Bid Exposure.** We will require PJM to correct (or otherwise explain) a discrepancy between its transmittal letter discussion and the proposed tariff sheets accompanying PJM's filing. PJM's transmittal letter describes the uncleared bid exposure as equal to the sum of the not-cleared bids and offers, multiplied by the Nodal Reference Price, summed over all nodes for the prior four days of actual bids. PJM further explains:

> The Nodal Reference Price is the 97 percentile of the difference between the hourly day-ahead and real-time prices based on a corresponding period in the prior year. It is calculated for each node and aggregated price point. If an uncleared bid and offer occur at the same node, only the high value is considered.[18]

30. However, the tariff sheet language corresponding with these requirements (set forth at Original Sheet No. 523I.01) does not contain the explanation found in PJM's transmittal letter. Accordingly, we will require PJM to conform its tariff language to its

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[17] 16 U.S.C. § 824e (2000).

[18] See PJM Filing at p.9, n.6.

transmittal letter description, or alternatively, submit proper support justifying the tariff provision, as submitted, in a compliance filing.

C. Additional Protest Arguments

31. **Alternative Collateralization Models.** Protesters assert that in lieu of PJM's proposed credit revisions, PJM should be required to adopt creditworthiness standards comparable to those utilized in the security and commodity markets. We will reject this alternative. In a futures market, credit requirements are based on the day-to-day price change in a forward position. PJM's virtual traders, by contrast, are bidding on the difference between prices in the day-ahead and real-time markets. PJM argues that such changes are far more volatile and in fact, may exceed the price of the commodity itself. PJM further notes that NYMEX and other commodity exchanges escalate margin requirements as the contract nears delivery. We agree. It is not appropriate to compare the short term PJM market to the long term futures markets.

32. Nor will we require PJM to adopt the collateralization requirements currently being used in the markets operated by ISO-NE (Outback, et al.'s alternative proposal). Subject to the revisions approved herein, we believe that PJM's credit requirements will be appropriately tailored to the needs and circumstances existing in PJM's day ahead market.

33. **Use of the Nodal Reference Price.** We will reject protesters' assertion that PJM's Nodal Reference Price should not be set at the 97th percentile of the actually experienced price differentials for the same time period at a given node. We accept PJM's explanation that they cannot know in advance what the price differential will be. PJM's substitution of a proxy clearing price for each node, based on an analogous timeframe is a reasonable approach to assessment of the potential for risk in virtual bidding. Further, this is the same basis for determining a virtual bid proxy price differential approved by the Commission in the New York ISO.[19]

34. **Net Obligations.** We will also reject protesters' arguments that PJM's collateral requirements should be based on a netting of positions on a portfolio basis. Protesters state that since, in practice, a proportionate number of buy and sell bids will generally be accepted, the creditworthiness provisions should reflect this through a probability-adjusted creditworthiness requirement. We accept PJM's explanation that buy and sell bids at different nodes may simultaneously move in opposite directions creating more rather than less exposure and thus netting across nodes would be inappropriate. As

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[19] See New York Independent System Operator, Inc., et al., 97 FERC ¶61,091 (2001).

discussed above, PJM does provide for netting of offers and bids at the same node by choosing the greater of the two.

35. We will also reject Outback, et al.'s assertion that PJM's definition of Net Obligations fails to include credits owed by PJM to a market participant. In fact, PJM's revised tariff language clearly states that it reduces the Net Obligation by amounts owed to a market participant by PJM as it pertains to monthly market activity.

36. **Undue Discrimination.** We also reject protesters' arguments that PJM's credit revisions are unduly discriminatory against virtual bidders. PJM notes in its answer that its credit policy would be based solely on the financial risk a bidder imposes on the system and would apply, as an initial matter, to all participants in the day-ahead market. Moreover, the provisions which may subsequently apply to financial traders alone would, in our judgment, have a rational basis that has been adequately supported by PJM. Accordingly, we find no undue discrimination in PJM's proposed credit policy revisions.

37. **Risk Exposure.** We also reject protesters arguments that PJM has overstated the risk exposure associated with virtual trading, given the relatively low number of virtual bids and offers that actually settled. Each bid is tendered in good faith that it will be accepted, provided it is a competitive bid. Thus, each bid requires financial assurance to the full amount that bid subjects PJM's market participants to risk. PJM explains that the use of statistical probability to assess whether bids and offers will or will not be accepted would require subjective determinations that it should not be required to provide. The same would be true, PJM states, were it required to consider price differences. We agree. PJM should not be required to assess and evaluate the trading strategies of individual market participants to determine the likelihood of whether a given bidding strategy will or will not lead to a cleared bid for which there should be a corresponding collateral requirement.

The Commission orders:

(A) PJM's proposed tariff changes are hereby accepted, subject to a one-day suspension, to become effective September 20, 2003 and subject refund and to the modifications, as discussed in the body of this order.

(B) PJM is hereby directed to make a compliance filing within 15 days of the date of this order, as discussed in the body of this order.

(C) PJM is hereby directed to file its reports, as discussed in the body of this order.

By the Commission. [20]

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Magalie R. Salas,
Secretary.

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[20] Action in this proceeding was required on September 19, 2003. On that day, however, all Federal Government offices in the Washington, D.C. metropolitan area, including the offices of the Federal Energy Regulatory Commission, were officially closed.