155 FERC ¶ 61,282
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Norman C. Bay, Chairman;
Cheryl A. LaFleur, Tony Clark,
and Colette D. Honorable.

PJM Interconnection, L.L.C. Docket Nos. ER16-372-000
ER16-372-001

ORDER ON PROPOSED TARIFF REVISIONS

(Issued June 17, 2016)

1. On June 9, 2015, the Commission issued an order[1] finding that PJM Interconnection, L.L.C's (PJM) current Tariff may be unjust and unreasonable because it does not allow market participants to submit day-ahead offers that vary by hour or to update their offers in real-time (hourly offers), including during emergency situations. The Commission instituted a proceeding pursuant to section 206 of the Federal Power Act (FPA)[2] to examine these issues. On November 20, 2015, PJM proposed revisions to the PJM Open Access Transmission Tariff (Tariff) and Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. (Operating Agreement)[3] to meet the June 2015 Order's directives.

2. As discussed below, we find that PJM's existing Tariff and Operating Agreement are unjust and unreasonable. Also, for the reasons discussed below, we reject PJM's November 20, 2015 compliance filing to the June 2015 Order and find that PJM has not demonstrated that its compliance filing is just and reasonable. We direct PJM to submit

[1] *Duke Energy Corp. v. PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,206 (2015) (June 2015 Order), *order on reh'g*, 154 FERC ¶ 61,156 (2016).

[2] 16 U.S.C. §§ 824e, 825e (2012).

[3] Appendix A lists the Tariff and Operating Agreement sections filed by PJM.

another compliance filing reflecting specific revisions and the further guidance discussed below.[4]

I. Background

3. On May 5, 2014, Duke Energy Corporation (Duke)[5] filed a formal complaint against PJM seeking to recover costs it incurred in January 2014 to secure natural gas for the Lee Facility in Dixon, Illinois.[6] In its complaint, Duke alleged that PJM failed to fulfill its obligation under the Tariff to indemnify Duke for losses incurred due to implementation of a PJM directive. Alternatively, Duke sought a waiver of certain provisions of the PJM Tariff and Operating Agreement to enable Duke to recover those losses through make-whole payments.

4. In the June 2015 Order, the Commission denied Duke's complaint because Duke had failed to demonstrate that it was entitled to indemnification under section 10.3 of the PJM Tariff. The Commission also denied Duke's request for waiver, on the basis that it would violate the filed rate doctrine and the rule against retroactive ratemaking. While the Commission denied Duke's complaint, it found that aspects of PJM's current Tariff may be unjust, unreasonable, unduly discriminatory or preferential because it did not appear to allow market participants to submit day-ahead offers that vary by hour and to update their offers in real-time, including during emergency situations.

5. In the June 2015 Order, the Commission directed PJM to submit a compliance filing,[7] "either to (1) report whether it will propose tariff changes that (a) allow market participants to submit day-ahead offers that vary by hour and to update their offers in real-time, including during emergency situations, and (b) make any associated modifications to its market power mitigation rules; such report must include a proposed

[4] Under section 206 of the FPA, having found PJM's Tariff or Operating Agreement and the instant proposal to be unjust and unreasonable, the Commission is required to establish the just and reasonable replacement rate.

[5] Duke stated it was also acting on behalf of its subsidiaries Duke Energy Lee II, LLC and Duke Energy Commercial Asset Management, Inc.

[6] Duke owns the Lee Facility in Dixon, Illinois, which consists of eight 80-MW natural gas-fired, combustion turbines that are Generation Capacity Resources in PJM.

[7] Within 30 days of the date of publication of notice of the Commission's initiation of Docket No. EL15-73-000.

timeline from PJM explaining how it will implement such changes by November 1, 2015… or as soon as practicable thereafter; or (2) explain why such changes are not necessary."[8]

6. On July 10, 2015, PJM submitted comments stating that it agreed with the Commission that its current governing documents should be revised to allow market participants to submit day-ahead offers that vary by hour and to update their offers in real time on an hourly basis under certain circumstances.[9] PJM proposed to submit Tariff and Operating Agreement revisions to the Commission on or before November 20, 2015 and to fully implement its hourly offers by November 1, 2016.[10]

II. <u>November 20, 2015 Filing</u>

7. On November 20, 2015, PJM submitted its proposal to implement flexible offers (hourly offers) in its energy markets in order to: (1) allow Market Sellers[11] to submit market-based and cost-based offers for resources into the day-ahead energy market that vary by price and quantity on an hourly basis; (2) allow Market Sellers to update such offers after the close of the day-ahead energy market, up to 60 minutes before the clock hour during the operating day in which the resource is scheduled to operate under certain conditions; (3) prevent Market Sellers from submitting market-based updated offers that

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[8] June 2015 Order, 151 FERC ¶ 61,206 at P 73.

[9] *See* PJM July 10, 2015 Report at 1-2.

[10] PJM Transmittal at 51-52. PJM explains that, while November 1, 2016 is its target implementation date, it does not propose a specific effective date for its proposal because there could be unforeseen implementation delays. PJM states that within 30 days of a Commission order, or the date of the submittal of any compliance filing it is required to make in this proceeding, PJM will submit a supplemental filing proposing a preliminary implementation date and proposed effective date for the governing document revisions. Thereafter, no later than 30 days prior to that preliminary proposed effective date, PJM will make another filing with the Commission proposing a final effective date.

[11] All capitalized terms not otherwise defined herein shall have the same meaning as defined in the Tariff or Operating Agreement. According to the Operating Agreement, a "'Market Seller' shall mean a Member that has met reasonable creditworthiness standards established by the Office of the Interconnection and that is otherwise able to make sales in the PJM Interchange Energy Market." *See* Operating Agreement, Definitions, Section 1.23.

are higher than their market-based offers in effect at the time of commitment; and (4) include additional offer flexibility for PJM's ancillary service products, where appropriate.[12]

A. Day-ahead Offers

8. Under PJM's current market rules, offers submitted in the day-ahead market and during the reoffer period include three key cost components: (1) startup cost; (2) no-load cost; and (3) incremental energy offer. A Market Seller must submit a cost-based offer and may also elect to submit a market-based offer. Cost-based offers are based on short-run marginal costs and are calculated by Market Sellers in accordance with PJM's Cost Development Guidelines,[13] which require documentation for the costs.[14] Should an issue arise with regard to the accuracy of these costs, PJM can review those costs *ex post*. Market-based offers are based on Market Sellers' assessment of costs, operating risks, market forces, and other factors that may contribute to their expectation of market conditions. An offer submitted in the day-ahead market for an operating day cannot vary by hour for that operating day and the offer price remains constant hour to hour. As a result, such offers accepted in the day-ahead market or during the Reliability Assessment Commitment[15] are deemed to be the Market Seller's offers in real-time.

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[12] PJM Transmittal at 8.

[13] PJM Manual 15: Cost Development Guidelines.

[14] For example, natural gas fired generators are required to base their cost estimates on a natural gas index price or other publicly available information. PJM's Manual 15 states: "[t]he method of calculation of fuel cost may include the use of actual fuel prices paid, e.g. the contract price paid for fuel, or the spot price for fuel. The contract price for fuel must include the locational cost of fuel for the generating unit. The source used for spot price for fuel must be publicly available and reflect the locational cost of fuel for the generating unit. The locational cost of fuel shall include specification of any additional incremental costs of delivery for the generating unit." Http://www.pjm.com/~/media/documents/manuals/m15.ashx.

[15] The Reliability Assessment Commitment period (also known as the rebidding period), which occurs between the time PJM posts the results of the Day-ahead Energy Market (i.e., approximately 12:00 p.m. Eastern Prevailing Time (EPT) to 1:30 p.m. EPT) until 2:15 p.m. EPT, allows generators that did not clear the day-ahead market to adjust their offers. *See PJM Interconnection, L.L.C.*, 153 FERC ¶ 61,209, at PP 18, 35 (2016).

9. In the instant filing, PJM proposes to allow Market Sellers to submit day-ahead offers for the supply of energy, regulation, synchronized reserve, and economic load reductions that vary by hour for the operating day and that can be updated in real-time for each hour.[16] PJM states that this flexibility is necessary because cost-based offers for regulation and synchronized reserve include components that may vary in real-time such as fuel costs. PJM also states that the proposed treatment of these ancillary services and economic load reductions is consistent with the Commission's charge to allow Market Sellers to accurately reflect the cost of their resources in their offers.

B. Real-Time Offers

10. PJM proposes to introduce new provisions to codify the rules that govern a resource's ability to submit real-time offers. PJM proposes to allow a Market Seller to update previously submitted offers any time after the close of the day-ahead market for a clock hour for which the Market Seller makes its resource available, up to 60 minutes before the applicable clock hour during the operating day. PJM proposes that real-time offers[17] will supersede previous offers made for the same applicable clock hour.

11. PJM proposes that, once a resource is committed in the day-ahead market for an applicable clock hour, the resource will not be allowed to submit a market-based real-time offer that is greater than its market-based offer at the time the resource was committed for that clock hour. PJM states that cost-based real-time offers must be consistent with section 1.10.1A(d) of Schedule 2 of the Operating Agreement and the PJM manuals at the time they are submitted.[18] With respect to when a Market Seller must update a resource's cost-based offer, PJM proposes that if a resource's available cost-based offer is not compliant with Schedule 2 of the Operating Agreement or the PJM manuals at the time that a resource submits a market-based real-time offer for an applicable clock hour and the current price of the resource's available cost-based offer for an applicable clock hour exceeds the Market Seller's estimation of its new cost-based offer for the applicable hour by more than $5/MWh, the resource must submit an updated

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[16] PJM Transmittal at 15-18.

[17] *Id*. at 14. PJM proposes to revise Section 1.10.9B of the Operating Agreement to define real-time offers as "a new offer or an update to a Market Seller's existing cost-based or market-based offer for a clock hour, submitted after the close of the Day-ahead Energy Market." *See* Operating Agreement, Schedule 1, Section 1.3.

[18] PJM Transmittal at 20-22. *See, e.g.*, proposed Tariff language in section 1.10.9B.

cost-based real-time offer for that clock hour that is compliant with both Schedule 2 of the Operating Agreement and the PJM manuals.[19] PJM states that this requirement strikes a reasonable balance between ensuring the accuracy of the cost-based offer and not imposing unreasonable administrative and compliance burden on Market Sellers and PJM.[20]

12. PJM states that, in order to ensure that Market Sellers do not exercise market power, Market Sellers with previously committed resources will be prohibited from increasing their market-based offers relative to the market-based offers on which those resources were committed. According to PJM, this is because, once committed, the Market Seller can generally assume that the resources will operate in real-time for those committed hours and simultaneously observe the state of the market and trends in real-time clearing prices. As a result, PJM explains, the Market Seller could then increase its offer for a given resource in real-time in an attempt to extract additional profit from the market without pricing the resource out of the market. PJM explains that if the resource is marginal and thus sets the real-time clearing price, it would raise the market clearing price. PJM further explains that even if the resource's offer is not marginal, the resource could still raise the market clearing price if the energy from the resource that increases its offer must be replaced by another resource.[21]

C. Three-Pivotal Supplier Test and Offer Mitigation

13. PJM currently uses the three pivotal supplier test to detect local market power in the presence of a constraint. The three pivotal supplier test is applied every time PJM has to commit a resource to resolve a binding transmission constraint. If a resource's market-

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[19] *Id*. at 20-22. *See* PJM Tariff, section 1.10.9B(c).

[20] PJM Transmittal at 23.

[21] *Id*. at 11-12. For example, suppose a resource is committed in the day-ahead market based on its market-based offer and the Market Seller was allowed to increase the price of its market-based offer in real-time. If the increased price causes the resource to be dispatched for fewer megawatts than it would have been dispatched for based on its original offer in the day-ahead market, those megawatts would need to be replaced by other megawatts from different resources.

based offer fails the three pivotal supplier test, its offer is mitigated and replaced with thelower of that resource's cost-based or market-based offer.[22]

14. PJM states that it is not proposing to change the formulation of the three pivotal supplier test, but rather is only proposing to change how often it evaluates resources for market power to account for the fact that Market Sellers will be permitted to submit market-based real-time offers on an hourly basis.[23] PJM explains that the proposed tariff revisions will allow PJM to re-evaluate Market Sellers of resources for market power on an hourly basis once their resources have either run to the end of their day-ahead or real-time commitment period or have met their minimum run time once those times have elapsed.[24] PJM notes that this is necessary because, after these periods, Market Sellers of such resources will be allowed to increase their market-based offers and therefore must be re-evaluated by the three pivotal supplier test. PJM also proposes to revise the tariff to explicitly exempt self-scheduled resources[25] from the three pivotal supplier test, which PJM says is consistent with current practice.[26]

[22] The three pivotal supplier test determines whether the supply of any Market Seller, when combined with the two largest available suppliers, can supply enough megawatts to relieve a binding transmission constraint. If the megawatts of any Market Seller being tested, when combined with the two largest available suppliers other than that Market Seller, are required to relieve a constraint, the offer of that Market Seller's resource fails the three pivotal supplier test and the offer is mitigated to the lower of the resource's cost-based or market-based offer. The ranking of the offers is determined by evaluating the dispatch cost of both offers.

[23] PJM Transmittal at 25.

[24] *Id.* at 26.

[25] PJM defines a self-scheduled resource as "[a] generating resource that is scheduled and controlled by the owner or operator of the facility, not following the economic dispatch rate, under the overall coordination of PJM." *See* PJM Manual 35 (Definitions and Acronyms), http://www.pjm.com/documents/~/media/documents/manuals/m35.ashx. *See also* PJM Operating Agreement, Section 1.10.3, Self-Scheduled Resources.

[26] PJM Transmittal at 27.

15. According to PJM, Flexible Resources[27] are resources that are committed in the day-ahead market but only actually operate in real-time if further instructed by PJM. Therefore, a Flexible Resource that clears the day-ahead market may not be dispatched in real-time. PJM proposes to exclude Flexible Resources from the three pivotal supplier test during the hours that they clear the day-ahead market or minimum run time, whichever is lower.[28]

16. PJM explains that a resource, either flexible or non-flexible, that clears the day-ahead market based on a market-based offer cannot raise its market-based offer in real-time during the hours that the resource cleared the day-ahead market (i.e., during the hours that the resource is scheduled to operate accordingly in the day-ahead market). However, such a resource may submit an updated cost-based offer in real-time that is higher than that resource's day-ahead offer. PJM explains that non-flexible resources that clear the day-ahead market on a cost-based offer will not be dispatched on a market-based real-time offer in real-time at a price level higher than the cost-based offer on which the resource was committed.[29] PJM further explains that Flexible Resources that clear the day-ahead market on a cost-based offer *may* be dispatched on a market-based real-time offer that is higher than that cost-based offer *if* the Market Seller of the Flexible Resource passes the three pivotal supplier test in real-time.[30]

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[27] *Id*. at 29. PJM states that an example of a Flexible Resource is a combustion turbine generator that can be started within an hour and has a minimum run time of one hour. PJM explains that this type of flexibility affords PJM operators additional opportunities to optimize the real-time system because they can elect to commit the resources, or not, based on real-time system conditions and not solely on the resource's day-ahead commitment. PJM states that it treats Flexible Resources in this manner because they generally are peaking resources that are only operated during the highest load periods of an operating day, or to control transmission congestion.

[28] *Id.* at 29-30.

[29] *Id*. at 21-22.

[30] *Id*. at 31-32. PJM explains that this is because Flexible Resources are evaluated for market power during the day-ahead market and in real-time, and the result of the three pivotal supplier test in real-time is used to determine whether the resource is offer capped when the resource operates. However, a Flexible Resource may pass the three pivotal supplier test in the day-ahead market, but nonetheless be offer capped when the resource operates because it failed the three pivotal supplier test in real-time.

D. Lost Opportunity Cost Credits and Operating Reserve Payments

17. PJM also proposes changes to its reactive power compensation, lost opportunity cost (LOC) credits,[31] and Operating Reserve payment[32] provisions in order to ensure that Market Sellers are accurately compensated when they submit hourly offers under a variety of circumstances. The purpose of LOC credits is to ensure that resources follow PJM's dispatch instructions by compensating resources for any lost revenues resulting from PJM's dispatch instructions.[33]

18. PJM also proposes to define new terms to distinguish between the types of offers that Market Sellers can submit for resources. PJM proposes to define the term "Final Offer" as the "[o]ffer on which a resource was dispatched by the Office of the Interconnection for a particular clock hour for the Operating Day."[34] PJM explains that the term "dispatched" is being used to specifically identify this offer as the one that was used by PJM's system operators in the determination of the basepoint sent to the resource in real-time. PJM also proposes to define a resource's "Committed Offer" as the "[o]ffer on which a resource was scheduled by the Office of the Interconnection for a particular clock hour for the Operating Day."[35] The Committed Offer is the hourly offer, or set of hourly offers, on which a decision was made to schedule or commit a resource. For resources scheduled in the day-ahead market, the Committed Offer is the hourly market-based or cost-based offer on which the resource received a schedule to operate in the day-

[31] Lost opportunity cost is the "difference in net compensation from the energy market between what a unit receives when providing regulation or synchronized reserve and what it would have received for providing energy output." *See* PJM Manual 35 (Definitions and Acronyms), http://www.pjm.com/documents/~/media/documents/manuals/m35.ashx.

[32] Operating Reserves are "amounts of generating capacity scheduled to be available for specified periods of an Operating Day to ensure the security of the PJM [Regional Transmission Organization]." *Id.*

[33] PJM Transmittal at 33.

[34] *Id.* at 34.

[35] *Id.*

ahead market. For resources scheduled outside of the day-ahead market, the Committed Offer is the offer on which the resource received a commitment from PJM.[36]

19. PJM proposes to define the term "LOC Deviation" to codify how it calculates LOC credits to compensate a resource when its scheduled output is reduced at PJM's direction. The LOC deviation represents the difference between the resource's scheduled (i.e., desired) megawatt output and its actual megawatt output. PJM also proposes to revise the calculation of LOC credits that a resource is entitled to receive when it reduces its energy output, consistent with PJM's dispatch instructions, in order to maintain reliable operation of the system.[37] Under PJM's current rules, LOC credits are limited to the lesser of the resource's Maximum Facility Output or its Economic Maximum (i.e. the highest incremental megawatt output level that it can achieve while following economic dispatch instructions).

20. PJM proposes to introduce the term "Generation Resource Maximum Output"[38] to replace current references to "Maximum Facility Output" in the Operating Agreement.[39] PJM explains that the current use of the defined term Maximum Facility Output in the tariff is not technically correct when more than one generation facility is located at a

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[36] *Id.* at 34-35.

[37] PJM proposes to revise the Operating Agreement, Schedule 1, Sections 3.2.3 and 3.2.3B. PJM states that while these revisions are not directly tied to effectuating PJM's hourly offer proposal, such revisions are needed in order to ensure that Market Sellers are properly compensated for lost opportunity cost under PJM's proposal.

[38] PJM Transmittal at 50-51. The term "Generation Resource Maximum Output" refers to the calculation of lost opportunity cost for resources that operate at a megawatt output level above which is appropriate and could have a negative impact on system reliability.

[39] *Id.* at 50. The proposed definition for the Generation Resource Maximum Output is as follows: "For Customer Facilities identified in an Interconnection Service Agreement or Wholesale Market Participation Agreement, the Generation Resource Maximum Output for a generating unit shall equal the unit's pro rata share of the Maximum Facility Output, determined by the Economic Maximum values for the available units at the Customer Facility. For generating units not identified in an Interconnection Service Agreement or Wholesale Market Participation Agreement, the Generation Resource Maximum Output shall equal the generating unit's Economic Maximum."

single location.[40] PJM states that Maximum Facility Output is calculated on a facility-specific basis and can be comprised of output from more than one generating unit. According to PJM, when a facility is made up of multiple generating units, the individual Maximum Facility Output values on a per-generating unit basis are not always specified in the applicable Interconnection Service Agreement or Wholesale Market Participation Agreement.

21. PJM proposes that for pool-scheduled resources, the "Total Lost Opportunity Offer" will equal the hourly offer integrated under the applicable incremental energy offer curve for the LOC deviation.[41] PJM explains that the applicable incremental energy offer curve will be determined by the greater of the Committed Offer or last real-time offer submitted, on which the resource was committed in the day-ahead market for each hour in an operating day.[42]

22. With respect to Operating Reserve payments (i.e., uplift payments), PJM proposes to introduce the term, "Total Operating Reserve Offer," defined as the sum of all individual hourly energy offers, inclusive of start-up costs (shut-down costs for demand resources) and no-load costs, for every hour in a Segment,[43] integrated under the applicable offer curve up to the applicable megawatt output.[44] PJM states that the applicable offer curve shall be the lesser of the Committed Offer or Final Offer for each hour in real-time. PJM explains that these revisions are being proposed to account for the multiple types of offers that can now be submitted by Market Sellers, yet still maintain the basic compensation mechanism for Operating Reserves.[45]

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[40] *Id*. at 46.

[41] *Id.* at 37.

[42] *Id*. For all other pool-scheduled generating units, the Total Lost Opportunity Offer will be the hourly offer integrated under the applicable offer curve for the LOC deviation, as determined by the offer curve associated with the greater of the Committed Offer or Final Offer for each hour in an operating day.

[43] *Id.* at 41, n.9. A Segment is defined as a block of hours corresponding to a resource's minimum run time or commitment in the day-ahead market, not necessarily the entire submitted offer for a resource.

[44] *Id*. at 41.

[45] *Id*. at 40-41.

III. Notice of Filings and Responsive Pleadings

23. Notice of PJM's November 20, 2015 filing was published in the *Federal Register*, 80 Fed. Reg. 75,086 (2015), with answers, interventions and protests due on or before December 11, 2015. Notices of intervention and timely-filed motions to intervene were submitted by the entities noted in Appendix B to this order. In addition, motions to intervene out-of-time were submitted by Public Power Association of New Jersey (PPANJ), Delaware Division of the Public Advocate, and West Virginia Consumer Advocate Division.

24. Supporting comments were filed by Electric Power Supply Association (EPSA), Calpine Corporation (Calpine), Dominion Resources Services, Inc. (Dominion), PJM Power Providers Group (Providers Group), and PJM Utilities Coalition (PJM Coalition).[46] Several parties filed protests, including the Indiana Utility Regulatory Commission (Indiana Commission), Public Utilities Commission of Ohio (Ohio Commission), Delaware Public Service Commission (Delaware Commission), Load Group and Interested State Commissions,[47] the PJM Independent Market Monitor (IMM), and the Pennsylvania Public Utility Commission (Pennsylvania Commission).

25. On December 23, 2015, the Pennsylvania Commission filed a motion for leave to answer and answer in support of the IMM's protest. On December 23, 2015, Dominion filed a motion for leave to answer and answer to the IMM's protest. On December 24, 2015, the Organization of PJM States, Inc. (OPSI) filed a comment in response to PJM's November 20, 2015 filing. On December 28, 2015, the Load Group and Interested State Commissions filed an answer in support of the IMM's protest. On January 8, 2016, PJM filed an answer to the comments and protests. On January 27, 2016, the IMM and the Load Group and Interested State Commissions filed additional answers.

26. On February 3, 2016, Commission staff issued a data request identifying specific issues on which staff required additional information. PJM filed a response to the data

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[46] The PJM Coalition comprises: American Electric Power Service Corporation, the Dayton Power and Light Company, FirstEnergy Service Company, and East Kentucky Power Cooperative.

[47] The Load Group and Interested State Commissions comprises: PJM Industrial Customer Coalition, American Public Power Association, Public Power Association of New Jersey, Rockland Electric Company, New Jersey Division of Rate Counsel, Illinois Citizens Utility Board (Load Group), New Jersey Board of Public Utilities, and the Maryland Public Service Commission (Interested State Commissions).

request on March 7, 2016. Notice of PJM's response to the data request was published in the *Federal Register*, 81 Fed. Reg. 12,891 (2016), with comments due on or before March 28, 2016. The New Jersey Board of Public Utilities, EPSA, and the IMM filed comments on or protests to PJM's response to the data request.

IV. Discussion

A. Procedural Matters

27. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure,[48] the timely, unopposed motions to intervene serve to make the entities that filed them parties to the proceedings in which they were filed.

28. Pursuant to Rule 214(d) of the Commission's Rules of Practice and Procedure,[49] the Commission will accept PPANJ, Delaware Division of the Public Advocate, and West Virginia Consumer Advocate Division's late-filed motions to intervene given their interest in the proceeding, the early stage of the proceeding, and the absence of undue prejudice or delay.

29. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure prohibits an answer to a protest unless otherwise ordered by the decisional authority.[50] We will accept the parties' answers because they have provided information that has assisted us in our decision-making process.

30. We also accept the additional answers filed by the IMM and the Load Group and Interested State Commissions on January 27, 2016, in response to PJM's answer filed on January 8, 2016, because they have provided information that has assisted us in our decision-making process.

B. Substantive Matters

31. In the June 2015 Order, we directed PJM to report whether it will propose Tariff changes to allow market participants to submit day-ahead offers that vary by hour and to update their offers in real time on an hourly basis, or to explain why such changes are unnecessary. On July 10, 2015, PJM submitted a report in which it stated that PJM's

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[48] 18 C.F.R. § 385.214 (2015).

[49] 18 C.F.R. § 385.214(d) (2015).

[50] 18 C.F.R. § 385.213(a)(2) (2015).

Tariff should be revised to allow market participants to submit hourly offers and to allow market participants to update their offers under certain circumstances.

32. In light of the potential for significant changes in costs between the time that offers are submitted in the day-ahead market and when resources operate in real-time, ensuring market participants have greater flexibility to modify their offers will allow resources in PJM to reflect their actual costs in their offers. Such offer flexibility, when combined with appropriate market power mitigation, also supports proper price formation and efficient real-time dispatch. Accordingly, we find that PJM's current Tariff is unjust and unreasonable because it does not allow market participants to submit offers that vary by hour in the day-ahead energy market and to update their offers in real-time.

33. PJM proposes offer flexibility reforms that are generally consistent with the directive of the June 2015 Order, but we reject PJM's proposal in response to the Commission's section 206 directive because, as discussed below, it lacks specific details necessary to find that it is just and reasonable. PJM's proposal is deficient because it (1) does not include in PJM's Tariff and Operating Agreement the proposed rules for the offer parameters that are subject to flexible hourly offers and the appropriate definitions for various terms, (2) lacks rules pertaining to the mitigation of self-scheduled resources, and (3) lacks provisions for sufficient review of cost-based offers to ensure that—even with increased offer flexibility—resources continue to have the proper incentive to submit accurate cost-based offers. Accordingly, we direct PJM to submit another compliance filing reflecting specific Tariff and Operating Agreement revisions and further guidance provided below.

1. Scope of the Section 206 Directive

a. Comments and Protests

34. The IMM and the Load Group and Interested State Commissions argue that PJM's proposal goes beyond the scope of the Commission's section 206 directive in the June 2015 Order to implement offer flexibility because it permits a resource to update its market-based offer and should only allow for changes in offers to reflect changes in a resource's underlying fuel-related costs. For example, the IMM states that "the only element required by the [June 2015] Order is to reflect changes in fuel cost," and that PJM's proposal should only permit resources to change their offers when their fuel costs change.[51]

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[51] IMM Protest at 16-17.

35. PJM argues that the Commission's June 2015 Order did not explicitly state that offer flexibility changes should be limited to changes in fuel costs, as the IMM asserts. PJM argues that fuel cost changes were simply mentioned as an example for allowing resources to change their offers.[52]

b. Commission Determination

36. Although we reject PJM's proposal, we clarify that providing flexibility for market-based offers appropriately falls within the scope of this proceeding. The Commission's directive in the June 2015 Order did not state that changes in hourly offers must be limited to changes in a resource's underlying fuel costs. To the contrary, the June 2015 Order directed PJM to "report whether it will propose tariff changes that (a) allow market participants to submit day-ahead offers that vary by hour and to update their offers in real time and . . . make any associated modifications to its market power mitigation rules."[53] PJM permits resources to submit both cost-based and market-based offers. Accordingly, we provide guidance that Tariff and Operating Agreement revisions proposed by PJM in its compliance filing directed herein need not be restricted to changes in fuel costs.

2. Aggregate Market Power Mitigation

a. Comments

37. According to the IMM, PJM's proposal is "likely to create significant market power and market manipulation opportunities" and does not "meaningfully address the market power mitigation issues raised by the implementation of hourly offer flexibility." The IMM argues that PJM only uses the three pivotal supplier test to check for the existence of structural market power, and that it only tests for local market power. The IMM further argues that local market power mitigation rules cannot prevent the exercise of structural aggregate market power and asserts that PJM's proposal does not address aggregate market power. The IMM defines "aggregate market power" as "the ability to exercise market power in the aggregate market when no constraint is binding or in the balance of the market when a constraint creates a local market."[54] The IMM explains

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[52] PJM Answer at 16-17.

[53] June 2015 Order, 151 FERC ¶ 61,206 at P 73.

[54] IMM Protest at 6. The IMM states that local market power is the ability to exercise market power in a local market created by a binding constraint.

that aggregate market power exists when a resource owner or a group of two or three resource owners can increase the market clearing price above the competitive level.[55] According to the IMM, aggregate market power occurs when system conditions are tight, with high demand relative to available supply, which can occur on a regular basis on hot summer days and cold winter days. The IMM states that the only explicit test for market power in the PJM energy market design is the three pivotal supplier test, which is run when there is a binding transmission constraint that creates a local market, smaller than the aggregate market. The IMM also argues that PJM's proposal would make exercising aggregate market power less risky for resource owners.[56] The IMM further argues that under PJM's proposal, a resource whose output was needed to meet demand would have market power and therefore could increase the markup inherent in its market-based offer without any changes in its costs, and thereby raise the market clearing price above a competitive level.[57]

38. The IMM offers an alternative solution to PJM's proposal to address aggregate market power concerns by requiring resources to submit market-based offers that have a constant markup relative to their cost-based offers over their entire incremental energy offer curves throughout the operating day (constant markup proposal).[58] The IMM argues that its constant markup proposal will permit resources to have different offers by hour only if those offers are based on differences in the cost of fuel. The IMM argues that its constant markup proposal will allow the cost of commitment to be accurately calculated, while ensuring that generators offer competitively, thus protecting against the exercise of aggregate market power.[59]

39. Delaware Commission and Ohio Commission filed comments in support of the IMM's position on market power concerns. The Load Group and Interested State Commissions also argue that the IMM has documented aggregate market power abuse and that changing PJM's current single daily offer rule, which requires generators to submit competitive supply offers, upsets this balance because they contend that, under PJM's proposal, a Market Seller can leverage real-time conditions during strained market

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[55] *Id*. at 6.

[56] *Id*. at 6-7.

[57] *Id.* at 8.

[58] *Id.* at 28, 34.

[59] IMM Protest at 32, 36.

conditions. They argue that Flexible Resources, such as combustion turbine units that PJM can dispatch in real-time at its discretion, are able to observe real-time market conditions and drive prices above competitive levels during tight system conditions. The Load Group and Interested State Commissions argue that PJM's proposal fails to address this issue.[60]

40. In response, PJM contends that the IMM's arguments about aggregate market power are speculative and not supported by empirical evidence.[61] PJM argues that its current market rules provide sufficient protections against the exercise of aggregate market power.[62] For example, PJM explains that all offers are subject to various offer caps, including the energy offer cap which the Commission recently approved.[63] According to PJM, "[o]ne of the primary reasons for the existence of the overall $1,000/MWh offer cap is to provide a reasonable limitation on market-based offers and prohibit Market Sellers from exerting aggregate market power."[64] PJM also argues that the Commission's market-based rates program has established rules to determine whether a resource has aggregate market power and whether such market power has been mitigated, which also protects against the exercise of market power.[65] PJM notes that the Commission requires all entities that are authorized to sell at market-based rates to submit periodic information to ensure that they do not have aggregate market power.[66]

41. PJM also maintains that its shortage pricing rules offer an additional layer of protection against the exercise of aggregate market power when the system is in shortage

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[60] Load Group and Interested State Commissions Protest at 11-21.

[61] PJM Answer at 7.

[62] *Id*. at 8-13.

[63] *Id*. at 10. PJM's cap on cost-based incremental energy offers was recently raised to $2,000/MWh, but the cap on market-based incremental energy offers remains at $1,000/MWh. *See PJM Interconnection, L.L.C.*, 153 FERC ¶ 61,289 (2015).

[64] PJM Transmittal at 6; PJM Answer at 8-9.

[65] PJM Answer at 9 (citing *Market-Based Rates For Wholesale Sales Of Electric Energy, Capacity And Ancillary Services By Public Utilities*, 119 FERC ¶ 61,295, at PP 3-5 (2007)).

[66] *Id*. at 9.

conditions. PJM also argues that, if overall market conditions are tight but PJM does not enter into shortage conditions, competitive market dynamics will influence the behaviors of Market Sellers so that they will not increase their offers to a level that would result in their not being dispatched by PJM for an applicable clock hour during the Operating Day. Thus, PJM asserts, competition will dissuade Market Sellers that potentially have the ability to exert aggregate market power from submitting non-competitive offers because if a Market Seller submits such an offer, it will be at a greater risk of not being dispatched by PJM.[67]

42. PJM states that it "has not independently observed any behavior from Market Participants suggesting that aggregate market power has actually been exerted in PJM."[68] PJM explains that, nonetheless, as a result of its concern related to the potential exercise of aggregate market power resulting specifically from its hourly offers proposal, it proposes to prevent resources that clear the day-ahead market from updating their market-based offers in real-time.[69] PJM maintains that this feature of its flexible offer proposal was a prudent and direct response to the concerns raised by the IMM and other stakeholders during the stakeholder process associated with this proposal.[70]

43. PJM states that if the IMM or any other party believes that PJM's current rules related to aggregate market power are inadequate, they should present a problem statement and issue charge to PJM's stakeholders or raise their concerns with the Commission in another forum.[71]

44. The IMM argues that it has previously raised concerns about aggregate market power[72] and notes that the PJM 2015 State of the Market Report found that certain coal-fired resources, whose costs did not change with the extreme weather conditions

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[67] *Id*. at 12-13.

[68] *Id*. at 10.

[69] *Id*.

[70] *Id*.

[71] *Id*. at 12-13. PJM states that it has expressed its willingness to discuss issues and proposals regarding aggregate market power tests within the PJM stakeholder process to the IMM and all other PJM stakeholders on numerous occasions.

[72] IMM January 27, 2016 Answer at 13.

experienced in the winters of 2014 and 2015, engaged in economic withholding by increasing the markups in their market-based offers in anticipation of high demand days on which they were likely to be dispatched.[73] The IMM contends that such behavior occurred with PJM's current fixed daily offer rule, the $1,000/MWh offer cap on incremental energy offers,[74] and shortage pricing rules. The IMM further argues that under PJM's hourly offers proposal, it will be easier to offer competitively during low demand periods during an operating day and offer non-competitively during periods of high demand during the same day.[75] The Load Group and Interested State Commissions recommend that the Commission order PJM to investigate a test for aggregate market power because without such a test, resources in PJM can exercise market power during tight supply and high demand market conditions, and are only limited by the level of the market-based offer cap, currently set at $1,000/MWh.[76]

b. Commission Determination

45. We agree with PJM that this proceeding is not the appropriate forum for determining the merits of the IMM's concerns over aggregate market power. Moreover, the evidence in this proceeding does not sufficiently demonstrate that aggregate market power is a systemic issue in PJM's markets that would be exacerbated under PJM's hourly offers proposal. However, we encourage PJM, the IMM, and PJM's stakeholders to discuss the issue of aggregate market power in the stakeholder process, establish whether opportunities to exercise aggregate market power exist in PJM, and explore potential mitigation measures, if necessary.

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[73] *Id*. at 18-19.

[74] *Id*. at 4-5. The IMM notes that PJM's energy market offer cap has been increased from $1,000/MWh to $2,000/MWh, a change that was explicitly limited to increases in verified fuel costs.

[75] *Id*. at 15-16.

[76] Load Group and Interested State Commissions December 28, 2015 Answer at 18; March 28, 2016 Answer at 6-7.

3. Local Market Power Mitigation

a. Comments

46. The IMM and the Load Group and Interested State Commissions argue that the application of the current three pivotal supplier test is critically flawed. According to PJM, currently, absent mitigation, PJM will select resources based on their market-based offers. In the presence of a binding constraint, if a resource's offer fails the three pivotal supplier test, that offer is mitigated to the lower of a resource's cost-based or market-based offer.[77] The IMM argues that the three pivotal test conducted in this manner can fail to adequately mitigate local market power if the cost-based and market-based offer curves cross each other,[78] which can occur under PJM's current rules. The IMM argues that its constant markup proposal prevents a resource's cost-based and market-based offer curves from crossing each other, thereby reducing the ability to avoid local market power mitigation.[79]

47. As with protesters' concerns over aggregate market power, PJM states that if any party believes that there are problems with the existing three pivotal supplier test, they should present such concerns to PJM's stakeholders, or bring them before the Commission in another proceeding.[80]

48. PJM explains that, to protect against the potential exercise of local market power, while allowing for greater offer flexibility under its proposal, it has increased the frequency of the application of the three pivotal supplier test in real-time. PJM states that it will apply the three pivotal supplier test to resources that are currently online and operating outside of their day-ahead or real-time market commitment or minimum run time, whichever is greater. PJM argues that this is necessary after the commitment period since resources will be allowed to increase their market-based offers and must be re-

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[77] PJM Data Request Response at 18.

[78] IMM Protest at 17-21. *See, e.g.*, "Figure 1 Offers with varying markups at different MW output levels" at 19.

[79] IMM Protest at 32-33.

[80] PJM Answer at 13-15.

evaluated by the three pivotal supplier test to determine if the resource has the potential to exert local market power.[81]

49. In response to Commission staff's data request asking if PJM could apply the three pivotal supplier test in every interval that a resource changes its market-based offer, PJM states that doing so would be a less effective alternative to what it is currently doing and could create adverse effects with oscillations between the different offer quantities under cost-based and market-based schedules. PJM contends that the same potential exercise of local market power exists for resources that are committed in real-time and raise hourly offers beyond the expiration of their minimum run time. PJM argues that if cost-based and market-based incremental energy offers vary significantly, switching between them will create volatility in the resource's dispatch instructions as the resource has to adjust its energy output from hour to hour solely because of switching between offers. PJM argues that such volatility impacts not only the offer-capped resource, but also the other resources that have to be redispatched in order to maintain power balance. PJM explains that this adds a level of complexity to managing the system that may be more costly and outweighs the benefit of a more flexible mitigation practice. [82]

50. The Load Group and Interested State Commissions raise concerns similar to the IMM's that a resource's ability to exercise local market power could be exacerbated by PJM's proposal. They argue that the absence of any rules requiring consistent operational parameters (e.g., economic minimum/maximum, minimum run time, start-up time, etc.) in a resource's market-based and cost-based offers permits a resource to submit a market-based offer that could appear to be lower than the cost-based offer, when in fact the market-based offer would be the higher offer if the two offers used the same operational parameters.[83]

[81] PJM Transmittal at 25-27.

[82] PJM states that it discussed the issues of schedule switching with stakeholders. Generator Offer Flexibility Senior Task Force (GOFSTF), *Updated Hourly Offers Proposal Overview*, PJM Interconnection, L.L.C., 7-9 (Nov. 12, 2015), http://www.pjm.com/~/media/committees-groups/task-forces/gofstf/20151112/20151112-item-02d-proposal-overview.ashx (Three Pivotal Supplier test and schedule switching minimization approach). PJM Data Request Response at 14-16.

[83] Load Group and Interested State Commissions Protest at 20.

51. The IMM also argues that PJM's proposal lacks sufficient tariff[84] language to explain how PJM will apply the three pivotal supplier test, which creates significant uncertainty for market participants and leaves too much discretion to PJM.[85]

52. Commission staff, in the data request, asked PJM to provide additional information about how PJM currently applies the three pivotal supplier test and implements mitigation.[86] In response to a question about how PJM performs mitigation when resources fail the three pivotal supplier test, PJM explained that its current operational practice is to mitigate, or "cap," a resource's offer if it fails the three pivotal supplier test for its entire run time.[87] In response to the question about how PJM currently applies the three pivotal supplier test, PJM explains that if a resource offer fails the three pivotal supplier test, that resource's offer will be mitigated to the lower of its market-based or cost-based offer based on the resource's dispatch cost. PJM defines a resource's dispatch cost as the resource's marginal cost at its economic minimum output level plus a fixed cost adder.[88]

b. <u>Commission Determination</u>

53. We find that general concerns about the three pivotal supplier test as it currently exists are beyond the scope of this section 206 proceeding. However, given the concerns raised regarding the effectiveness of PJM's mitigation scheme, we encourage PJM, the IMM, and interested stakeholders to further explore this issue in the stakeholder process. The stakeholder process should examine potential solutions to any existing problems with the application of the three pivotal supplier test.

54. Nevertheless, we agree with the IMM that PJM's proposal lacks sufficient information about how PJM will apply the existing three pivotal supplier test to hourly

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[84] The term "tariff" as used by commenters and protesters in the pleadings may refer to the PJM Tariff and/or the Operating Agreement.

[85] IMM Protest at 21, 26.

[86] Commission Staff Data Request questions 4 and 5.

[87] PJM Data Request Response at 17.

[88] *Id.* at 18. PJM explained that Dispatch cost = Marginal cost at Economic minimum output + *Fixed cost adder*, where *Fixed cost adder* = Startup cost/(Economic maximum output * Minimum run hours) + No-load cost/Economic maximum output.

offers and that this lack of detail could create uncertainty for market participants. Accordingly, we reject PJM's proposal and direct PJM to specify in its Tariff and Operating Agreement the manner in which a resource's offer is mitigated when that resource offer fails the three pivotal supplier test. PJM should include in the Tariff and Operating Agreement provisions clarifying that if a resource's offer fails the three pivotal supplier test, that resource's offer is mitigated for the resource's entire run time.[89] Similarly, we direct PJM to include within its Tariff and Operating Agreement the formula PJM uses to determine the lower of a resource's cost-based offer and market-based offer, which, as noted above, involves calculating the dispatch cost of each offer.[90] PJM is required to submit Tariff and Operating Agreement revisions implementing these changes to the Commission within 30 days of the date of this order.

4. Mitigation of Self-Scheduled Resources

a. Comments

55. The IMM opposes PJM's proposal to explicitly exempt self-scheduled resources from application of the three pivotal supplier test and mitigation. The IMM argues that although self-scheduled resources are not committed by PJM, a self-scheduled resource can be dispatched by PJM to a level above its economic minimum level according to the economic portion of a self-scheduled resource's offer and thus could set the market clearing price.[91] According to the IMM, unlike a pool-scheduled resource, a self-scheduled resource is automatically selected on its market-based offer. As a result, if a self-scheduled resource is the marginal resource and has market power, the resource has the ability to raise clearing prices above competitive levels if its market-based offer is higher than its cost-based offer because it would not be mitigated.

56. PJM acknowledges that the IMM's concerns may be valid and there may be a benefit to revisiting the current practice of allowing some self-scheduled resources to set the clearing price yet be exempt from mitigation. However, PJM states that it would prefer to discuss the issue with stakeholders to determine the best way to address the issue if necessary.[92] PJM also argues that the most appropriate way to address the IMM's

[89] *Id.* at 17.

[90] *Id.* at 18.

[91] IMM Comments at 28-29.

[92] PJM Answer at 27.

concerns is to change the ability of some self-scheduled resources to set the market clearing price because mitigating a self-scheduled resource would allow PJM to dictate the offer applicable to a resource that PJM did not schedule to operate and for which the resource is not being made whole.[93]

b. Commission Determination

57. Although we are rejecting PJM's proposal, we clarify that self-scheduled resources that offer a portion of their supply to PJM on an economic basis should be subject to market power mitigation and direct PJM to submit Tariff and Operating Agreement revisions to effectuate this application. We find that exempting self-scheduled resources from the three pivotal supplier test could lead to market power abuses because self-scheduled resources that also offer economic supply to PJM can set the market clearing price. Therefore, self-scheduled resources can face the same economic incentives as resources that are committed economically and should thus be subject to the same market power mitigation measures, i.e., the three pivotal supplier test and offer caps.

58. We disagree with PJM that the most appropriate means to address the IMM's concerns about self-scheduled resources would be to adjust the ability of self-scheduled resources to set clearing prices. As the 2015 State of the Market Report for PJM notes, a significant amount of self-scheduled resources also offer economic supply to PJM,[94] and therefore preventing such resources from setting clearing prices could be highly disruptive to the market and possibly limit the ability of PJM to dispatch resources on an economic basis.

59. We also disagree with PJM that mitigating the economic portion of offers submitted by self-scheduled resources is inappropriate because PJM's decision to dispatch a self-scheduled resource at an output level above its self-scheduled quantity would be based on an offer that the resource chooses to make available to PJM on an economic basis. Therefore, PJM is not directing the resource to operate; rather, PJM is accepting a self-schedule resource's economic offer to increase its output above that resource's self-scheduled quantity through the PJM market clearing process. We find

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[93] *Id*. at 27.

[94] Monitoring Analytics, LLC, 2015 State of the Market Report for PJM, Volume II, Detailed Analysis, at 117 (Mar. 10, 2016), http://monitoringanalytics.com/reports/PJM_State_of_the_Market/2015/2015-som-pjm-volume2.pdf.

that, under PJM's hourly offers proposal here, exempting from mitigation a self-scheduled resource that is dispatched on an economic basis at an output level above its self-scheduled quantity inappropriately increases the likelihood that the market clearing price will be higher than the competitive level. Accordingly, we direct PJM to submit Tariff and Operating Agreement revisions to explicitly state that the economic portion of offers submitted by self-scheduled resources is subject to the three pivotal supplier test and potential mitigation. PJM is directed to file Tariff and Operating Agreement revisions accordingly within 30 days of the date of this order.

5. Rules Governing Cost-Based Offers, Fuel Cost Guidelines, and Verification

a. Comments

60. In response to Commission staff's data request, PJM states that it does not plan to change the rules governing the development of cost-based offers and fuel cost guidelines. PJM maintains that, under its proposal, changes in fuel costs will be developed and verified in the same manner in which they are currently developed and verified. PJM explains that, currently, resources in PJM are not required to provide proof that their fuel costs have changed when they submit cost-based offers. Rather, resources are required to submit cost-based offers that meet the guidelines set forth in Schedule 2 of the Operating Agreement and the PJM manuals. Upon request by the IMM, resources must furnish evidence supporting the submitted costs.[95] PJM adds that changes to these rules may result from the outcome of, and PJM's compliance with, the Commission's ongoing energy offer cap rulemaking proceeding in Docket No. RM16-5-000.[96] Similarly, while PJM does not validate cost-based offers *ex ante*, it believes that a reasonable validation of a cost-based offer's compliance with Schedule 2 on an *ex ante* basis can be done, but

[95] PJM Data Request Response at 8. PJM argues that its current business practices do not validate a cost-based offer's compliance with Schedule 2 on an *ex ante* basis. Under the current rules, compliance with Schedule 2 is the responsibility of the Market Seller and the submitted cost-based offers may be subject to an *ex post* audit by either PJM or the IMM at any time.

[96] *Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Notice of Proposed Rulemaking, FERC Stats. & Regs. ¶ 32,714 (2016).

would require major changes to PJM's systems and additional tariff and manual changes.[97]

61. PJM explains that it does not currently collect information on resources' expected fuel costs as they change in real-time[98] and it does not intend to identify instances when a resource must submit an updated real-time cost-based offer for a given clock hour because it would be difficult to identify and enforce. PJM states that it cannot differentiate between a cost-based offer that is being updated to reflect changes in underlying fuel costs versus a cost-based offer that is being updated for other reasons.[99] As a result, PJM argues, it will rely on its existing practices by enforcing compliance with the cost development guidelines specified in Schedule 2 of the Operating Agreement and the PJM manuals. PJM states that resources are responsible for following the rules and if PJM or the IMM suspect that a market participant has not updated its costs in accordance with this rule, they may request evidence to support the calculation of the submitted cost-based offers. PJM explains that any violation of these rules can result in a referral to the Commission's Office of Enforcement.[100]

62. The IMM argues that a resource's fuel cost policy could be updated as part of PJM's compliance with the Final Offer Cap Rule, which could enable *ex ante* verification of cost-based offer input assumptions. The IMM states that fuel cost policies require resources to define how they calculate hourly fuel costs in day-ahead cost-based offers and how they update those fuel costs in real-time cost-based offers. The IMM contends that cost-based offers can be made compliant with Schedule 2 of the Operating Agreement on an *ex ante* basis if resources submit compliant fuel cost policies and the IMM can review and approve those policies. The IMM also states that *ex post*

[97] PJM Data Request Response at 8-9.

[98] *Id.* at 8. PJM states that it recognizes that the extent of collecting information regarding expected fuel costs may change as a result of the Commission's rulemaking proceeding in Docket No. RM16-5-000, regarding whether a resource's incremental energy offer should be capped at the higher of $1,000/MWh or that resource's verified cost-based incremental energy offer (Final Offer Cap Rule).

[99] *Id.* at 12.

[100] *Id*. at 12, n. 14. *See, e.g.*, Operating Agreement, Schedule 1 § 6.4.2(d) ("Market Participants shall have exclusive responsibility for preparing and submitting their offers on the basis of accurate information and in compliance with the FERC Market Rules, inclusive of the level of any applicable offer cap.").

verification and penalties may be necessary to ensure that resources submit accurate cost-based offer updates in real-time.[101]

b. Commission Determination

63. PJM states that resources themselves are responsible for abiding by Schedule 2 of the PJM Operating Agreement and the Cost Development Guidelines in Manual 15 with respect to developing their cost-based offers. PJM also states that PJM or the IMM may request evidence supporting the calculation of cost-based offers in the event that either PJM or the IMM suspects that a resource has not submitted a cost-based offer in accordance with the PJM Tariff and manuals.[102] We find that PJM's proposal lacks provisions for sufficient review of cost-based offers and could permit a resource to submit inaccurate cost-based offers. We also find that because a resource's cost-based offer will be permitted to vary by hour in the day-ahead market and can be updated in real-time, the frequency of changes to cost-based offers will increase under PJM's proposal and thus additional measures are necessary to ensure that resources have the proper incentive to submit accurate cost-based offers. Therefore, we direct PJM to include in its Tariff and Operating Agreement (1) a requirement for market participants to submit fuel cost policies[103] that are approved by PJM prior to submission of cost-based offers, and (2) a penalty structure that will be applicable in the event that PJM or the IMM determines that a resource has submitted a cost-based offer that does not comply with Schedule 2 of the Operating Agreement or the Cost Development Guidelines in Manual 15. We direct PJM to submit these revisions, as part of the compliance filing, within 30 days of the date of this order. While we are not requiring PJM to implement identical provisions, we note that both ISO New England Inc. (ISO-NE)[104] and the New York Independent System Operator, Inc. (NYISO)[105] have market power provisions in place to review real-time offer updates after-the-fact and impose penalties on resources that submit inaccurate cost information.

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[101] IMM's Answer at 3-5.

[102] PJM Data Request Response at 12.

[103] See PJM Manual 15, section 2.3: Fuel Cost Guidelines.

[104] ISO-NE Transmission, Markets, and Services Tariff, Section III A.3.4(a)-(c).

[105] NYISO Market Administration and Control Area Services Tariff, Attachment H, Section 23.4.3.3.3.

6. Cost-Based Incremental Offer Threshold

a. Comments

64. The IMM states that it is not clear how PJM will apply the $5/MWh threshold and whether the $5/MWh figure applies to the incremental energy offer, start-up offer, no-load offer, or the sum of all three components.[106] The IMM argues that the tariff should require a resource that updates its market-based offer to also update its cost-based offer if that resource's cost-based offer decreases by any amount to avoid creating a safe-harbor for non-compliance.[107]

65. PJM agrees with the IMM that proposed section 1.10.9B(c) should be revised to clarify what part or parts of the cost-based offer the $5/MWh threshold applies. PJM states that, as discussed with stakeholders at the Generation Offer Flexibility Senior Task Force, the intent of the proposed revisions is to require a resource to update all three components of a cost-based offer (startup cost, no-load cost, and each segment of the incremental offer curve) once the incremental energy offer portion of the cost-based offer triggers the $5/MWh threshold.

66. In response to Commission staff's data request, PJM explains that it initially proposed that Market Sellers update a resource's cost-based offer any time that resource updates its market-based offer. PJM explains that the $5/MWh threshold was added during stakeholder discussions to address concerns about compliance risk given that the methods for developing cost-based offers cannot always be re-created by using a rigid formula. PJM explains that any attempt by the IMM or PJM to recalculate a resource's cost-based offer could lead to a value that varies from the submitted cost-based offer by a few cents to several dollars. PJM states that Market Sellers were concerned about the risk of referral to the Commission's Office of Enforcement in the event that a Market Seller's calculation of a given resource's cost-based offer did not match the calculation made by PJM or the IMM.[108]

67. PJM reiterated that the $5/MWh threshold strikes a reasonable balance between ensuring the accuracy of cost-based offers and the administrative and compliance burden

[106] IMM Protest at 28.

[107] *Id*.

[108] PJM Data Request Response at 13.

imposed on Market Sellers.[109] PJM adds that the threshold was set at $5/MWh because it was determined to be a reasonable level such that a minor variation in fuel prices or other inputs would not result in non-compliance, while being tight enough to ensure that cost-based offers are relatively accurate.[110]

68. In response to Commission staff's data request regarding how PJM will enforce the $5/MWh provision, PJM explains that it does not intend to identify instances when a Market Seller must submit an updated cost-based real-time offer because doing so would be extremely difficult to identify and enforce. PJM states that the $5/MWh threshold would be enforced consistent with existing practices for enforcing compliance with the cost development guidelines specified in Schedule 2 of the Operating Agreement and the PJM manuals. PJM notes that if PJM or the IMM suspect that a Market Seller has not updated a resource’s costs in accordance with the proposal, PJM or the IMM may request evidence supporting the calculation of the cost-based offers submitted by the resource, and adds that any violation can result in a referral to the Commission’s Office of Enforcement.[111]

69. The IMM argues that the $5/MWh threshold is an arbitrary trigger for a Market Seller to update a resource’s cost-based offer. The IMM states that when a Market Seller has an incentive to update a resource’s market-based offer, the Market Seller should be required to update the resource’s cost-based offer to be compliant with Schedule 2 of the Operating Agreement and the PJM manuals.[112]

70. The IMM argues that it is reasonable to have a threshold to require updates in a resource’s cost-based offer in order to address the compliance risk associated with small changes in a resource’s costs.[113] The IMM proposes that Market Sellers be required to update a resource’s cost-based offer when a resource’s operating rate at its economic maximum level decreases by at least $1/MWh, where the operating rate is defined as the sum of no load cost and the area under the incremental offer curve up to the economic

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[109] *Id.*

[110] *Id.*

[111] *Id.* at 12.

[112] IMM Answer at 6.

[113] *Id.*

maximum point divided by the economic maximum point.[114] The IMM explains that it proposes using a resource's operating rate because PJM's sole focus on a resource's incremental energy offer curve is arbitrary and it is unclear what part of the incremental curve PJM will test for a $5/MWh difference because such curves may change by different amounts along the offer curve.[115]

b. Commission Determination

71. We find that it is critical for the Market Sellers of resources to make accurate and timely updates to their cost-based offers, and direct PJM to explain in detail why the $5/MWh threshold is a reasonable amount in its compliance filing. We agree with PJM and the IMM that it is reasonable to minimize the administrative burden on resources associated with small changes in a resource's costs. While PJM provided an explanation on the rationale behind the $5/MWh threshold, it did not give details on why this particular threshold was a reasonable and not arbitrary amount. Accordingly, we direct PJM to explain in detail and to include examples in its compliance filing as to why the $5/MWh threshold is a reasonable amount. PJM should also explain how it proposes to use this threshold in conjunction with the ten percent adder that is currently included in cost-based offers. PJM should provide this explanation in the compliance filing to be submitted within 30 days of the date of this order. Alternatively, PJM may propose a different threshold in that compliance filing that is sufficiently explained, consistent with the requirements of this paragraph.

7. Lost Opportunity Cost Credits and Eligibility

a. Comments

72. The IMM argues that a resource that raises its market-based offer in real-time should not be eligible to receive LOC credits. The IMM argues that any resource that raises its offer in a manner that causes PJM to reduce a resource's output or decommit it should not be eligible for compensation because under PJM's existing rules, a resource cannot affect PJM's decision to reduce its output or to not commit the resource. As such,

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[114] *Id.* The IMM explains that a resource's operating rate would be calculated as follows: (no-load cost + area under incremental curve up to the economic maximum MW)/(economic maximum MW).

[115] *Id.* at 5-6.

the IMM asserts, resources cannot make themselves less economic in real-time. The IMM argues that if a resource increases its offer and that increase results in PJM reducing the resource's output or not committing the resource, the resource should not be compensated for a LOC.[116]

73. PJM states that any resource that raises its offer in real-time would be making its own economic decision through the submission of a market-based offer that is higher than its cost-based offer and there is no guarantee PJM will accept the higher offer and dispatch the resource. PJM contends that such resources are not making themselves less economic in real-time to obtain greater LOC credits.[117]

74. PJM agrees with the IMM about the complexity related to the rules for how Operating Reserve and LOC payments will be made. However, PJM contends that complexity alone does not make rules unjust and unreasonable. PJM states that its proposed rules are just and reasonable because they will ensure that market power is appropriately mitigated. Thus, PJM maintains that the added complexity in the flexible offers proposal related to Operating Reserve and LOC credits is far outweighed by the benefits they will provide to PJM and PJM's markets on the whole.[118]

b. Commission Determination

75. We reject PJM's proposal regarding LOC credits. PJM has not shown why a Flexible Resource that raises its real-time offer above its day-ahead offer (i.e., the offer PJM considered when it scheduled that resource in the day-ahead market) in a manner that causes PJM to reduce its real-time output or decommit the resource should be eligible for LOC credits. We find that it is appropriate to restrict LOC credit eligibility for Flexible Resources that raise their market-based offers in real-time for their day-ahead commitment period. If the purpose of these credits is to compensate a resource for its LOC for not being dispatched to its day-ahead schedule, we find no justification to compensate Flexible Resources with LOC credits when they are not dispatched as a result of the increase of their offer between day-ahead and real-time markets. Accordingly, we reject PJM's proposal here and direct it to submit, as part of the compliance filing, tariff provisions, within 30 days of the date of this order, that make Flexible Resources that submit updated real-time offers at levels above their previously accepted day-ahead

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[116] IMM Protest at 37.

[117] PJM Data Request Response at 24.

[118] PJM Answer at 25-26.

offers ineligible to receive LOC credits. We also direct PJM to correct its proposed definition of Total Lost Opportunity Offer to include the word "cost," which PJM agreed to do in response to the IMM's comments.[119]

8. Operating Parameters

a. Comments

76. The IMM argues that provisions relating to hourly changes to specific parameters should be included in the tariff and not just the manuals. The IMM contends that this information needs to be included in the tariff so that the proposal can be properly evaluated by the Commission and stakeholders and that excluding such information from the tariff violates the Commission's rule of reason.[120] As an example, the IMM notes that PJM's proposal does not specify whether a resource can submit day-ahead offers with minimum run times that vary by hour or whether a resource can change its minimum run time in real-time. The IMM argues that if minimum run times can be changed, resources would be given another variable that they could use to either avoid commitment or impose a commitment on PJM to increase that resource's uplift payments, such as a resource that increases its minimum run time in real-time.[121] The Load Group and Interested State Commissions also argue that the proposal fails to incorporate all terms and conditions into the tariff and state that the business rules governing these new changes should not be included only in the PJM manuals.[122]

77. PJM argues that the IMM's arguments in this regard are erroneous and should be dismissed. According to PJM, the Commission's rule of reason requires that "all practices that *significantly* affect rates, terms and conditions fall within the purview of section 205(c) of the FPA and, therefore, must be included in a tariff filed with the Commission."[123] PJM maintains that updating offer parameters does not significantly

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[119] *Id*. at 32. *See also* IMM Protest at 24.

[120] IMM Protest at 12-14.

[121] *Id*. at 25.

[122] Load Group and Interest State Commissions Comments at 8-11.

[123] PJM Answer at 23 (citing *City of Cleveland v. FERC*, 773 F.2d 1368, 1376 (D.C. Cir. 1985) (outlining "rule of reason" standard); *ISO New England Inc*., 137 FERC ¶ 61,112, at n.36 (2011)).

affect market participants' rates, terms and conditions. Therefore, PJM argues, the specific business rules and details related to updating offer parameters are not required to be included in the tariff.[124]

78. PJM also states that while it did not include certain information related to implementation details in the compliance filing in accordance with the Commission's rule of reason, PJM reviewed how it planned to allow Market Sellers to update their offer parameters during the Generation Offer Flexibility Senior Task Force (Task Force) stakeholder process, and posted a detailed matrix related to this issue and other implementation details of the flexible offer proposal, which was thoroughly discussed in Task Force meetings and is publicly available.[125] PJM states it has not yet developed the relevant manual language related to the flexible offer proposal because PJM is waiting to see what aspects of its proposal are approved by the Commission before developing these manual revisions.[126] PJM explains that Manual 11[127] will be updated to provide guidance regarding the submission of real-time offers and, like all changes to the PJM manuals, there will be a stakeholder review and approval process.[128] As part of its Data Request Response, PJM included a matrix describing the flexibility Market Sellers have under its proposal to differentiate and update each offer parameter of the energy supply offer.[129]

79. PJM also states that there is no detailed language in any of its current governing documents related to how market participants can update offer parameters, despite the fact that market participants have updated offer parameters since PJM began operating its

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[124] *Id*. at 23-24.

[125] *See, e.g.*, PJM, *Updated Proposal Matrix*, http://pjm.com/committees-and-groups/task-forces/gofstf.aspx.

[126] PJM Data Request Response at 24-25.

[127] PJM Manual 11: Energy and Ancillary Services Market Operations.

[128] PJM Data Request Response at 2-3.

[129] *Id.* at 4-7. PJM's matrix includes the following offer components: incremental energy offer, MW blocks, no-load fee, start-up fee, use offer slope, notification time, start-up time, minimum run time, maximum run time, ramp rate, day-ahead scheduling reserve offer, synchronized reserve offer price and MWs, regulation offer price and MWs, resource status, resource limits, and resource characteristics.

markets.[130] PJM contends that including in the PJM manuals the details related to which offer parameters market participants can update and when they can be updated is consistent with the Commission's rule of reason and PJM's longstanding and well known practice.[131]

b. Commission Determination

80. We find that PJM's proposed Tariff and Operating Agreement revisions associated with implementing the flexible offer proposal do not include key provisions that significantly affect rates, terms, and conditions. First, three key offer parameters, incremental energy offer, start-up costs, and no-load costs, are not currently defined in the Tariff and Operating Agreement, despite being referenced in numerous locations within the Tariff and Operating Agreement and being subject to several limitations as part of PJM's proposal.[132] The term "Flexible Resources" is also not included in PJM's proposed Tariff and Operating Agreement revisions, despite being referenced throughout the Tariff and Operating Agreement. Providing these definitions more formally in the Tariff and Operating Agreement will benefit market participants by ensuring clarity and consistent application, so we direct PJM to submit Tariff and Operating Agreement revisions, within 30 days of the date of this order, to define the missing offer parameters and terms noted here.

81. Second, PJM should include the general rules for flexibility of offer parameters in its Tariff and Operating Agreement. To allow resources to pursue strategies to best procure fuel and minimize costs, the Tariff and Operating Agreement should indicate what limitations apply to submission of offer parameters and specify any limitations on when these parameters can be changed in the hourly updates. Among these revisions, PJM must clarify provisions relating to the minimum run time offer parameter and indicate whether a resource will be permitted to submit day-ahead offers with minimum run times that vary by hour and whether a resource can change its minimum run time between the day-ahead and real-time markets. Thus, we direct PJM to submit Tariff and Operating Agreement revisions, within 30 days of the date of this order, to provide a general rules framework for offer parameters, including a specification of what

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[130] PJM Answer at 24.

[131] *Id*.

[132] During the Operating Parameters Definitions stakeholder group, PJM proposed several clarifying definitions for many of these parameters that would be incorporated into its manuals, which would provide a good starting point.

limitations, if any, PJM is proposing for these parameters and when these parameters can or cannot be changed.

82. We next turn to PJM's proposed treatment of startup and no-load costs. Under PJM's current market rules, a resource can submit either market-based startup and no-load costs or cost-based startup and no-load costs as part of its market-based offer. If the resource chooses to submit market-based startup and no-load costs, these costs are locked in for six months. If it chooses the cost-based startup and no-load costs, these costs can be updated daily. Under PJM's proposal, a resource cannot update its market-based offer's cost-based startup and no-load costs hourly during the hours in which it is committed, even though these offer components can vary across hours. The lack of a resource's ability to update its market-based offer's cost-based startup and no-load costs seems overly restrictive given that a cost-based offer's startup and no-load costs can be updated on an hourly basis. While we are rejecting PJM's proposal, we find that PJM should allow resources to update their market-based offer's cost-based startup and no-load costs during committed hours, unless PJM can clarify the rationale for the proposed limitations. PJM must submit Tariff and Operating Agreement revisions, or provide the appropriate clarification, in its compliance filing to be submitted within 30 days of the date of this order.

9. Committed and Final Offers

a. Comments

83. The IMM recommends that PJM clearly define which offer will be the Committed Offer for self-scheduled resources. The IMM argues that the Committed Offer for self-scheduled resources in the day-ahead market should be either the market-based or cost-based offer on which the resource cleared the day-ahead market. The IMM argues that the Committed Offer for a self-scheduled resource outside the day-ahead market should be the market-based or cost-based offer at the time the resource comes online.[133]

84. The IMM also recommends that PJM clarify if a resource's Final Offer could be its market-based offer for a subset of commitment hours and its cost-based offer for the remaining committed hours. The IMM argues that the Final Offer should be based on the lower offer on every interval of the commitment period based on the output level for each time interval. For example, if a resource fails the three pivotal supplier test and is offer capped, but has a cost-based offer curve that intersects with its market-based offer curve,

[133] IMM Protest at 22.

the Final Offer should be based on the lower offer for each time interval of the commitment period.[134]

85. PJM argues that the term Committed Offer is clearly defined.[135] PJM states that self-scheduled resources cannot have a Committed Offer and are not eligible to receive Operating Reserve payments. Moreover, PJM argues, its proposed definition, which describes in part how self-scheduled resources can receive LOC credits, excludes Committed Offers from the relevant tariff language describing the calculation.[136] PJM explains that the Final Offer is always intended to reflect the offer that PJM uses to dispatch a resource. PJM argues that using the lower of all cost-based offers and the market-based offer for the Final Offer, as the IMM proposes, is inconsistent with PJM's proposal.[137]

b. <u>Commission Determination</u>

86. While we reject PJM's proposal, we clarify that the term Committed Offer should be clearly defined because there may be some instances when a self-scheduled resource's day-ahead energy cleared output, based on an economic offer, is above that resource's self-scheduled output. Because PJM does not propose to prevent a self-scheduled resource that offers a portion of its supply to the market on an economic basis from updating its offer between the day-ahead and real-time markets, the term Committed Offer should be amended to accommodate the fact that self-scheduled resources can change their offers. As noted above, the Commission also requires PJM to subject self-scheduled resources that also submit economic offers beyond their self-scheduled quantities to the three pivotal supplier test when appropriate. We therefore direct PJM to submit Tariff and Operating Agreement revisions, within 30 days of the date of this

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[134] *Id*. at 23.

[135] PJM Answer at 28.

[136] *Id*. at 37 (quoting proposed definition of "Total Lost Opportunity Offer," which is "the applicable offer used to calculate lost opportunity credits . . . [f]or self-scheduled generating units, the Total Lost Opportunity Offer shall equal the hourly offer integrated under the applicable offer curve for the LOC Deviation, as determined by either the cost-based offer on which the resource was dispatched or the offer curve associated with the highest available offer submitted by the Market Seller for each hour in an Operating Day.").

[137] *Id.* at 29.

order, to define the Committed Offer for a self-scheduled resource that clears the day-ahead energy market at a point on its economic incremental energy offer curve that is above its self-scheduled quantity as the market-based or cost-based offer upon which the resource cleared the day-ahead market. The Committed Offer of a self-scheduled resource that clears the real-time market at a point on its economic incremental energy offer curve that is above its self-scheduled quantity should be the market-based or cost-based offer upon which the resource cleared the real-time market.

10. LOC Deviation Definition

a. Comments

87. The IMM states that PJM's proposal to base the LOC Deviation value on a resource's Final Offer will give a resource the ability to increase its LOC credits by simply reducing its offer in real-time.[138] According to the IMM, the LOC Deviation should be based on a resource's Committed Offer and not its Final Offer.

88. PJM explains that as a resource's LOC Deviation increases, so does its Lost Opportunity Offer. PJM states that this is because PJM uses the greater of the Final or Committed Offer to determine the Total Lost Opportunity Offer. PJM argues that in most scenarios, the LOC credits will be the same or less than if a resource had not increased its LOC Deviation. PJM contends that while it is theoretically possible for a resource to increase its LOC credits by increasing the LOC Deviation, the amounts would be *de minimus*.[139]

89. The IMM agrees with PJM's explanation, but raised an additional issue of potential LOC under-compensation if PJM uses the Final Offer to calculate the LOC Deviation. The IMM argues that PJM should use the Committed Offer, which results in the same LOC compensation, regardless of any changes made to the offer.[140]

b. Commission Determination

90. While we reject PJM's proposal, we find that PJM should clarify, in its compliance filing to be submitted within 30 days of the date of this order, whether

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[138] IMM Answer at 34.

[139] PJM Answer at 30.

[140] IMM Comments at 11-13.

resources will be under-compensated for LOC credits in situations when the real-time price is between the Final Offer and Committed Offer, as it has not been addressed in the proposal.

11. Total Operating Reserve Offer Definition

a. Comments

91. The IMM explains that it is not clear how PJM will determine the applicable megawatts for the Total Operating Reserve Offer if the desired output from a resource's Final Offer differs from the desired output from its Committed Offer. The IMM requests that PJM clarify whether its approach of using the applicable offer (i.e. the lesser of the Committed or Final Offer) to calculate Operating Reserve Credits would apply to both Balancing Operating Reserves and Day-Ahead Operating Reserve Credits. The IMM states that the tariff should not use different offers to separately determine the offer level used to calculate Operating Reserve Credits.[141]

92. PJM states that it will revise the balancing value component of the Balancing Operating Reserve Credit calculation to account for the differences in megawatt quantities between the Final Offer and Committed Offer.[142]

b. Commission Determination

93. While we reject PJM's proposal, we find that adjusting the balancing value component of the Balancing Operating Reserve Credit calculation, as PJM suggests, satisfactorily addresses the IMM's concern. We find that this detail is appropriately placed in the PJM manuals. We also direct PJM to submit Tariff and Operating Agreement provisions, within 30 days of the date of this order, to clarify what the applicable offer is for the calculation of Day-Ahead Operating Reserve Credits.

12. Generation Resource Maximum Output Definition

a. Comments

94. The PJM Coalition filed supporting comments and a limited protest stating that the proposed new term "Generation Resource Maximum Output" introduced by PJM to calculate LOC credits is beyond the scope of the directives in the June 2015 Order. The

[141] IMM Protest at 24-25.

[142] PJM Data Request Response at 29.

PJM Coalition argues that the change to LOC credits is unrelated to hourly offers and was not discussed substantively during stakeholder meetings. The Coalition provides an example of two generating units at a facility, both rated at 100 MW for their economic maximums. The PJM Coalition argues that if one unit can operate at 110 MW, then the LOC credits should be calculated based on the MW actually produced and not the rated MW (i.e., 100 MW). The PJM Coalition requests that the Commission reject the new definition, but approve the remainder of the filing.[143]

b. Commission Determination

95. We disagree with the PJM Coalition's protest regarding the term "Generation Resource Maximum Output," and instead find that PJM's revisions are necessary to ensure the calculation of LOC credits is accurate. PJM proposed this definition to replace the Maximum Facility Output definition which was limited to a static megawatt amount that could not change until a facility was restudied. PJM elected to use Maximum Facility Output as part of the calculation for LOC credits. PJM explained in its proposal that each generation unit at a facility will receive an appropriate pro rata share of the facility's Maximum Facility Output and is in line with how LOC credits are awarded for individual units.[144] While not directly related to the proposal, these revisions do impact the LOC Deviation which is being introduced in this proposal and are necessary to ensure that the calculation of LOC credits is as accurate as possible given that there may be multiple units at a facility. Accordingly, while we are rejecting PJM's proposal, we find that PJM's definition for Generation Resource Maximum Output is appropriate and should be retained in the compliance filing directed herein.

13. Regulation and Synchronized Reserve Offers

a. Comments

96. The IMM protests PJM's proposal to allow Regulation and Synchronized Reserve offers to vary by hour because the underlying costs require hourly offers or real-time updates. The IMM explains that, currently, a small component of a resource's cost-based Regulation offers varies with fuel costs given the lower efficiency with which resources provide reserves, which is accounted for through a 0.35 percent degradation factor.[145]

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[143] Coalition Comments at 3-5.

[144] PJM Transmittal at 44-51.

[145] IMM Protest at 27.

The IMM argues that this cost component is not significant enough to warrant a modification of the regulation offer rules. The IMM recommends that resources should not be permitted to submit hourly Regulation offers or update Regulation offers. The IMM adds that under PJM's current offer rules, regulation offers effectively change hourly as a result of changes in resources' opportunity costs, which are calculated hourly and constitute most of the regulation offers. The IMM states that Synchronized Reserve Offers are not dependent on fuel costs and thus advises against permitting resources to submit Synchronized Reserve offers that vary by hour or to update those offer in real-time.[146]

b. Commission Determination

97. Consistent with our finding above, in P 36, that Market Sellers may submit market-based offers that vary by hour, we find that PJM's proposal to allow for Regulation and Synchronized Reserves offers that vary by hour is consistent with the scope of the Commission directive and should not be limited to changes in a resource's underlying fuel costs. Thus, the compliance filing that PJM must submit, within 30 days of the date of this order, should not limit offer flexibility for Regulation and Synchronized Reserves.

14. Other Concerns

a. Comments

98. In response to Commission staff's data request, PJM proposed clarifying tariff language to section 1.10.9B(c), which better defines the term "current price" with respect to the three-part cost-based offer.[147]

99. PJM also proposed revisions to section 1.3.33D regarding the Total Lost Opportunity Offer definition. As PJM explains, for self-scheduled resources, the Total Lost Opportunity Offer shall equal the hourly offer integrated under the applicable offer curve for the LOC deviation. PJM explains that this will be determined by the either the cost-based offer curve on which the resource was dispatched or the offer curve associated with the highest available offer submitted by the resource for each hour in real-time.[148]

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[146] *Id*.

[147] PJM Data Request Response at 11.

[148] *Id*. at 26-27.

b. Commission Determination

100. While we reject PJM's proposal, we find that the clarifications that PJM proposes to these sections are adequate. We direct PJM to submit these Tariff and Operating Agreement revisions on compliance, within 30 days of the date of this order.

The Commission orders:

(A) PJM's proposed Tariff and Operating Agreement revisions are hereby rejected, as discussed in the body of this order.

(B) PJM is hereby directed to submit a compliance filing within 30 days of the date of this order, as discussed in the body of this order.

By the Commission.

(S E A L)

Kimberly D. Bose,
Secretary.

Appendix A

Tariff Records Rejected
PJM Interconnection, L.L.C.
FERC FPA Electric Tariff
Intra-PJM Tariffs

OATT ATT K APPX Sec 1.2, OATT Attachment K Appendix Sec 1.2 Cost-based Offers, 1.0.0
OATT ATT K APPX Sec 1.3, OATT Attachment K Appendix Sec 1.3 Definitions, 24.0.0
OATT ATT K APPX Sec 1.10, OATT Attachment K Appendix Sec 1.10 - Scheduling, 25.0.0
OATT ATT K Appx Sec 3.2, OATT Attachment K Appendix Sec 3.2 - Market Buyers, 33.0.0
OATT ATT K APPX Sec 3.3A, OATT Attachment K Appendix Sec 3.3A Economic Load Response, 8.0.0
OATT ATT K APPX Sec 6.4, OATT Attachment K Appendix Sec 6.4 Offer Price Caps, 8.0.0
OA Schedule 1 Sec 1.2, OA Schedule 1 Sec 1.2 Cost-based Offers, 1.0.0
OA Schedule 1 Sec 1.3, OA Schedule 1 Sec 1.3 Definitions, 24.0.0
OA Schedule 1 Sec 1.10, OA Schedule 1 Sec 1.10 - Scheduling, 26.0.0
OA Schedule 1 Sec 3.2, OA Schedule 1 Sec 3.2 - Market Buyers, 33.0.0
OA Schedule 1 Sec 3.3A, OA Schedule 1 Sec 3.3A - Economic Load Response Participants, 8.0.0
OA Schedule 1 Sec 6.4, OA Schedule 1 Sec 6.4 Offer Price Caps., 8.0.0.

Appendix B

List of Intervenors

American Electric Power Service Corporation
American Municipal Power, Inc.
American Public Power Association
Buckeye Power, Inc.
Calpine Corporation (Calpine)
Dayton Power and Light Company
Delaware Division of the Public Advocate
Delaware Public Service Commission (Delaware Commission)
Direct Energy Business, LLC
Dominion Resources Services, Inc. (Dominion)
Duke Energy Corporation
Dynegy Marketing and Trade, LLC
East Kentucky Power Cooperative, Inc.
Electric Power Supply Association (EPSA)
Exelon Corporation
FirstEnergy Service Company
Independent Market Monitor for PJM (IMM)
Indiana Utility Regulatory Commission (Indiana Commission)
Load Group and Interested State Commissions
Maryland Public Service Commission
New Jersey Board of Public Utilities
New Jersey Division of Rate Counsel
NextEra Energy Resources, LLC
North Carolina Electric Membership Corporation
North Carolina Utilities Commission
NRG Power Marketing LLC and GenOn Energy Management, LLC
Organization of PJM States, Inc. (OPSI)
Pennsylvania Public Utility Commission (Pennsylvania Commission)
PJM Industrial Customer Coalition
PJM Power Providers Group (Providers Group)
PJM Utilities Coalition (PJM Coalition)
PSEG Companies
Public Power Association of New Jersey (PPANJ)
Public Utilities Commission of Ohio (Ohio Commission)
Rockland Electric Company
West Virginia Consumer Advocate Division