

170 FERC ¶ 61,259
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Neil Chatterjee, Chairman;
Richard Glick and Bernard L. McNamee.

PJM Interconnection, L.L.C.

Docket No. ER18-87-002

ORDER DENYING REHEARING

(Issued March 26, 2020)

1. On March 30, 2018, the Commission rejected tariff revisions proposed by PJM Interconnection, L.L.C (PJM) on October 17, 2017, as amended on October 25, 2017, pursuant to section 205 of the Federal Power Act (FPA)¹ and section 35.13² of the Commission’s regulations.³ PJM Interconnection, L.L.C. (PJM) and the Independent Market Monitor (IMM) sought rehearing. For the reasons discussed below, we deny the requests for rehearing.

I. Background

A. Overview of PJM’s Regulation Market

2. Regulation service is one of the tools system operators use to balance supply and demand on the transmission system in order to maintain reliable operations. It is the injection or withdrawal of real power by facilities capable of responding appropriately to a transmission system operator’s automatic generation control (AGC) signal.⁴ When a

¹ 16 U.S.C. § 824d (2018).

² 18 C.F.R. § 35.13 (2019).

³ *PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,295 (2018) (March 2018 Order).

⁴ *Frequency Regulation Compensation in the Organized Wholesale Power Markets*, Order No. 755, 137 FERC ¶ 61,064, at P 1 (2011), *reh’g denied*, Order No. 755-A, 138 FERC ¶ 61,123 (2012). AGC is defined as: “Equipment that automatically adjusts generation in a Balancing Authority Area from a central location to maintain the Balancing Authority’s interchange schedule plus Frequency Bias. AGC may also accommodate automatic inadvertent payback and time error correction.” *See*

balancing authority area experiences an energy deficiency, as measured by Area Control Error (ACE),⁵ the system operator may direct Regulation resources to increase output. When a balancing authority area experiences an energy surplus, the system operator may direct Regulation resources to decrease output or withdraw energy.

3. In Order No. 755, the Commission recognized that regional transmission organizations (RTOs) and independent system operators (ISO) deploy a variety of resources to meet Regulation needs and that these resources differ in both their ramping ability, which affects their ability to increase or decrease their output when providing Regulation service, and the accuracy with which they can respond to the system operator's dispatch signal.⁶ The faster a resource can ramp up or down, the more accurately it can respond to the AGC signal. Alternatively, when a resource ramps slowly, its ramping limitations may cause it to work against the needs of the system and force the system operator to commit additional Regulation resources to compensate.

B. Revisions to PJM's Regulation Market

4. On October 20, 2011, the Commission issued Order No. 755 to remedy undue discrimination in the Regulation markets and ensure just and reasonable and not unduly discriminatory compensation for providing Regulation service.⁷ Order No. 755 requires RTOs/ISOs to compensate Regulation resources based on the actual service provided, including: (1) a capacity payment that includes the marginal unit's opportunity costs; and (2) a payment for performance that reflects the quantity of Regulation service provided by a resource when the resource is accurately following the dispatch signal.⁸ As to the performance payment, Order No. 755 requires that a resource's performance must be

Glossary of Terms Used in NERC Reliability Standards, North American Electric Reliability Corporation (NERC Glossary), www.nerc.com/files/glossary_of_terms.pdf.

⁵ ACE is the "instantaneous difference between a Balancing Authority's net actual and scheduled interchange," taking into account the effects of Frequency Bias and correction for meter error. NERC Glossary, www.nerc.com/files/glossary_of_terms.pdf.

⁶ Order No. 755, 137 FERC ¶ 61,064 at P 1.

⁷ Order No. 755, 137 FERC ¶ 61,064, *reh'g denied*, Order No. 755-A, 138 FERC ¶ 61,123.

⁸ See 18 C.F.R. § 35.28(g)(8) (2019) (promulgated by Order No. 755).

based on the absolute amount of regulation up and down a resource provides in response to the system operator's dispatch signal,⁹ that is, absolute mileage.

5. As relevant here, PJM explained in its Order No. 755 compliance filing that it employs two different types of Regulation signals. PJM uses a traditional signal, called RegA, to dispatch slower, sustained-output resources, such as steam and combustion resources. PJM uses a faster signal, called RegD, to dispatch faster, dynamic resources, such as battery storage. PJM proposed to adjust the capability and performance payments in settlement by a marginal benefits factor¹⁰ in the Regulation clearing process to reflect the operational relationship between the RegA signal and the RegD signal.¹¹ The purpose of the benefits factor curve is to establish the tradeoff between RegA and RegD resources at various combinations so that the Regulation market's clearing engine can consider them on a comparable basis. In a May 2012 Order, the Commission conditionally accepted PJM's proposal, to become effective on October 1, 2012, subject to PJM submitting an additional compliance filing within ninety days.¹² Specifically, the Commission found that PJM failed to explain how its proposed benefits factor would be calculated.¹³

6. PJM submitted a compliance filing on August 15, 2012, amended on August 23, 2012.¹⁴ The Commission rejected the compliance filing in a November 2012 Order, because the proposal did not include actual mileage in the settlements equation, which the Commission found represented a substantive change in performance compensation

⁹ Order No. 755, 137 FERC ¶ 61,064 at P 133. Mileage can be considered the amount of work provided by each resource.

¹⁰ The purpose of the benefits factor is to establish a common basis for the Regulation market's clearing engine to consider and compare the ability of RegD and RegA resources to provide system control, using the common measurement of "effective" megawatts. *See PJM Interconnection, L.L.C.*, 139 FERC ¶ 61,130, at P 12 (2012) (May 2012 Order); *see also PJM Interconnection, L.L.C.*, 141 FERC ¶ 61,134, at PP 27-30 (2012) (November 2012 Order).

¹¹ PJM, Order No. 755 Compliance Filing Transmittal Letter at 9, Docket ER12-1204 (filed March 5, 2012).

¹² May 2012 Order, 139 FERC ¶ 61,130.

¹³ *Id.* P 54.

¹⁴ PJM, Amended Compliance Filing Transmittal Letter, Docket No. ER12-1204-002 (filed Aug. 23, 2012) (August 2012 Compliance Filing).

relative to what the Commission accepted in the May 2012 Order.¹⁵ Additionally, the Commission found that PJM did not demonstrate that the marginal benefits factor was a substitute for including actual mileage in the settlement process.¹⁶ Consequently, the Commission found that PJM's proposal was inconsistent with the directives in Order No. 755.¹⁷ In a responsive January 2013 compliance filing, PJM proposed to eliminate the use of the marginal benefits factor in calculating the capability and performance payments in settlement.¹⁸ PJM also added new tariff language stating that each Regulation resource will be compensated for its performance by multiplying the resource's megawatts by the Performance Market Clearing Price, as adjusted by a mileage ratio, and the resource's accuracy score.¹⁹ However, in proposing these changes in compliance with the Commission's directives, PJM cautioned that removal of the marginal benefits factor from settlement would result in an unsustainable market structure.²⁰ The compliance filing was accepted, subject to conditions and submission of an additional compliance filing.²¹

7. In April 2015, PJM and the IMM introduced a problem statement to the PJM stakeholder community regarding certain operational issues observed in the Regulation market since 2012, due to the growth of RegD resources between 2012 and 2015, and proposed a review of the Regulation signals and market design.²²

¹⁵ November 2012 Order, 141 FERC ¶ 61,134 at P 46.

¹⁶ *Id.* PP 46, 86-7.

¹⁷ *Id.* P 46.

¹⁸ PJM, Compliance Filing Transmittal Letter at 7-8, Docket No. ER12-2391-003 (filed Jan. 15, 2013) (January 2013 Compliance Filing).

¹⁹ *Id.* at 4.

²⁰ *Id.* at 8-12. PJM specifically stated that adopting the Commission's approach would "lead to over-compensation for fast-following resources that provide less control," and would result in a portfolio with too many fast-following resources that could ultimately result in "undesirable ACE oscillations" and the need for future mitigation proposals. *Id.* at 10-11.

²¹ *PJM Interconnection, L.L.C.*, 144 FERC ¶ 61,053 (2013) (July 2013 Order).

²² PJM, Regulation Proposal Transmittal Letter at 6, Docket No. ER18-87-001 (filed Oct. 17, 2017).

8. PJM took a series of steps to address these operational challenges. In December 2015, PJM revised the benefits factor curve so that RegD resources could make up no more than 40 percent of the resources procured to meet PJM's Regulation requirement.²³

9. In January 2017, PJM implemented operational changes to the Regulation signals and the hourly Regulation requirement to better promote reliability and optimize system control by minimizing Area Control Error (ACE) in January 2017 (January 2017 Signal Redesign).²⁴ PJM's changes were the subject of challenges through the FPA section 206 complaint process in Docket Nos. EL17-64 and EL17-65 (Complaint).

C. PJM's 2017 Regulation Proposal

10. On October 17 and 25, 2017, PJM filed in Docket Nos. ER18-87-000 and ER18-87-001, pursuant to FPA section 205, a package of Tariff revisions to reform its Regulation market design (Regulation Proposal), which featured four primary components: (1) replacement of the benefits factor curve with the Regulation Rate of Technical Substitution Curve;²⁵ (2) adjustment of performance scoring; (3) revisions to the Regulation settlements equation, including elimination of the mileage ratio and replacing it with the marginal Regulation Rate of Technical Substitution Curve value; and (4) revisions to lost opportunity cost calculations. PJM explained that its Regulation Proposal was built upon the January 2017 Signal Redesign.²⁶

1. Regulation Rate of Technical Substitution

11. PJM explained that the Regulation Rate of Technical Substitution Curve would replace the benefits factor curve to more accurately determine the trade-off between

²³ PJM Manual 11, Energy & Ancillary Services Market Operations (PJM Manual 11), § 3.2.7 (Regulation Market Clearing) & Revision History (noting that version 78, effective December 14, 2015, "[r]evised the Benefits Factor Curve to a more steeper [*sic*] slope intersecting x-axis at 40 (from 62)").

²⁴ *Id.* at 9.

²⁵ PJM defines the "Regulation Rate of Technical Substitution Curve" as a function that defines the operational relationship between traditional and dynamic Regulation resources utilized to meet the Regulation Requirement. The Regulation Rate of Technical Substitution Curve is calculated in accordance with the PJM Manuals. PJM Regulation Proposal Transmittal Letter at 11.

²⁶ *Id.* at 2.

RegA and RegD resources in providing Regulation service.²⁷ PJM further explained it would use the Regulation Rate of Technical Substitution Curve to optimize the commitment of RegA and RegD resources in order to calculate Regulation Effective Megawatts (effective megawatts)²⁸ and determine the least cost dispatch solution.²⁹

2. Performance Scoring

12. PJM explained that Regulation performance score reflects how well a resource follows the Regulation signal, and is used in market clearing and settlements.³⁰ PJM proposed to modify performance scoring by using a single measurement, precision, to better align the resource performance score with the system benefit provided by the resource.³¹

3. Settlements Equation

13. PJM proposed to revise the settlement process so that all Regulation resources, RegA and RegD, are settled on the effective MW they provide to meet the Regulation requirement.³² PJM argued that this modification would strengthen consistency between market clearing and settlements and would be implemented by adding a Regulation Marginal Rate of Technical Substitution (RMRTS)³³ component in settlements. PJM argued that the current settlement construct for Regulation service does not properly take

²⁷ *Id.* at 14.

²⁸ PJM proposed to define the “Regulation Effective Megawatts” as equal to the product of: (1) the amount of Regulation that a resource is providing in a given hour; (2) the resource’s historic performance score; and (3) the resource’s Regulation Rate of Technical Substitution.

²⁹ PJM Regulation Proposal Transmittal Letter at 18.

³⁰ *Id.* at 20.

³¹ *Id.* at 13.

³² *Id.* Regulation Requirement is defined as the calculated Regulation Effective Megawatts required to be maintained in a Regulation Zone, absent any increase to account for additional Regulation scheduled to address operational uncertainty. *Id.* at 12.

³³ PJM proposed to define the RMRTS as the Regulation Rate of Technical Substitution assigned to the last dynamic Regulation resource committed to provide Regulation service in a given hour.

into account the effective megawatts of resources, thus incorrectly compensating resources and sending incorrect financial signals to the market.³⁴ PJM argued this modification would permit resources following the RegA and RegD signals to be defined, cleared and settled in equivalent units throughout.³⁵ As a result, PJM proposed to remove the mileage ratio from the settlements equation.

14. PJM explained that its current settlements equation for Regulation service was:

$$\text{Regulation Credit} = \text{CCP} * \text{MW} * \text{PS} + \text{PCP} * \text{MW} * \text{PS} * \text{mileage ratio}^{36}$$

PJM explained that it found that the inclusion of mileage ratio in the settlements equation has caused RegD resources to be improperly compensated.³⁷ PJM claimed the mileage ratio multiplier distorts the market signal for RegD resources, incents zero dollar offers and self-scheduling, and inefficiently signals long-term investment for both RegA and RegD resources.³⁸ Under the current settlements equation, PJM stated that RegD resources are undercompensated when the RMRTS is more than one and overcompensated when it is less than one, in relation to the effective megawatts they provide the system.³⁹ RegD resources, including batteries, move much more than RegA resources, by design. Therefore, PJM argued that the inclusion of mileage ratio in the settlements equation, combined with a RMRTS that frequently has been less than one (especially prior to the January 2017 Signal Redesign described above), has caused RegD resources to be overcompensated relative to RegA resources when viewed on an effective MW basis. PJM stated that the overcompensation, in turn, has caused too many RegD resources to enter the market in pursuit of a flawed financial signal, which ultimately has worked against reliability considerations. PJM claimed that the most efficient and accurate financial signal is one that promotes reliability while properly compensating all Regulation resources, whether RegA or RegD, based on their effective megawatt

³⁴ PJM Regulation Proposal Transmittal Letter at 22.

³⁵ *Id.* at 13.

³⁶ Where CCP is the capability clearing price, MW*PS is the performance-adjusted megawatt value (i.e., megawatt, or “MW,” adjusted by performance score, or (PS)) and PCP is the performance clearing price (PCP).

³⁷ PJM Regulation Proposal Transmittal Letter at 23.

³⁸ *Id.*

³⁹ *Id.*

contributions to the management of ACE.⁴⁰ Consequently, PJM's proposal removed the mileage ratio from the performance clearing price component of the settlements equation and incorporates the RMRTS in both the capability clearing price and performance clearing price components of the equation, to address the compensation misalignments. PJM proposed to modify the settlements equation as follows:

$$\text{Regulation Credit} = \text{CCP} * \text{MW} * \text{PS} * \text{RMRTS} + \text{PCP} * \text{MW} * \text{PS} * \text{RMRTS}^{41}$$

15. PJM explained that using the RMRTS in the settlements equation will allow PJM to settle RegA and RegD resources on an effective megawatt basis.⁴² PJM argued that this is consistent with the clearing process where PJM calculates effective megawatts for all Regulation resources and uses those values to meet the Regulation Requirement.⁴³ PJM claimed this will ensure that a correct financial signal is sent to the market that properly indicates any under or over supply of RegA or RegD resources, as applicable.⁴⁴

4. Lost Opportunity Cost Calculations

16. PJM explained that it would change the lost opportunity cost calculation for online resources providing Regulation service to use the schedule for which the resource is committed to provide energy. PJM asserted that this change will allow PJM to properly reflect the real-time cost of a resource not following economic dispatch and align the incremental costs of Regulation and energy to ensure a least-cost dispatch solution.⁴⁵

17. PJM asserted that all components of the Regulation Proposal are interdependent, and a change in one area will affect other areas.⁴⁶ PJM explained that this proposed package of reforms is necessary because the existing Regulation market clearing and settlements processes are not operating efficiently, and the two Regulation signals are not

⁴⁰ *Id.* at 23-24.

⁴¹ Definitions as described above. *Supra* note 36.

⁴² PJM Regulation Proposal Transmittal Letter at 24.

⁴³ *Id.* at 25-26.

⁴⁴ *Id.* at 26.

⁴⁵ *Id.* at 13-14.

⁴⁶ *Id.* at 14.

well integrated, which creates compensation misalignments, impedes efficient price signals, and causes reliability issues.⁴⁷

D. March 2018 Order and Related Settlement Proceedings

18. In the March 2018 Order, the Commission rejected the Regulation Proposal.⁴⁸ The Commission found that the Regulation Proposal was inconsistent with the Commission's regulations and Order No. 755 because it did not account for actual mileage in settlement⁴⁹ and did not compensate all Regulation resources based on the quantity of Regulation service provided.⁵⁰ The Commission concluded that PJM failed to demonstrate that the RMRTS compensates resources for the quantity of service actually provided.⁵¹ Moreover, the Commission found that because the Regulation Proposal compensates capacity from all RegD resources based on *marginal* (i.e., lowest) substitution benefit provided by the last resource cleared, the proposal does not accurately reflect the effective megawatts contribution of RegD resources when they operate in a given hour.⁵² The Commission stated that PJM is free to propose Regulation compensation reforms to address concerns that have arisen in its Regulation market construct, but such reforms must include the consideration of actual mileage in compensation.⁵³

19. Given PJM's statement that the Regulation Proposal reforms were interdependent, the Commission did not address other aspects of the Regulation Proposal, such as the performance score and lost opportunity cost calculations components.⁵⁴

20. The Commission noted that commenters raised broader concerns about PJM's operation of the Regulation market, including changes PJM implemented after December

⁴⁷ *Id.* at 1-2.

⁴⁸ March 2018 Order, 162 FERC ¶ 61,295.

⁴⁹ *Id.* P 53.

⁵⁰ *Id.* P 56.

⁵¹ *Id.* P 53.

⁵² *Id.*

⁵³ *Id.* P 55.

⁵⁴ *Id.* P 56.

2015 and concerns about what should be included in the PJM Tariff, which were also raised in the Complaint proceedings. The Commission stated that, given the overlap between issues raised in this proceeding and those raised in the Complaint, it would also use the technical conference to generally examine PJM's two-signal Regulation market design with respect to the requirements of Order No. 755.⁵⁵

21. On March 30, 2018, the Commission issued an order finding that the benefits factor methodology and signal parameters should be included in PJM's Tariff and directed staff to establish a technical conference to address all other issues in the Complaint.⁵⁶ In the Notice of Technical Conference,⁵⁷ Commission staff requested additional information from ESA and PJM for use in facilitating the technical conference.

22. PJM, Energy Storage Association (ESA), Renewable Energy Systems Americas, and Invenenergy Storage Development, LLC submitted a joint request for postponement of the technical conference and appointment of a settlement judge to explore whether the proceedings could be resolved without further litigation. On May 30, 2018, the Commission issued an order holding the technical conference and information request in abeyance and established settlement procedures in the Complaint dockets, Docket Nos. EL17-64 and EL17-65.⁵⁸ The parties submitted a contested settlement to the Commission, which the Commission is approving in an order issued concurrently with this order.⁵⁹

E. Subsequent Proceedings, Pleadings, and Rejected Answers

23. On April 30, 2018 PJM and the IMM sought rehearing of the Commission's March 2018 Order. On May 15, 2018, NextEra Energy Resources, LLC (NextEra) filed an answer to the request for rehearing. On May 29, 2018, the IMM filed an answer to the

⁵⁵ See *id.* P 57.

⁵⁶ *Energy Storage Ass'n v. PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,296, at PP 111-13 (2018) (Complaint Order).

⁵⁷ Notice of Technical Conference, Docket Nos. EL17-64-000, EL17-65-000, ER18-87-000, ER18-87-001 (May 3, 2018).

⁵⁸ *Energy Storage Ass'n v. PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,157 (2018).

⁵⁹ *PJM Interconnection, L.L.C.*, 170 FERC ¶ 61,258 (2020) . We clarify that with the resolution of this proceeding and the approval of the settlement in Docket No. ER19-1651-000, Docket Nos. ER18-87-000 and ER18-87-001 are closed.

answer to the request for rehearing. On May 31, 2018, ESA filed an answer to the requests for rehearing. On June 16, 2018, the IMM filed an answer to ESA's answer.

24. Rule 713(d)(1) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.713(d)(1) (2019), prohibits an answer to a request for rehearing. Therefore, we reject the answers filed by NextEra and ESA, as well as the IMM's June 18, 2018 and May 29, 2018 answers.

II. Discussion

A. Consistency with Commission Regulations and Order No. 755

1. Background

25. As stated above, in the March 2018 Order the Commission found that the Regulation Proposal did not satisfy the requirements of the Commission's regulations.⁶⁰ Section 35.28(g)(8) of the Commission's regulations, 18 C.F.R. § 35.28(g)(8), reads:

Frequency regulation compensation in ancillary services markets. Each Commission-approved independent system operator or regional transmission organization that has a tariff that provides for the compensation for frequency regulation service must provide such compensation based on the actual service provided, including a capacity payment that includes the marginal unit's opportunity costs and a payment for performance that reflects the quantity of frequency regulation service provided by a resource *when the resource is accurately following the dispatch signal*.⁶¹

26. In the March 2018 Order, the Commission found that the Regulation Proposal was inconsistent with Order No. 755 and the Commission's regulations because Regulation resources would not be, in the words of the regulation, "compensat[ed] based on the actual service provided, including . . . a payment for performance that reflects the quantity of frequency regulation service provided by a resource when the resource is accurately following the dispatch signal."⁶²

⁶⁰ *Id.* P 51.

⁶¹ 18 C.F.R. § 35.28(g)(8) (emphasis added).

⁶² March 2018 Order, 162 FERC ¶ 61,295 at P 51 (quoting 18 C.F.R. § 35.28(g)(8)).

27. The Commission explained that the Regulation Proposal did not account for actual mileage in settlement, described in Order No. 755 as “the absolute amount of regulation up and regulation down [the resource] provides in response to the system operator’s dispatch signal.”⁶³ PJM failed to demonstrate that the RMRTS compensates resources for the quantity of service actually provided.⁶⁴ Moreover, the Commission determined in the March 2018 Order that because the Regulation Proposal compensates capacity from all RegD resources based on the *marginal* (i.e., lowest) substitution benefit provided by the last resource cleared, the proposal does not accurately reflect the effective megawatts contribution of RegD resources when they operate in a given hour.⁶⁵

2. Rehearing Requests

28. On rehearing, PJM and the IMM challenge these findings, arguing that the Regulation Proposal compensates resources for the quantity of service actually provided and is consistent with the Commission’s regulations.⁶⁶ PJM and the IMM contend that using RMRTS as a multiplier in the settlements equation will allow all Regulation resources (whether RegA or RegD) to be settled at the same dollar per effective megawatt value.⁶⁷ PJM contends that this will ensure that an appropriate financial signal will be sent to the market that properly indicates any under or oversupply of RegA or RegD resources.⁶⁸ Moreover, PJM and the IMM contend that movement of Regulation resources is already included in the pricing and clearing of the Regulation market.⁶⁹ PJM further contends that its Regulation Proposal accurately reflects the effective megawatts contribution of RegD resources when they operate in a given hour and corrects for the improper compensation of RegD resources under the current settlements equation.⁷⁰ PJM states that its Regulation Proposal ensures that all resources, whether they use the RegA

⁶³ March 2018 Order, 162 FERC ¶ 61,295 at P 53.

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ PJM Rehearing Request at 3; IMM Rehearing Request at 4-7.

⁶⁷ PJM Rehearing Request at 3; IMM Rehearing Request at 6.

⁶⁸ PJM Rehearing Request at 3; IMM Rehearing Request at 5-6.

⁶⁹ PJM Rehearing Request at 3; IMM Rehearing Request at 9.

⁷⁰ PJM Rehearing Request at 4.

or RegD signal, are settled based on effective megawatt contribution to managing ACE, consistent with clearing and operating those resources.⁷¹

29. Although PJM contends that it is not required to comply with the preamble of Order No. 755, as opposed to the regulations promulgated by Order No. 755, PJM nevertheless argues on rehearing that its Regulation Proposal comports with Order No. 755 and that the Commission erred in rejecting the proposal on the basis that its Regulation Proposal must be measured on the absolute amount of regulation up and regulation down it provides in response to the system operator's dispatch signal.⁷²

30. The IMM also argues on rehearing that the Regulation Proposal is consistent with the directives of Order No. 755 because, contrary to the Commission's finding, it accounts for the actual mileage in settlement.⁷³ The IMM contends that the mileage ratio, expected or actual, has nothing to do with the relative or direct valuation of the amount of ACE control provided by RegD or RegA.⁷⁴ The IMM contends that the March 2018 Order confuses the elimination of the mileage ratio in settlement with the elimination of actual mileage in settlement to conclude that PJM's Regulation Proposal does not include a value for the volume of actual mileage that a resource uses.⁷⁵ Specifically, the IMM argues that the Regulation Proposal includes actual mileage in the determination of actual within hour offers, the within hour marginal offer, the within hour price of Regulation, and the within hour settlement.⁷⁶ The IMM contends that this means that every offer is adjusted to reflect actual work done within the market hour, suggesting that the realized clearing price in the Regulation market reflects the actual work done within the market hour.⁷⁷ The IMM argues that once a resource clears, the actual within hour mileage of the followed signal is used to convert every dollar per mile offer into the actual dollar per megawatt performance hour based on the actual mileage of the followed signal within the

⁷¹ *Id.*

⁷² *Id.* at 4, 6.

⁷³ IMM Rehearing Request at 8.

⁷⁴ *Id.* at 6.

⁷⁵ *Id.* at 8-9.

⁷⁶ *Id.* at 9.

⁷⁷ *Id.* at 10.

hour among all cleared resources.⁷⁸ Consequently, the IMM explains that actual mileage is used in the determination of the clearing price and settlement of resources.⁷⁹ Further, the IMM argues that the Regulation Proposal is consistent with Order No. 755 because using the RMRTS in settlement accurately reflects the effective megawatts contribution of RegD Resources when they operate in a given hour.⁸⁰ For example, the IMM argues that in the Regulation Proposal, RegD resources will be used until the marginal value of RegD as a substitute for RegA is equal to the marginal price of RegD (the price of the most expensive RegD resource cleared), demonstrating that no resource would be underpaid.⁸¹ The IMM claims that the March 2018 Order erred by finding that the RMRTS displaces the use of actual mileage in the settlement process.⁸²

31. The IMM contends that the PJM Regulation Proposal is consistent with Order No. 755 because it results in compensation that is based on the actual service and performance that reflects the quantity of Regulation provided by a resource.⁸³ The IMM argues that the current market design does not set the correct price signal for the RegD resources, and is therefore inconsistent with Order No. 755.⁸⁴ The IMM contends that replacing the mileage ratio with the Regulation Proposal, (which includes RMRTS - properly defined and applied consistently), would correct the issues in the current market.⁸⁵

32. The IMM asserts that it was unreasonable for the Commission to accept the marginal benefits factor (which acts as the RMRTS) that converts RegA and RegD resources, on the margin, into equitable units (effective megawatt and effective miles) for

⁷⁸ *Id.* at 9-10 (citing PJM Regulation Proposal Transmittal Letter at 28).

⁷⁹ *Id.*

⁸⁰ *Id.* at 10.

⁸¹ *Id.* at 13.

⁸² *Id.* at 3, 9-10.

⁸³ *Id.* at 5.

⁸⁴ *Id.* at 7.

⁸⁵ *Id.* at 8.

purposes of optimization, market clearing and price setting, but then reject the same marginal benefits factor/RMRTS for the purpose of compensating resources.⁸⁶

33. The IMM argues that the March 2018 Order erred by finding that PJM failed to provide evidence that its Regulation Proposal is necessary to address the operational issues that PJM states it has experienced.⁸⁷ The IMM explains that, notwithstanding PJM's revisions to the Regulation market prior to the Regulation Proposal, the existing flawed market design "required out of market solutions" that justify PJM's approach.⁸⁸ PJM contends that Order No. 755 grants regional flexibility to design market rules, and therefore the Commission should accept its Regulation Proposal.⁸⁹

3. Commission Determination

34. We deny the IMM's and PJM's requests for rehearing. As explained in the March 2018 Order, PJM's proposal does not comply with section 35.28(g)(8) of the Commission's regulations, 18 C.F.R. § 35.28(g)(8), because the resources are not paid for performance *when the resource follows the dispatch signal*.⁹⁰ Rather, PJM's Regulation Proposal bases Regulation performance payments on ACE control.⁹¹ Because the resources are not being paid for performance rendered as a result of following the dispatch signal, the Regulation Proposal does not satisfy our regulations.

35. Additionally, we are not persuaded by arguments that PJM's Regulation Proposal complies with Order No. 755. Order No. 755 requires that a resource's performance must be based on actual mileage.⁹² Actual mileage is the absolute amount of regulation up and down a resource provides in response to the system operator's dispatch signal.⁹³

⁸⁶ *Id.* at 13.

⁸⁷ *Id.* at 14.

⁸⁸ *Id.*

⁸⁹ PJM Rehearing Request at 6.

⁹⁰ March 2018 Order, 162 FERC ¶ 61,295 at P 51; *see* 18 C.F.R. § 35.28(g)(8).

⁹¹ PJM Regulation Proposal Transmittal Letter at 23-24; PJM Rehearing Request at 4.

⁹² Order No. 755, 137 FERC ¶ 61,064 at P 133.

⁹³ *Id.*

PJM's Regulation Proposal removes the mileage ratio from its performance payment equation and replaces it with RMRTS. Embedded in RMRTS is a historical expectation of mileage (movement) within the market optimization at the time of clearing. We find that using the RMRTS does not comply with the requirements of Order No. 755 because it bases performance payments on historical *expectations* of resource movement internalized within the market optimization at the time of clearing, rather than *actual movement* provided during the operating hour. Therefore, we again find that PJM has failed to demonstrate the RMRTS compensates resources for the quantity of service actually provided.⁹⁴

36. We further disagree with arguments that mileage is accounted for in settlement. PJM requires Regulation resources to submit a two-part offer, consisting of capability (capacity) and performance (work/movement/mileage), which are ultimately combined into a single offer. PJM's Regulation Proposal removes the mileage in the settlements equation. PJM's Regulation Proposal then adds RMRTS into the *clearing price* formula. We find that this methodology does not comply with Order No. 755, which requires that actual mileage must be included in the *settlements* calculation, not simply the *clearing price* calculation.⁹⁵

37. More generally, we disagree with PJM's argument⁹⁶ that the March 2018 Order inappropriately relies on the statement in Order No. 755 that "[a] resource's performance must be measured based on the absolute amount of regulation up and regulation down it provides in response to the system operator's dispatch signal,"⁹⁷ because that provision is not repeated in the text of the promulgated regulation, 18 C.F.R. § 35.28(g)(8). In a single sentence, PJM argues both that the Commission cannot rely on this statement in Order No. 755 *and* that PJM should be able to rely on the Commission's "intent to provide flexibility as expressed in Order No. 755 itself,"⁹⁸ which is internally inconsistent. Regardless, PJM points to no inconsistency between Order No. 755 and the Commission's regulations. Rather, Order No. 755 appropriately provides further explanation of the promulgated regulations.

⁹⁴ March 2018 Order, 162 FERC ¶ 61,295 at P 53.

⁹⁵ Order No. 755, 137 FERC ¶ 61,064 at P 75. *See* November 2012 Order, 141 FERC ¶ 61,134, at P 46.

⁹⁶ PJM Rehearing Request at 4-5.

⁹⁷ Order No. 755, 137 FERC ¶ 61,064 at P 133.

⁹⁸ PJM Rehearing Request at 5-6.

38. Furthermore, the IMM incorrectly claims that the Commission’s decision to reject the RMRTS conflicts with its prior determinations accepting the marginal benefits factor for market clearing, optimization and price setting.⁹⁹ But, as explained in the March 2018 Order, the Commission previously rejected the marginal benefits factor in the *settlements equation*.¹⁰⁰ Because the Regulation Proposal does not account for actual mileage in settlement, the Regulation Proposal is also similarly inconsistent with our regulations, which required that *compensation* must be based on actual service provided.¹⁰¹ In sum, we are not persuaded by arguments suggesting the RMRTS should displace the use of actual mileage in the settlement process.¹⁰²

39. We also reject arguments that the Commission should accept PJM’s Regulation Proposal on the basis of regional flexibility, or that “out of market solutions” are necessary. In Order No. 755, the Commission provided RTOs/ISOs flexibility to design market rules that accommodate their markets, while at the same time addressing existing unduly discriminatory rates by imposing certain specific requirements, including the requirement that compensation must be based on actual service provided.¹⁰³ However, on rehearing, PJM failed to demonstrate how its Regulation Proposal satisfies this requirement.¹⁰⁴ In any event, because actual mileage is not included in the settlement calculation, as required by the regulation, we affirm the Commission’s decision to reject the Regulation Proposal.

B. Future Filings

40. PJM seeks clarification that the Commission will consider a future proposal from PJM that seeks to demonstrate that its proposed approach, including the removal of the mileage ratio from settlement and incorporation of RMRTS, is consistent with Order No. 755.¹⁰⁵

⁹⁹ IMM Rehearing Request at 13.

¹⁰⁰ March 2018 Order, 162 FERC ¶ 61, 295 at P 52 (citing November 2012 Order, 141 FERC ¶ 61,134 at P 46).

¹⁰¹ 18 C.F.R. § 35.28(g)(8) (emphasis added).

¹⁰² March 2018 Order, 162 FERC ¶ 61,295 at P 52.

¹⁰³ Order No. 755, 137 FERC ¶ 61,064 at PP 3, 75.

¹⁰⁴ PJM Rehearing Request at 5-6.

¹⁰⁵ *Id.*

41. We deny PJM's request. As discussed above, PJM's Regulation Proposal is contrary to the directives of Order No. 755 and the Commission's regulations. PJM should take into account the Commission's findings and rationale in this proceeding as it continues developing any necessary reforms to the design of the Regulation market.

The Commission orders:

(A) PJM's and the IMM's rehearing requests are hereby denied, as discussed in the body of this order.

(B) The proceedings held in abeyance in Docket Nos. ER18-87-000 and ER18-87-001 are hereby closed, as discussed in the body of this order.

By the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.