

153 FERC ¶ 61,035  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

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

PJM Interconnection, L.L.C.

Docket Nos. ER14-2940-001  
ER14-2940-002

ORDER ON REHEARING AND COMPLIANCE

(Issued October 15, 2015)

1. In this order, we deny requests for rehearing of the Commission's November 28, 2014 order in this proceeding which conditionally accepted a filing submitted by PJM Interconnection, L.L.C. (PJM), subject to a compliance filing.<sup>1</sup> We also accept PJM's December 19, 2014 compliance filing submitted pursuant to the November 28 Order.

**I. Background**

2. On September 25, 2014, PJM filed proposed changes to Attachment DD of its Open Access Transmission Tariff (OATT) to revise certain pricing elements used to clear its capacity market auctions. Specifically, PJM proposed changes to its capacity market demand curve – the Variable Resource Requirement (VRR) Curve – and related inputs, including the cost of new entry (CONE) of a representative new power plant, and the energy and ancillary services (EAS) revenues that such a plant would be expected to earn through its participation in PJM's markets.

3. The VRR Curve is the administratively determined demand curve used to clear PJM capacity auctions. In designing the VRR Curve, PJM seeks to ensure that the amount of capacity it procures satisfies a loss of load expectation of one event in 10 years. The price axis of the VRR Curve contains multiples of the Net CONE value, and the megawatt quantity axis contains the target reliability requirement. Higher prices (above Net CONE) are associated with capacity shortage conditions and lower prices are associated with excess capacity conditions. The Net CONE value is determined by taking the cost of building a new gas fired combustion turbine with dual fuel capability (Gross CONE) and subtracting expected revenues from the energy market and ancillary

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<sup>1</sup> *PJM Interconnection, L.L.C.*, 149 FERC ¶ 61,183 (2014) (November 28 Order).

services. Because of the need to model the performance of the VRR Curve and to administratively determine the cost of a hypothetical combustion turbine, PJM has to make a variety of estimates and projections.

4. As explained in the November 28 Order, the intersection of the VRR Curve with the supply curve (representing capacity suppliers' sell offers) establishes a capacity clearing price. Because this clearing mechanism is based on underlying market assumptions that can change, PJM has conducted triennial reviews to examine and make recommendations regarding PJM's going-forward assumptions, including both the parameters and shape of the VRR Curve.<sup>2</sup> PJM noted in its filing that, consistent with its prior triennial reviews, it had retained an independent consultant, the Brattle Group (Brattle), to conduct the required simulation analyses and related assessments.<sup>3</sup>

5. Based on the Brattle Report and a stakeholder compromise agreement, discussed below, PJM proposed a revised shape for its VRR Curve, consistent with evolving market conditions. In addition, PJM proposed CONE values reflecting: (i) an 8.0 percent cost of capital used to discount future cash flows into present values; and (ii) labor inputs, as prepared by PJM's independent market monitor (Market Monitor). In the November 28 Order, the Commission accepted the proposed OATT revisions, to become effective December 1, 2014, subject to PJM's removal of proposed tariff language addressing certain aspects of its proposed location-specific Net CONE values, as they would have applied to a congested sub-locational deliverability area.<sup>4</sup>

## **II. Requests for Rehearing**

6. Rehearing of the November 28 Order was sought by: (i) the PJM Power Providers Group (P3); (ii) PSEG Companies (PSEG); (iii) a coalition of parties consisting of the Maryland Public Service Commission, the New Jersey Board of Public Utilities, and the PJM Load Group (collectively, the Indicated Parties); and (iv) a coalition of parties consisting of the American Electric Power Service Corp., the Dayton Power and Light

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<sup>2</sup> See PJM OATT at Attachment DD, § 5.10(a)(iii). PJM's filing in the instant proceeding was the third such review.

<sup>3</sup> Brattle's analysis was set forth in two reports: (i) the Triennial Review of PJM's Variable Resource Requirement Curve (Brattle VRR Curve Report); and (ii) Cost of New Entry Estimates for Combustion Turbine and Combined Cycle Plants in PJM (Brattle CONE Report) (collectively, the Brattle Report). See PJM's September 25, 2014 Filing at Attachments D and E.

<sup>4</sup> See November 28 Order, 149 FERC ¶ 61,183 at P 127.

Co., FirstEnergy Service Co., Duke Energy Ohio, Inc., and East Kentucky Power Cooperative, Inc. (collectively, the Coalition).

7. We address these requests, below, in section A (VRR Curve), section B (Cost of Capital), section C (Labor Inputs), and section D (EAS Offsets).<sup>5</sup>

### **III. Discussion**

#### **A. VRR Curve**

##### **1. November 28 Order**

8. The November 28 Order accepted PJM's proposed revisions to the VRR Curve, including: (i) the extension of the VRR Curve's horizontal line segment from PJM's Installed Reserve Margin (IRM) minus three percent position (IRM-3) to an IRM-1 position; (ii) the adjustment of the curve from a convex to a concave shape; and (iii) the one percent rightward shift of the curve.<sup>6</sup>

9. The Commission agreed with PJM that the VRR Curve, as revised under PJM's proposal, would achieve an acceptable level of reliability, in light of evolving market conditions and anticipated supply shifts. Specifically, the Commission found credible the explanation of PJM's expert witness, Dr. Paul M. Sotkiewicz. Dr. Sotkiewicz argued that, due to these anticipated changes, PJM's prior modeling assumptions, based on historical data, were no longer appropriate. The Commission further found that PJM's proposed utilization of a more conservative VRR Curve was just and reasonable, i.e., a VRR Curve that will result in the procurement of additional capacity.<sup>7</sup>

10. The November 28 Order also addressed intervenors' concerns regarding the potential cost impact attributable to PJM's proposed VRR Curve revisions (i.e., the additional one percent increase, at a cost of approximately \$216 million, on average, over

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<sup>5</sup> The EAS Offset (*see* PJM OATT, Attachment DD § 5.10(a)(v)) is the estimated total revenues earned by the reference resource in the energy and ancillary services markets, subtracted by the costs of providing energy and ancillary services. The net revenues are assumed to fund the reference resource's fixed capital and operations and maintenance costs needed to enter the PJM market.

<sup>6</sup> November 28 Order, 149 FERC ¶ 61,183 at P 52. As explained in the November 28 Order, the first two proposed updates were recommended by Brattle, while the third update was supported by PJM's stakeholders. *Id.* P 25.

<sup>7</sup> *Id.* P 52.

PJM's then-existing curve). The Commission found that the Brattle VRR Curve Report's alternative, lower-cost VRR Curve would fail to meet a 1-event-in-5-years loss of load expectation level 13 percent of the time while the curve proposed by PJM would be expected to fall short of that standard only seven percent of the time.<sup>8</sup> The Commission concluded that the cost increase attributable to PJM's proposal was reasonable, on balance, given the increased reliability it would provide.<sup>9</sup>

11. The November 28 Order also addressed intervenors' argument that the reliance on a Monte Carlo simulation, as employed by the Brattle VRR Curve Report to estimate the distribution of capacity market price and quantity outcomes under various demand curve shapes, promotes the use of an enhanced reliability standard that has not been supported by the asserted market uncertainties on which it is based.<sup>10</sup> The Commission, however, found that the Monte Carlo analysis is an appropriate tool by which price, quantity, and reliability outcomes can be simulated. The Commission further noted that the Brattle VRR Curve Report had appropriately used historical PJM offer prices and quantities, and simulated deviations from expected supply and demand conditions calibrated to market conditions observed in PJM.

12. The November 28 Order also addressed intervenors' argument that the Brattle VRR Curve Report's Monte Carlo analysis failed to support PJM's claim regarding the asserted inadequacy of PJM's existing VRR Curve because PJM had failed to account for its ability to procure additional capacity between the auction and the delivery year, via PJM's incremental auctions. Intervenors asserted that the Monte Carlo model erroneously relies on a single year to simulate long-term conditions. The Commission, however, noted that the purpose of PJM's capacity auctions is to procure sufficient capacity to meet PJM's reliability requirement for the relevant delivery year, after accounting for self-supply, in accordance with applicable resource adequacy standards.<sup>11</sup>

13. The Commission further found that incremental auctions should be relied upon by PJM to procure capacity should an unexpected change occur, not as a routine

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<sup>8</sup> *Id.* P 53.

<sup>9</sup> *Id.*

<sup>10</sup> As explained in the November 28 Order, the Monte Carlo simulation is used to approximate the probability of certain outcomes by running multiple trial runs, called simulations, based on selected variables (e.g., supply, demand, import limits, etc.). The performance attributed to each simulated VRR Curve (i.e., its performance against a 1-event-in-10-years standard) is the average of 1,000 different simulations. *Id.* P 5.

<sup>11</sup> *Id.* P 55 (citing PJM OATT at Attachment DD, section 2.5).

procurement strategy. The Commission concluded that, as such, the Brattle VRR Curve Report had appropriately based its analysis on PJM's underlying need to meet its reliability requirement with the capacity it procures during each auction. The Commission noted the Brattle VRR Curve Report's finding that the use of PJM's existing VRR Curve would result in 0.121 events per year, and thus would not meet the minimum 0.1-events-per-year standard. The Commission also noted that anticipated changes to PJM's resource base could not be fully modeled, and that, in procuring capacity, it would not be acceptable to fall short of PJM's reliability needs.

## 2. Requests for Rehearing

14. Indicated Parties challenge the November 28 Order's reliance on Dr. Sotkiewicz's testimony on the issue of evolving market conditions. First, Indicated Parties challenge Dr. Sotkiewicz's claim that the ongoing retirement of 26,000 MW of coal capacity represents a fast-changing and uncertain future market condition. Indicated Parties argue that the retirement of this capacity has largely already occurred and that it has been replaced over the past three years with 17,000 MW of new natural gas-fired capacity.<sup>12</sup>

15. Indicated Parties also challenge Dr. Sotkiewicz's claim that the May 2014 decision of the U.S. Court of Appeals for the D.C. Circuit (D.C. Circuit) vacating Order No. 745 (regarding compensation for demand response participation in organized wholesale markets) represents a supply uncertainty supporting PJM's VRR Curve updates.<sup>13</sup> Indicated Parties argue that any demand response shortfall attributable to *EPSA* will be matched by the demand response participation that will be made possible under PJM's Capacity Performance market mechanism.<sup>14</sup>

16. In addition, Indicated Parties dispute Dr. Sotkiewicz's claim regarding the uncertainty attributable to the carbon emission guidelines then being considered by the Environmental Protection Agency (EPA) in a rulemaking proceeding, as it may affect

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<sup>12</sup> Indicated Parties' Rehearing Request at 6 (citing PJM Load Group Protest, Aff. of J. Wilson at 9).

<sup>13</sup> See *Electric Power Supply Assoc. v. FERC*, 733 F.3d 216 (D.C. Cir. 2014) (*EPSA*), cert. granted, Nos. 14-840, 14-841.

<sup>14</sup> PJM submitted its Capacity Performance resource adequacy proposal in Docket No. ER15-623-000, et al. See *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208 (2015), reh'g pending.

existing generation and planned generation, as of January 2014.<sup>15</sup> Indicated Parties argue that, under the Clean Power Plan as proposed, the relevant limitations will not be effective until 2030, with only interim standards going into effect in 2020. Indicated Parties add that, given existing and/or planned coal plant retirements, PJM's existing coal fleet will be depleted, as of 2020, such that compliance with the Clean Power Plan should not be difficult and will not require further fossil fuel plant retirements, at least not until after 2020. Indicated Parties argue that while carbon pollution emission controls may become a factor driving generation retirement and development decisions in the future, such controls will not be a factor during the period that PJM's triennial review decisions will remain effective.<sup>16</sup>

17. Indicated Parties also challenge the November 28 Order's finding that the increase in costs attributable to PJM's VRR Curve updates are reasonable, on balance, given the reliability benefits they will produce.<sup>17</sup> Indicated Parties assert that, in making this finding, the Commission relied on the cost figures reported in the Brattle VRR Curve Report's Monte Carlo analysis. Indicated Parties argue, however, that this analysis explicitly states that it is not to be used to measure the costs attributable to PJM's VRR Curve updates.<sup>18</sup> Indicated Parties add that, regardless, the Brattle VRR Curve Report provides no explanation of how its cost figures were developed. Indicated Parties argue that a better reflection of the costs attributable to PJM's VRR Curve updates was provided by PJM in response to a stakeholder data request, i.e., in PJM's analysis applying its VRR Curve updates to its Base Residual Auction (BRA) offer prices made under its then-existing VRR Curve and other data for the three most recent annual

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<sup>15</sup> The relevant guidelines, the Clean Power Plan, were issued by the EPA as a Final Rule on August 3, 2015. *See* Environmental Protection Agency, *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, Final Rule, Docket No. EPA-HG-OAR-2013-0602 (Aug. 3, 2015).

<sup>16</sup> Indicated Parties note that based on PJM's own planning study, issued October 8, 2014, PJM will need 10,000 MW of generation additions over the next eleven years to satisfy load growth and generation retirements.

<sup>17</sup> November 28 Order, 149 FERC ¶ 61,183 at P 53.

<sup>18</sup> Indicated Parties Rehearing Request at 9 (citing PJM's September 25, 2014 Filing at Attachment C, Aff. of Dr. Sotkiewicz at 5) (“[O]ur simulations reflect long-term conditions at economic equilibrium on average, and do not reflect a forecast of outcomes over the next several years or any other particular year.”).

capacity auctions (from 2012 through 2014).<sup>19</sup> Indicated Parties assert that these annual cost figures totaled \$1.4, \$1.0, and \$1.7 billion, respectively.

18. Indicated Parties acknowledge that this requested simulation analysis was based on a VRR Curve that procured a lower volume of resources than PJM's proposed VRR Curve, and that the corresponding offer prices might have changed had generators known that a greater quantity of generation was to be procured. Indicated Parties assert, however, that increased generation procurement would be expected to increase generation price offers and thus the cost of procuring required capacity in the BRA.

19. Indicated Parties also challenge the November 28 Order's finding that PJM's VRR Curve updates will benefit end-users by enhancing reliability.<sup>20</sup> Indicated Parties assert that while this finding relies on the Brattle VRR Curve Report's Monte Carlo analysis, that analysis is an improper basis for establishing any reliability claim or any other purported service benefits. Indicated Parties argue that this is so because the Brattle VRR Curve Report, in developing both upward and downward capacity shocks over the relevant capacity-year period (2009-2017), failed to account for the fact that load growth for this period was over-estimated for each year by an average of almost six percent (i.e. with actual load-forecast declining), while supply offers increased over this period, almost without exception.<sup>21</sup> Indicated Parties argue that, accordingly, the Brattle VRR Curve Report's analysis should have considered only an upward, reliability-improving shock.<sup>22</sup>

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<sup>19</sup> See Indicated Parties Rehearing Request at Att. A.

<sup>20</sup> November 28 Order, 149 FERC ¶ 61,183 at P 53 (finding that while the updates recommended in the Brattle VRR Curve Report would be expected to fall short of a low-reliability 1-event in-5 years level 13 percent of the time, the additional one percent rightward shift of the VRR Curve proposed by PJM – and accepted by the Commission – would fall short of that standard only seven percent of the time).

<sup>21</sup> “Shocks” are a realistic catalogue of varying levels of supply, demand, capacity import limits, and Net CONE estimates from which each Monte Carlo “draw” may randomly select to create one of a thousand or more different scenarios for which reliability and cost outcomes can be calculated. See PJM September 25, 2014 Filing at 16.

<sup>22</sup> Indicated Parties' Rehearing Request at 15 (citing PJM Load Group Protest, Aff. of J. Wilson at 44-45).

20. Indicated Parties also challenge, as unsupported, the Brattle VRR Curve Report's use of a shock based on an annual deviation in actual, measured Net CONE for the period 2000-2014. Indicated Parties argue that, in fact, under-estimates of Net CONE are unlikely.<sup>23</sup> In addition, Indicated Parties argue that the Monte Carlo analysis was flawed on the grounds that it: (i) failed to simulate generation investment decisions; (ii) imposed an average clearing price equal to Net CONE over all 1000 simulations for each compared VRR Curve shape; (iii) made no distinction between three-year forward and delivery year reserve margins (and thus, it is claimed, produced inaccurate loss-of-load expectation values and grossly over-estimated reliability risks); and (iv) introduced new VRR Curve evaluation criteria not used in PJM's prior triennial reviews.

21. Indicated Parties argue that, rather than consider actual reserve margins and reliability risk, the Monte Carlo analysis erroneously focused on hypothetical risks based on capacity and load levels as estimated in the BRA, three years prior to the delivery year. Indicated Parties argue that the November 28 Order erred in not setting these issues for hearing and permitting intervenors the right to discovery and cross examination.

22. Indicated Parties also assert that, while the November 28 Order accepted a reliability standard based on a 1-event-in-10-years loss occurrence, PJM's VRR Curve updates, in fact, provide reliability at a more expensive and unjustified cost, at a level equivalent to a 1-event-in-17 years loss occurrence. Indicated Parties argue that this standard is inconsistent with the model approved by the Commission in the case of ISO New England Inc. (ISO-NE), i.e., in a market that is smaller and riskier than PJM's market.<sup>24</sup>

23. Finally, Indicated Parties argue that the added reliability protections associated with PJM's VRR Curve updates are unnecessary (and their costs unjustified), given PJM's ability to rely on other existing mechanisms to ensure against supply shortages. Indicated Parties note that, under the PJM Reliability Assurance Agreement Among Load Serving Entities, PJM is required each year to establish a reserve requirement and confirm that load serving entities have the necessary generation to satisfy this requirement. Indicated Parties add that, while these results are factored into the planning parameters for PJM's annual BRA, any shortfalls in the capacity that may be required can

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<sup>23</sup> *Id.* at 14 (citing PJM Load Group Protest, Aff. of J. Wilson at 19-20).

<sup>24</sup> *Id.* at 22 (citing *ISO New England Inc.*, 147 FERC ¶ 61,173 at PP 30, 33 (2014) (*ISO-NE Demand Curve Order*)). Indicated Parties note that ISO-NE's curve properly achieves a 1-event-in-10-years standard on average, with a 31.4 percent occurrence below this level, while PJM's VRR Curve produces a 16 percent occurrence. *Id.*

be adequately addressed by PJM during the three-year lag period that exists between the date of the BRA and the relevant delivery year.

### 3. Commission Determination

24. For the reasons discussed below, we deny rehearing on this issue. PJM based its revisions to the VRR Curve on the analyses presented by both the Brattle VRR Curve Report and PJM's expert economist, Dr. Sotkiewicz. Dr. Sotkiewicz determined that due to a variety of anticipated market changes, PJM's prior modeling assumptions, based on historical data, were no longer appropriate and recommended the utilization of a more conservative VRR Curve that will result in the procurement of additional capacity.<sup>25</sup> As the Commission found in the November 28 Order, the views of these experts are both reasonable and credible, and provided sufficient support for the revisions proposed by PJM, the applicant in this case.<sup>26</sup>

25. Indicated Parties challenge the evidentiary basis underlying PJM's revisions, including PJM's reliance on the planned retirement of 26,000 MW of coal-fired resources, as an evolving, uncertain market condition that supports its VRR Curve changes. Indicated Parties assert that, in fact, much of this capacity has already been retired. The Commission's acceptance of PJM's proposed VRR Curve changes, however, was not based on the specific timing of these retirements, but on the inability of PJM's prior modeling construct to capture these evolving conditions and thus on the resulting need for a more conservative VRR Curve.

26. We also reject Indicated Parties' argument that any demand response shortfall resulting from the D.C. Circuit's mandate in *EPSA* will be remedied and/or superseded by tariff revisions that PJM will propose in subsequent proceedings. PJM sufficiently demonstrated that its proposed tariff revisions are a just and reasonable way to account for the uncertainty associated with the *EPSA* decision in the near-term.

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<sup>25</sup> *Id.* P 52.

<sup>26</sup> See, e.g., *Transmission Agency of N. California v. FERC*, 628 F.3d 538, 551 (D.C. Cir. 2010) (“[T]he fact that the CAISO’s experts and data were credited over petitioners’ is no reason to grant the petition because the court, acknowledging the Commission’s expertise, defers to the Commission’s resolution of factual disputes between expert witnesses.”); *Murray Energy Corp. v. FERC*, 629 F.3d 231, 239 (D.C. Cir. 2011) (“[W]e defer to FERC’s resolution of factual disputes between expert witnesses.”); *Electric Consumers Resource Council v. FERC*, 407 F.3d 1232, 1236 (D.C. Cir. 2005) (“Because there is substantial evidence in the record to support the Commission’s conclusions, we defer to the Commission’s evaluation of the experimental rate design.”).

27. Indicated Parties also argue that the emissions controls proposed by the EPA in the Clean Power Plan will not take effect prior to the next VRR Curve review that PJM will be required to undertake in four years and that, as such, it was erroneous for the Commission to have relied on the EPA's rule in support of PJM's proposed VRR Curve changes. The deadline for compliance with the EPA's interim requirements is 2022; it is uncertain whether states will begin to implement programs or modifications to existing programs ahead of that deadline. Because the Brattle VRR Curve Report's modeling is unable to account for, or simulate, the impact that the Clean Power Plan will have on PJM's markets, and because of the other anticipated changes to PJM's resource base, we find that the proposed VRR Curve changes encompass reasonable reliability objectives.

28. Indicated Parties further assert that the cost figures provided in the Brattle VRR Curve Report cannot be relied upon, given Dr. Sotkiewicz's acknowledgment that the simulations at issue "reflect long-term conditions at economic equilibrium on average, and do not reflect a forecast of outcomes over the next several years or any other particular year."<sup>27</sup> Indicated Parties suggest that in place of these cost figures, the costs attributable to PJM's prior capacity auctions should be utilized in assessing the efficacy of PJM's VRR Curve.

29. The November 28 Order, however, did not rely on a forecast applicable to any particular delivery year or set of delivery years. It relied, rather, on the Brattle VRR Curve Report's simulation of PJM's auction clearing mechanics for any given year (a Monte Carlo simulation), based on realistic variations in supply and demand as reflected over PJM's first ten BRAs. As the November 28 Order pointed out, the Brattle VRR Curve Report analyzed the results from 1,000 different runs of the model, which showed that the increase in costs is expected to be less than 1 percent on average over the long-term.<sup>28</sup> Evaluating an administrative demand curve requires a reasonable balancing of objective factors, including the projected impact on reliability and cost. Although it would be impossible to predict the capacity costs or outage rates precisely for any given year, the Brattle VRR Curve Report's data provides a reasonable basis on which to evaluate the VRR Curve, and PJM has met its burden to show that the proposed VRR Curve is just and reasonable.

30. We also reject Indicated Parties' argument that the Brattle VRR Curve Report's Monte Carlo analysis erroneously considered only upward, reliability-improving shocks and thus failed to account for the fact that supply has trended only upward and load forecast only downward. The Brattle VRR Curve Report calibrated the net supply

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<sup>27</sup> *Id.* at 10 (citing Brattle VRR Curve Report at 33-34).

<sup>28</sup> November 28 Order, 149 FERC ¶ 61,183 at P 53.

fluctuations (supply minus demand) such that its model appropriately matches historically observed fluctuations in the capacity market, where price and quantity may go up or down in a given year. With respect to load forecast, the Brattle VRR Curve Report also considered load changes in PJM's capacity market over time, including the load forecast prior to the delivery year, thus correcting for the effects of any potential load forecast bias.<sup>29</sup>

31. We also reject Indicated Parties' argument that the Brattle VRR Curve Report's shock, based on annual deviation in measured Net CONE over a multi-year period, was unsupported. Indicated Parties argue that this analysis provided no evidence suggesting that Net CONE would be consistently underestimated, a point that is inapposite, however, because the Monte Carlo model is based on no such assertion. It simply models the effects on reliability if Net CONE is underestimated based on deviations in the rates published in the Handy-Whitman Index of Public Utility Construction Costs (Handy-Whitman Index),<sup>30</sup> and historical energy and ancillary services estimates. Modeling statistical deviations in these inputs provides a reasonable basis on which to compare the previous VRR Curve with the one accepted in the November 28 Order. The Commission determined that, based on those statistics, the new VRR Curve strikes an appropriate balance between cost and reliability.

32. Indicated Parties also argue that the reliability standard reflected in the Brattle VRR Curve Report results in unjustified system costs. We note, however, that the VRR Curve, as recommended by the Brattle VRR Curve Report, is expected to fall short of the low-reliability 1-event-in-5-years level 13 percent of the time, while the curve proposed by PJM is expected to fall short of that standard only seven percent of the time. Given the ongoing uncertainties related to PJM's resource base and the increased reliability that is projected to result from the proposed VRR Curve, PJM sufficiently demonstrated that the increase in costs, less than 1 percent on average over the long-term, is reasonable.

33. Indicated Parties' argue that PJM can rely on other mechanisms to ensure against supply shortages occurring after the BRA and therefore its proposal is unjust and unreasonable. However, relying on other mechanisms would result in PJM failing to procure sufficient capacity in the BRA to meet its resource adequacy requirements. We note that PJM does not have the discretion to secure an amount of capacity in the BRA

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<sup>29</sup> See PJM Answer at Attachment A (Aff. of Dr. Samuel A. Newell and Dr. Kathleen Spees at 8).

<sup>30</sup> See PJM OATT, Attachment DD, § 5.10(a)(iv)(B). The Handy-Whitman Index has been used by PJM to update its benchmark Gross CONE values. *Id.*

lower than what its OATT requires.<sup>31</sup> We also find PJM's proposal to commit sufficient capacity to meet the resource adequacy standard in the BRA to be just and reasonable.

34. Finally, the Indicated Parties claim that the Commission erred by not establishing hearing procedures to address PJM's proposed VRR Curve revisions, based on the above-noted arguments raised by Indicated Parties. However, for the reasons explained above, we find that the paper record and extensive testimony and reports provided in this proceeding sufficiently support PJM's proposal.

## **B. Cost of Capital**

### **1. November 28 Order**

35. The November 28 Order found that PJM's proposed cost of capital of 8.0 percent, as developed by Brattle, was just and reasonable. First, the Commission found that the Brattle CONE Report's use of the Capital Asset Pricing Model was appropriate, in calculating its cost of capital, given that a key input required to perform a Discounted Cash Flow analysis (i.e., dividend pay-outs for a proxy group of an independent power producers (IPPs)) would not be available.<sup>32</sup>

36. The November 28 Order also found that the Brattle CONE Report's cost of capital calculations and risk assessments were appropriately based on the costs attributable to both combustion turbine and combined cycle units. Specifically, the Commission found that P3's claim, that combustion turbine units were inherently more risky than combined cycle units, was not supported by empirical evidence.<sup>33</sup>

37. The November 28 Order also accepted PJM's proposed 1.3 percent upward adjustment in its cost of capital (from 6.7 percent to 8.0 percent).<sup>34</sup> The Commission

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<sup>31</sup> See PJM OATT, Attachment DD, § 5.4(a) (6.0.0) ("PJM shall conduct for each Delivery Year a [BRA] to secure commitments of Capacity Resources as needed to satisfy the portion of the [region-wide] Unforced Capacity Obligation not satisfied through Self-Supply of Capacity Resources for such Delivery Year."); *id.* § 5.10(a) (21.0.0) ("[PJM] shall determine Variable Resource Requirement Curves . . . to establish the level of Capacity Resources that will provide an acceptable level of reliability consistent with the Reliability Principles and Standards.").

<sup>32</sup> November 28 Order, 149 FERC ¶ 61,183 at P 76.

<sup>33</sup> *Id.* P 80.

<sup>34</sup> *Id.* P 81.

agreed with the Brattle CONE Report that for a generic merchant project within PJM's footprint, the risks would be larger than for the average portfolio of independent power producers (IPPs) that have long-term contracts and other hedges in place. The Commission also found that merchant projects are able to mitigate some risk by arranging medium-term financial hedging tools.

38. The Commission also addressed intervenors' argument that private equity investment in merchant generation is typical within PJM (and should be considered in establishing the cost of capital in this case). Intervenors argued that the lack of diversification that characterizes these firms warrants a higher cost of capital. The Commission found that private equity firms serve as a poor proxy for determining the cost of capital for a merchant generation facility. Specifically, the Commission found that private equity consists of portfolios of investments in numerous projects in a variety of industries.<sup>35</sup>

39. The November 28 Order also accepted PJM's proposed 60 - 40 percent debt-equity capital structure, based on the five-year debt-equity ratios of publicly-traded IPPs (i.e., companies engaged in merchant generation), and using company 10-K reports for the value of debt and Bloomberg Professional Service (Bloomberg) data for the market value of equity.<sup>36</sup> The Commission found that, while it had accepted the use of a 50-50 capital structure in other proceedings, it had established no precedent mandating such a capital structure in all cases. The Commission then found that PJM's proposed 60-40 capital structure was supported by the capital structures of several companies operating within PJM.

40. The November 28 Order also accepted PJM's proposed 7.0 percent cost of debt, based on the Brattle CONE Report and supporting data in the affidavit of PJM's expert witnesses, demonstrating that a representative project could reasonably couple a 7.0 percent cost of debt with a 60-40 debt-equity capital structure.

## **2. Requests for Rehearing**

41. P3 and PSEG request rehearing of the November 28 Order's acceptance of PJM's proposed 8.0 percent cost of capital for a representative combustion turbine unit. P3 argues that the November 28 Order adopted an overall Cost of Capital that was understated and not supported by the evidence presented. PSEG concurs, stating that at minimum, these issues should have been set for hearing.

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<sup>35</sup> *Id.* P 82.

<sup>36</sup> *Id.* P 85.

42. P3 challenges the November 28 Order's findings that PJM's use of costs attributable to both combined cycle and combustion turbine units was appropriate. Specifically, P3 disputes the November 28 Order's rejection of P3's argument that the development of a combustion turbine unit is more risky than the development of a combined cycle unit. P3 notes that, in making this finding, the November 28 Order relied on PJM's analysis of the standard deviations of annual cash flows from energy margins and the total of energy margins and capacity market revenues when normalized for the difference in combustion turbine and combined cycle CONE values.<sup>37</sup>

43. P3 argues, however, that in the analysis relied upon by the Commission, the standard deviation of energy average revenues divided by CONE for a combustion turbine unit was 6 percent, while this same measure for a combined cycle unit was 11 percent. P3 argues that this analysis does not support the finding that a combustion turbine unit is less risky, or a relatively low risk. P3 asserts that a more meaningful consideration, in terms of relative risk, is the standard deviation of energy average revenues divided by energy average revenues, which is 42 percent for a combustion turbine unit, versus 23 percent for a combined cycle unit.

44. P3 argues that the revenues the November 28 Order relied upon for a combustion turbine unit were low during the historical period, which is not representative of what would be expected in terms of return on investment going forward. P3 notes that for a combustion turbine unit, the average total revenues divided by the combustion turbine CONE is 43 percent, and for a combined cycle unit the average total revenues divided by combined cycle CONE is 70 percent. P3 concludes that PJM's proposed 8.0 percent cost of capital is understated because it relies on data for a combined cycle unit that is less risky than the reference combustion turbine unit.

45. P3 also argues that PJM's cost of capital proposal unduly relied on corporate-level, publicly-traded financial metrics, rather than project-level data. P3 argues that the vast majority of recent and current new build generation development in PJM is being driven by private equity and power generation development shops, which finance investments at the project level. P3 states that while the Brattle CONE Report acknowledged that company-level metrics are not representative of project-level costs (and thus purported to adjust for this difference by raising its pre-adjusted 6.7 percent cost of capital to 8.0 percent), it is unclear how this adjustment fully recognizes the difference between company level and project level financing, based on PJM's own reference points.<sup>38</sup>

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<sup>37</sup> *Id.* P 80.

<sup>38</sup> *See* P3 Rehearing Request at 13 (citing Brattle CONE Report at 37).

46. PSEG adds that this adjustment was based on data related to publicly-traded IPPs. PSEG argues, however, that the November 28 Order failed to address the allegation that this IPP data served as a poor cost of capital proxy for the vast bulk of companies currently building new generation facilities within PJM.

47. P3 also asserts as error the November 28 Order's acceptance of PJM's proposed capital structure of 60 percent debt and 40 percent equity – and rejection of P3's proposed range between 45-50 percent debt and 55-50 percent equity. P3 argues that PJM's proposed level of debt is excessive, given that it was based on data for combined cycle units, without adjustment, even though PJM's reference unit is a combustion turbine, whose gross margin profile is inherently more risky. P3 argues that current actual combined cycle development projects within the PJM region have averaged a 56/44 percent capital structure.

48. In addition, P3 notes that the Brattle Group (in its 2011 PJM study) and National Economic Research Associates, Inc. (in its 2013 New York Independent System Operator, Inc. (NYISO) study) used a lower, Commission-accepted 50/50 debt-to-equity ratio for the combustion turbine reference technology. P3 notes that while the Commission accepted a 60/40 debt-to-equity ratio in the case of ISO-New England (ISO-NE), it did so relative to a combined cycle reference unit that allows new build generation to secure capacity payments for up to seven years, i.e., in the case of a more stable and secure revenue stream relative to PJM's capacity market. P3 also argues that PJM's proposed capital structure inappropriately relies on company-level data, given the November 28 Order's finding (and Brattle CONE Report's acknowledgment) that project finance risks exceed the risks attributable to company-level financing.

49. P3 also argues that the November 28 Order accepted a 7.0 percent cost of debt that is too low, particularly with a capital structure set at 60 percent debt and 40 percent equity. P3 argues that recent project-financed cost of debt in PJM has averaged 7.7 percent and that this has been the figure for combined cycle units with capital structures averaging 55 percent debt and 45 percent equity.

50. P3 also argues that the November 28 Order adopted a cost of equity that, at 13.8 percent, is unreasonably low, given the Brattle CONE Report's reliance on publicly-traded IPPs.<sup>39</sup> P3 states that it has identified eight new projects in PJM and that all of the non-rate based projects are being developed by private equity firms, not IPPs. P3 argues

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<sup>39</sup> See also PSEG Rehearing Request at 13 (arguing that the November 28 Order failed to address the concerns raised by P3's consultant and supported by PSEG on this issue, namely that the cost of capital reflected in PJM's CONE values failed to include the risk profiles of the types of entities actually building in the PJM footprint).

that publicly-traded IPPs have a lower risk profile than merchant new build power generation investors, are more geographically, technologically, and/or contractually diverse, and are not likely to engage in the majority of new build generation development activity, as required within PJM. P3 asserts that, for a project developer active in PJM, a 13.8 percent return on equity (ROE) would be at the low-end of a reasonable zone of returns, but would be below the floor, taking into account factors that surround actual project development within PJM.

51. P3 adds that the Brattle CONE Report's cost of equity recommendation failed to account for the fact that a combustion turbine unit will have a greater reliance on capacity revenues than will a combined cycle unit – a need that presents higher corresponding investment risk. P3 argues that, as such, a cost of equity of 16.5 percent should have been adopted in this case, based on a zone of reasonableness ranging from 15 percent to 20 percent.

52. PSEG argues that, even accepting the November 28 Order's finding that private equity portfolios are a poor proxy because they involve projects in numerous unrelated industries, such a finding would not excuse PJM from carrying its burden of proof to demonstrate why the data derived from publicly-traded IPPs provides a reasonable basis for calculating the cost of capital for PJM's reference unit.

53. P3 also argues that the November 28 Order discussed but failed to provide sufficient grounds for distinguishing (i.e., not applying) the higher-end ROE established by the Commission in Opinion No. 531.<sup>40</sup> The November 28 Order, P3 notes, cited the existence of unique capital market conditions, in that case, namely, the low yields on U.S. Treasury bonds. P3 asserts, however, that these low yields continue to be evidenced today. Specifically, P3 notes that while the U.S. Treasury 10-year bond yield, as of June 19, 2014 (the date that Opinion No. 531 was issued) was 2.64 percent, the yield as of December 26, 2014 was 2.25 percent. P3 adds that while Opinion No. 531 also cited business risks applicable to electric transmission (including delays, project complexity, environmental impact proceedings, multiple jurisdiction approvals, liquidity risk for large projects relative to balance sheets, and shorter investment history), similar characteristics exist for merchant generation. P3 also asserts that a high-end return was warranted in this case, given the relatively higher risks attributable to PJM's reference resource, a combustion turbine unit, compared to a combined cycle unit.

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<sup>40</sup> See *Martha Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234, *order on reh'g*, Opinion No. 531-A, 149 FERC ¶ 61,032 (2014), *order on reh'g*, Opinion No. 531-B, 150 FERC ¶ 61,165 (2015).

### 3. Commission Determination

54. We deny rehearing on this issue. P3 renews its argument, first raised in its protest, that the development of a combustion turbine unit (PJM's reference resource) is riskier than the development of a combined cycle unit, and that, as such, it was an error for the Commission to have accepted PJM's use of costs attributable to both resource types in developing a cost of capital. The November 28 Order relied in part on PJM's comparison of the standard deviations of annual cash flows for both resource types, as represented by total of energy revenues (i.e., the relevant energy margins) *and* capacity market revenues.<sup>41</sup> P3, by contrast, relies on the standard deviations for energy average margins *alone*, which it alleges differ for each resource type (ranging from 6 percent for a combustion turbine unit to 11 percent for a combined cycle unit).

55. In addition, P3 divides the "standard deviation of energy average revenues" by "energy average revenues" (yielding a 42 percent total for a combustion turbine unit and a 23 percent total for a combined cycle unit) to support its conclusion that combustion turbine units are riskier than combined cycle units. We disagree, however, that these differences support a finding as to the relative overall risks attributable to each resource type (a combined cycle unit versus a combustion turbine unit), given that P3's calculations relate to only a single revenue stream. In fact, the more meaningful indicator of risk is the relative volatility of *total* annual cash flows, as the November 28 Order found.<sup>42</sup>

56. P3 also argues that in PJM's 2007-13 study period, revenues for combustion turbine units were uncharacteristically low and thus not representative of going-forward costs. P3, however, offers no support for its assertion that revenues can be expected to rise on a going-forward basis. Regardless, different revenues alone do not necessarily equate to a materially different standard deviation in annual cash flows.

57. P3 and PSEG further argue that an 8.0 percent cost of capital inappropriately relies on corporate-level data for publicly-traded IPPs and thus is not indicative of allegedly riskier, project-level financing. We disagree that this asserted distinction is relevant here. In addition to corporate-level data for IPPs with assets in PJM, the November 28 Order also relied on market- and transaction-based cost of capital data, including fairness opinions in merchant generation divestitures, as analyzed in the Brattle CONE Report.<sup>43</sup> This evidence was verifiable, and reflects the market's required compensation for the

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<sup>41</sup> November 28 Order, 149 FERC ¶ 61,183 at P 80.

<sup>42</sup> *Id.*

<sup>43</sup> *Id.* P 79.

specific, systemic operating risks attributable to merchant generation, and the willingness of borrowers to bear these risks.

58. The November 28 Order also agreed with the finding in the Brattle CONE Report that for a generic merchant project within PJM's footprint, risks are higher relative to the average portfolio of IPPs that have some long-term contracts and other hedges in place.<sup>44</sup> The November 28 Order further agreed that despite the likely difference in risk, merchant projects are able to mitigate risk by arranging medium-term financial hedging tools.<sup>45</sup> The Commission reasoned that taken together, PJM's cost of capital assumptions, including its 1.3 percent upward adjustment, represented an appropriate balance of the interests among investors and consumers.

59. We further note that neither P3 nor PSEG dispute PJM's calculation of the range of reasonable returns. The range reflects all available reference points, including investment analysts' reports for acquired companies' (ranging from 7.6 percent to 10.3 percent) and fairness opinions for merger and acquisition transactions involving merchant generation assets (ranging from 7.1 percent to 8.3 percent). As PJM states, an 8.0 percent cost of capital for a generic merchant generator is near the midpoint of that range. Moreover, given the fact that CONE is based on a *generic* merchant generator, it follows that a generic cost of capital is appropriate.

60. P3 also argues that the debt-to-equity ratio accepted by the November 28 Order is unattainable for a private-equity funded merchant generator. P3's own data, however, suggests otherwise. Specifically, and as the November 28 Order found, P3's data shows that the average debt-equity ratio of its proposed proxy group of new merchant projects in PJM is 58-42.<sup>46</sup> In fact, four of the eight projects cited by P3 as representative have debt ratios greater than 60 percent, with the greatest amount of leverage being 71 percent. P3 counters that its data, which is based on combined cycle units, must be adjusted downward due to the higher risks attributable to a combustion turbine unit. P3, however, offers no evidence illustrating that a combustion-turbine unit should have, on average, a materially different capital structure than a combined cycle unit.

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<sup>44</sup> *Id.* P 81 (citing Brattle CONE Report at 34).

<sup>45</sup> *Id.*

<sup>46</sup> *See* P3 Protest at Attachment 2 (Aff. of James A. Heidell and Mark Repsher at 8 tbl.1, col. G and col. H).

61. P3 argues that the Commission accepted a 50-50 capital structure in a recent NYISO proceeding, and should do so here.<sup>47</sup> However, the record here is distinguishable from the *NYISO Demand Curve Order*, and supports the use of the 60-40 capital structure. In this proceeding, PJM proposed a 60-40 capital structure based on the five-year average debt-to-equity ratio for each merchant generation company, using company 10-Ks for the debt value and data from Bloomberg for the market value of equity. The November 28 Order relied in part on this evidence in finding PJM's proposed capital structure just and reasonable.<sup>48</sup> Additionally, P3's own data, as noted *supra*, shows that half of the companies in its proposed proxy group have debt-to-equity ratios greater than 60-40 (e.g., 71-29), while half have debt-to-equity ratios less than 60-40. Such data supports as just and reasonable the 60-40 capital structure accepted in the November 28 Order.

62. P3 also asserts that, in establishing an appropriate capital structure, it was error to rely on company-level data, as used in the Brattle CONE Report, as opposed to project-level data financed on a stand-alone basis. However, we find that the Brattle CONE Report's use of company-level data was appropriate. The companies listed therein are IPPs that are active within PJM's footprint, with financial data that is publicly-available.

63. P3 also renews its argument that the 60-40 capital structure approved by the Commission in the case of ISO-NE can be distinguished from the 60-40 capital structure proposed here by PJM, given that ISO-NE's tariff allows new build generation to secure capacity payments for up to seven years, thus creating a more stable and secure revenue stream for financing compared to PJM's capacity market where revenues can be secured on a yearly basis alone. As the November 28 Order found, however, P3 has provided no analysis that would justify why a single component of ISO-NE's market design requires PJM's use of a lower debt-to-equity ratio.<sup>49</sup>

64. We next consider P3's assertions of error regarding the cost of debt accepted in the November 28 Order to establish PJM's overall cost of capital. P3 alleges that recent project-financed debt in PJM has averaged 7.7 percent, and that, as such, the 7.0 percent cost of debt accepted in the November 28 Order cannot be supported. Again, however, P3's own evidence shows otherwise. Specifically, P3's data suggests that the median

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<sup>47</sup> See *New York Independent System Operator, Inc.*, 146 FERC ¶ 61,043, at P 105 (2014) (*NYISO Demand Curve Order*).

<sup>48</sup> November 28 Order, 149 FERC ¶ 61,183 at P 85.

<sup>49</sup> *Id.* P 88.

cost of debt of recent project-level generation development in PJM is 6.77 percent,<sup>50</sup> with a simple average of 7.1 percent.<sup>51</sup>

65. P3 also relies on the Commission's findings in Opinion No. 531, as applicable to electric transmission utilities.<sup>52</sup> P3 asserts that, because similar business risks apply to electric transmission utilities and merchant generation, and because Opinion No. 531 approved an ROE that was halfway between the midpoint return and the high-end return, a comparable adjustment should be applied relative to the cost of debt input at issue here. However, there is no zone of reasonable returns to be calculated with respect to the cost of debt because it is a stated figure.

66. In support of a higher ROE, P3 alleges that current capital market conditions are identical to those present during the timeframe at issue in Opinion No. 531. However, as noted above, Opinion No. 531's establishment of an ROE within a zone of reasonable returns is appropriate only when relying on a Discounted Cash Flow analysis. As the Commission explained:

any [Discounted Cash Flow] analysis may be affected by potentially unrepresentative financial inputs to the [Discounted Cash Flow] formula, including those produced by historically anomalous capital market conditions. . . . [Accordingly,] the Commission may consider the extent to which economic anomalies may have affected the reliability of [Discounted Cash Flow] analyses in determining where to set a public utility's ROE within the range of reasonable returns.<sup>53</sup>

The Brattle CONE Report, however, utilized a Capital Asset Pricing Model, not a Discounted Cash Flow analysis. Accordingly, Opinion No. 531 does not support or otherwise warrant our adoption of an adjusted cost of equity, based on assumptions applicable to a Discounted Cash Flow analysis. Indeed, while Opinion No. 531 relied upon the Capital Asset Pricing Model to corroborate the place of the ROE within the zone of reasonableness, the Commission did not apply an upward adjustment to that model's result within its zone of reasonableness.

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<sup>50</sup> See P3 Protest at Attachment 2 (Aff. of James A. Heidell and Mark Repsher at 11, tbl. 2E).

<sup>51</sup> November 28 Order, 149 FERC ¶ 61,183 at P 90 (citing P3 Protest at Attachment 2 (Aff. of James A. Heidell and Mark Repsher at 11, tbl. 2E)).

<sup>52</sup> Opinion No. 531, 147 FERC ¶ 61,234 at P 41.

<sup>53</sup> *Id.*

67. P3 next argues that the November 28 Order adopted a cost of equity that, at 13.8 percent, is unreasonably low due to the inclusion of publicly-traded IPP's in the proxy group. P3 argues that publicly-traded IPPs have a lower risk profile than merchant new-built power generation investors, which include private equity and power generation developers. P3 cites to three private equity index funds, with returns that range between 14.1 and 19.7 percent. As the November 28 Order found, however, private equity index funds' returns on equity are a poor proxy for determining the cost of capital for a merchant generation facility because these funds represent investments made in numerous industries (e.g., technology, pharmaceuticals, etc.).<sup>54</sup>

### **C. Labor Inputs**

#### **1. November 28 Order**

68. The November 28 Order accepted PJM's proposed labor cost estimates used in calculating PJM's Gross CONE values. Specifically, the Commission accepted PJM's use of the Market Monitor's inputs as just and reasonable.

69. The Commission found that, in deriving these inputs, PJM had considered publicly-available data on wage rates and labor estimates from its previous CONE studies. The Commission also found that PJM had appropriately considered the publicly-available census data compiled by the U.S. Bureau of Labor Statistics, addressing employment and wages for utility construction workers, adjusted for inflation, fringe benefits, and labor productivity factors. The Commission also found that PJM's proposed labor construction values closely tracked publicly-available data and was therefore transparent.

#### **2. Rehearing Requests**

70. P3 and PSEG seek rehearing of the November 28 Order's acceptance of PJM's proposed labor cost inputs. P3 argues that PJM's proposed labor costs fail to reflect the actual experience of companies engaged in the construction of generating units within PJM, and in particular, within CONE Area 1.<sup>55</sup> P3 asserts that PJM's proposed labor

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<sup>54</sup> November 28 Order, 149 FERC ¶ 61,183 at P 91.

<sup>55</sup> See also PSEG Rehearing Request at 7. PJM's OATT contains separate CONE estimates for each of the five CONE Areas that are defined in terms of the transmission owner zones they encompass. CONE Area 1 encompasses the following transmission owner zones: Public Service Electric & Gas, Jersey Central Power & Light, Atlantic City Electric, PECO, Delmarva Power and Light, and Rockland Electric Co.

inputs understate effective hourly wage rates, the base number of hours required to construct the relevant reference resource, and productivity.

71. With respect to hourly rates, P3 argues that PJM's calculations erroneously assume that work will be performed under a 40-hour work week, even though a 50-hour work week is typically required because the inclusion of overtime is needed to attract high quality workers. P3 asserts that, for CONE Area 1, PJM's wage values are underestimated by 8-10 percent. P3 notes that PJM, in its answer, attempted to rebut this evidence, by claiming that it had relied on the Bureau of Labor Statistics for Utility Construction Wages, as designated under the North American Industrial Classification, which would have included all remuneration, including overtime. P3, however, notes that the data relied upon by PJM would still understate overall wage rates, because the "utility" classifications relied upon by PJM were not limited to power plant projects, or even electric utilities, and thus encompassed permanent full-time employment arrangements that are distinguishable from power plant wage conditions.<sup>56</sup>

72. With respect to base case-required labor hours, P3 argues that the consultant's figure, on which the estimate was based (and used by the Market Monitor), was not part of the record and has not otherwise been independently verified by PJM. P3 argues that, based on its consultant's affidavit (and relying on combustion turbine projects in New Jersey and Connecticut completed in 2012), PJM's number was understated by about 135 percent for CONE Area 1. PSEG notes that the Brattle CONE Report's estimates of unadjusted labor hours required for construction of the reference combustion turbine unit appeared to be about 76 percent higher than the value proposed by PJM for CONE Area 1. PSEG asserts that, given this disparity, the Brattle CONE Report's labor hours should have been used by the Commission.

73. With respect to productivity, P3 argues that PJM's values were understated, given its erroneous assumption that the work at issue would be limited to a 40-hour work week. P3 asserts that when work level increases to a 50-hour week, the productivity level would decrease, thereby increasing labor costs and CONE.

74. PSEG argues that if the Commission, on rehearing, does not accept the original labor cost values supported in the Brattle CONE Report, it should, at a minimum, set this issue for hearing.

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<sup>56</sup> See also PSEG Rehearing Request at 9 (noting that the data PJM used understates the wage rates for power plant construction workers because it includes wage rates for workers that belong to different labor unions than the craft workers for power plant construction and thus have different pay scales).

### 3. Commission Determination

75. We deny rehearing on this issue. P3 asserts that the hourly wage rates reflected in PJM's proposed labor cost inputs are understated for CONE Area 1 because they are based on a 40-hour work week. P3 argues that these calculations should have been based on a 50-hour-work week. PJM's proposed wage rates for CONE Area 1, however, were verified relative to the wage rates for utility construction in New Jersey, as reported by the U.S. Bureau of Labor Statistics. This data, moreover, reflects remuneration of every type, including overtime pay.<sup>57</sup> Accordingly, we find that these wages rates were not understated.

76. P3 also challenges the base case labor hours proposed by PJM, as developed in an analysis prepared for the Market Monitor (Pasteris Report).<sup>58</sup> P3 argues that the Pasteris Report was not made a part of the record, or independently verified by PJM. We disagree that PJM's base case labor hours were insufficiently supported on this record. We note that the differences between the labor hours initially developed by PJM and the labor hours reflected in the Pasteris Report were considered in PJM's stakeholder process. The construction estimate set forth in the Pasteris Report, moreover, was developed based on data from recent construction proposals and input obtained from multiple construction contractors doing business in New Jersey. PJM explained in its filing that it adopted the Pasteris Report's labor estimate as credible, as part of a good faith negotiation during the stakeholder process,<sup>59</sup> subject to its own independent review, including a review of publicly-available data on wage rates and its prior CONE studies.<sup>60</sup>

77. P3 also characterizes, as unreasonably low, PJM's estimate of total labor hours required to build its representative reference resource. In support of its claim, P3 cites three recent projects (two in New Jersey and one in Connecticut) that were relatively small: 89 MW, 133 MW and 178 MW. From the labor hours required for such projects, P3 extrapolates a corresponding number of labor hours for a 396 MW CT reference

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<sup>57</sup> See PJM November 6, 2014 Answer at 40-41.

<sup>58</sup> See Pasteris Energy, Inc., *Brattle CONE Combustion Turbine Revenue Requirements Review For Monitoring Analytics, LLC* (July 25, 2014), available at <http://www.pjm.com/~media/committees-groups/task-forces/cstf/20140725/20140725-brattle-vs-ma-som-cone-ct-revenue-requirements-comparison-final-report.ashx>.

<sup>59</sup> PJM November 6, 2014 Answer at 38.

<sup>60</sup> PJM Filing, Aff. of Dr. Paul M. Sotkiewicz at 12.

unit.<sup>61</sup> However, we are not persuaded by P3's calculation as it ignores the economies of scale in building larger plants with less proportionate quantities of labor.

78. Finally, PSEG argues that PJM should have been required to adopt Brattle's labor hours, which it asserts are about 76 percent higher for CONE Area 1 than those sponsored by the Market Monitor. PSEG's assessment of this differential, however, is mistaken. As PJM noted in its answer, Brattle's estimate and that sponsored by PJM's witness, Dr. Sotkiewicz (368,000 hours versus 360,000 hours) were not widely divergent.<sup>62</sup>

#### **D. EAS Offsets**

##### **1. November 28 Order**

79. The November 28 Order rejected, as beyond the scope of this proceeding, intervenors' requests that PJM be required to revise its existing EAS Offsets calculation methodology. The Commission found that the existing historic EAS Offset calculation methodology had previously been accepted as just and reasonable, and that PJM had not sought to revise this provision in its section 205 filing. The November 28 Order also addressed the Public Utilities Coalition's argument that EAS Offsets for the Rest-of-Market area should be calculated based on Rest-of-Market area prices, rather than total region-wide prices. The Commission found that PJM's allocation methodology was unchanged from what is currently on file and was thus not at issue.

##### **2. Requests for Rehearing**

80. The Coalition seeks rehearing of the November 28 Order's finding that PJM, in its filing, proposed no revisions to its currently-effective EAS Offset provisions, and that, as such, intervenors' requests that PJM be directed to do so were beyond the scope of this section 205 proceeding. The Coalition argues that, in fact, PJM's currently-effective EAS Offsets methodology was an issue raised by PJM's filing and that intervenors' request that PJM be directed to adjust the calculation of the EAS Offsets for the Rest-of-Market (based on the energy and ancillary service prices that the rest-of-market receives) should have been addressed on the merits and granted.

81. The Coalition argues that PJM's filing, in updating PJM's VRR Curve, also revised its EAS Offset provisions by proposing to "calculate an EAS revenue offset for

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<sup>61</sup> See P3 Protest at Attachment 3 (Aff. of Robert H. Uniszkiwicz at 5). 396 MW is the value for CONE Area 1.

<sup>62</sup> See PJM November 6, 2014 Answer at 41.

each Zone” and thus no longer calculate EAS Offsets for CONE Area 3 for non-Dominion Zones in that CONE Area.<sup>63</sup> The Coalition notes that it supported this approach, but then asked the Commission to direct PJM to make an additional tariff change, i.e., to calculate the EAS Offset for the Rest-of-Market on a separate basis. The Coalition concludes that because PJM’s filing encompassed a revision to PJM’s calculation of EAS Offsets in CONE Area 3, intervenors were free to propose additional EAS Offset changes as applicable to CONE Area 3 and to have those proposals considered by the Commission on the merits.

82. The Coalition argues that this finding is further supported by the fact that the rationale relied upon by PJM in support of its Dominion/CONE Area 3 proposal (i.e., the need to match the EAS Offset with the prices in each zone) would also apply to the Coalition’s Rest-of-Market proposal.

### **3. Commission Determination**

83. For the reasons discussed below, we reaffirm the finding in the November 28 Order that the EAS Offsets issues are beyond the scope of this proceeding and, accordingly, we deny rehearing on this issue.

84. The Coalition argues, in effect, that the appropriateness of PJM’s EAS Offsets mechanism as applied to PJM’s Rest-of-Market zone was an issue presented by PJM’s filing, given PJM’s proposal to revise its existing approach to CONE Area 3 by calculating a Net CONE for each zone using the applicable Gross CONE value less the EAS Offset estimate determined for that zone.<sup>64</sup> PJM, however, did not propose to revise the calculation applicable to the Rest-of-Market region, i.e., Attachment DD, section 5.10(a)(v)(A). Rather, its proposal was limited to sections 5.10(a)(ii) and section 5.10(v)(B), addressing the calculation of PJM’s EAS revenue offset for each Zone.<sup>65</sup>

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<sup>63</sup> Coalition Rehearing Request at 4 (citing PJM’s September 25, 2014 Filing at 25).

<sup>64</sup> See PJM OATT at Attachment DD, section 5.10(a)(ii) and section 5.10(v)(B).

<sup>65</sup> See *Pepco Holdings, Inc.*, 125 FERC ¶ 61,130, at P 113 (2008) (existing tariff provisions are not subject to revision as part of an FPA section 205 filing); see also *City of Winnfield, La. v. FERC*, 744 F.2d 871, 877 (D.C. Cir. 1984) (“The statutory obligation of the utility . . . is not to prove the continued reasonableness of *unchanged* rates or *unchanged* attributes of its rate structure.”) (emphasis in original).

#### IV. Compliance Filing

85. On December 19, 2014, PJM submitted its compliance filing in response to the November 28 Order. PJM states that, as required by the November 28 Order, it has revised Attachment DD, section 5.10(a)(ii) (addressing EAS Offsets) to delete language that, as the Commission found, could have operated to disconnect costs and/or revenues from the areas to which they might be attributed.<sup>66</sup>

86. Notice of PJM's compliance filing was published in the *Federal Register*, with interventions and protests due on or before January 9, 2015. None were filed.

87. Based on our review of PJM's proposed compliance revisions, we find that PJM's filing satisfies the requirements of the November 28 Order and we therefore accept it.

#### The Commission orders:

(A) Request for rehearing of the November 28 Order is hereby denied, as discussed in the body of this order.

(B) PJM's compliance filing is hereby accepted, as discussed in the body of this order.

By the Commission.

( S E A L )

Kimberly D. Bose,  
Secretary.

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<sup>66</sup> November 28 Order, 149 FERC ¶ 61,183 at P 127.