

170 FERC ¶ 61,258  
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. ER19-1651-000

ORDER ON CONTESTED SETTLEMENT

(Issued March 26, 2020)

1. On April 23, 2019, on behalf of the Settling Parties,<sup>1</sup> pursuant to Rule 602 of the Commission's Rules of Practice and Procedure,<sup>2</sup> PJM submitted an offer of settlement (Settlement) in the matter set for settlement judge procedures in this proceeding. In this order, we approve the Settlement, finding that the overall result of the Settlement is just and reasonable.

**I. Background**

**A. 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.<sup>3</sup> When a

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<sup>1</sup> The Settling Parties are PJM Interconnection, L.L.C. (PJM), The AES Corporation (AES); Duke Energy Corporation (Duke); EDF Renewables, Inc. (EDF); Invenergy Investment Company LLC (Invenergy); NextEra Energy, Inc. (NextEra); Renewable Energy Systems Americas, Inc. (RESA); Convergent Energy and Power LP, Convergent Energy and Power GP LLC, and Hazle Spindle, LLC; GlidePath Power Solutions LLC; GlidePath Power LLC (collectively with GlidePath Power Solutions LLC, GlidePath); and Energy Storage Association (ESA).

<sup>2</sup> 18 C.F.R. § 385.602 (2019).

<sup>3</sup> *Frequency Regulation Compensation in the Organized Wholesale Power Markets*, Order No. 755, 137 FERC ¶ 61,064, at P 4 (2011) (Order No. 755), *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

balancing authority area experiences an energy deficiency, as measured by Area Control Error (ACE),<sup>4</sup> the system operator may direct Regulation resources to increase output (RegUp). When a balancing authority area experiences an energy surplus, the system operator may direct Regulation resources to decrease output or withdraw energy (RegDown).

3. In Order No. 755, the Commission recognized that regional transmission organizations (RTOs) and independent system operators (ISOs) 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 AGC signal.<sup>5</sup> The Commission issued Order No. 755 to ensure just and reasonable compensation for the provision of Regulation service in RTOs and ISOs by implementing a two-part rate design.<sup>6</sup> As relevant here, PJM explained in its Order No. 755 compliance filing that it employs two different types of Regulation signals.<sup>7</sup> 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.<sup>8</sup> PJM originally designed its RegD signal to be unconditionally energy neutral, meaning that the amount of RegUp provided by a RegD resource would match the amount of RegDown provided

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location to maintain the Balancing Authority's interchange schedule plus Frequency Bias. AGC may also accommodate automatic inadvertent payback and time error correction." *See Glossary of Terms Used in NERC Reliability Standards*, North American Electric Reliability Corporation (NERC Glossary), [www.nerc.com/files/glossary\\_of\\_terms.pdf](http://www.nerc.com/files/glossary_of_terms.pdf).

<sup>4</sup> 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](http://www.nerc.com/files/glossary_of_terms.pdf).

<sup>5</sup> Order No. 755, 137 FERC ¶ 61,064 at P 1.

<sup>6</sup> *See id.* P 197.

<sup>7</sup> PJM, Compliance Filing Transmittal at 7, Docket No. ER12-1204-000 (Mar. 5, 2012).

<sup>8</sup> The RegA and RegD signals are not resource-type dependent, as any resource that can follow a given signal can qualify to provide Regulation service using that signal. PJM Answer at 6.

by the same resource, converging to neutrality within 15 minutes.<sup>9</sup> This feature of PJM's RegD signal reduced the likelihood that an electric storage resource would have insufficient energy to respond to a Regulation signal, which would reduce its potential compensation<sup>10</sup> and its ability to provide Regulation in a future interval. However, the energy neutrality feature of the RegD signal is not set forth in the PJM Tariff (Tariff).<sup>11</sup>

4. PJM also uses a "benefits factor" curve in its Regulation market-clearing process to reflect the operational relationship between the RegA and RegD signal.<sup>12</sup> 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.

#### **B. Regulation Market Changes Implemented by PJM**

5. PJM states that following its implementation of market rule changes in compliance with Order No. 755 in May 2015, it observed operational challenges in its Regulation market associated with RegD resources<sup>13</sup> and what PJM characterizes as a suboptimal mix of RegA and RegD resources.<sup>14</sup> Because the RegD signal was designed to be energy neutral over a 15-minute period, it was possible that RegD resources were operating contrary to ACE control needs when being brought back to energy neutrality at the end of

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<sup>9</sup> See PJM Answer, Hsia Aff. ¶ 8, Docket Nos. EL17-64-000 et al. (May 15, 2017) (PJM Answer to Regulation Complaints).

<sup>10</sup> See *PJM Interconnection, L.L.C.*, 139 FERC ¶ 61,130, at P 29 (2012) (May 2012 Order).

<sup>11</sup> The Commission does not require signals to be energy neutral. In Order No. 755, while encouraging RTOs and ISOs to work with stakeholders to analyze potential impediments to new technologies the Commission rejected as outside the scope of that proceeding requests to require reporting on "drift" or energy neutrality in the Regulation signal, as well as the suggestion that RTOs and ISOs use different Regulation signals for different resources. See Order No. 755, 137 FERC ¶ 61,064 at P 184.

<sup>12</sup> See May 2012 Order, 139 FERC ¶ 61,130 at P 12; see also *PJM Interconnection, L.L.C.*, 141 FERC ¶ 61,134, at PP 27-30 (2012).

<sup>13</sup> PJM Problem Statement, Fast Response Regulation (RegD) Resources Operational Impact (Problem Statement), <http://www.pjm.com/-/media/committees-groups/committees/oc/20150526-rpi/20150526-item-02-problem-statement.ashx>.

<sup>14</sup> PJM Answer to Regulation Complaints at 10.

a dispatch interval.<sup>15</sup> According to PJM, at times hundreds of megawatts (MW) of RegD resources were performing in a way that respected their energy neutrality but inhibited PJM's ability to control ACE.<sup>16</sup>

6. PJM took a series of steps to address these operational challenges. Relevant to the Settlement, in December 2015, PJM revised the benefits factor curve so that RegD resources could make up no more than 40% of the resources procured to meet PJM's Regulation requirement. Under the original benefits factor curve, this cap had been set at 62%.<sup>17</sup> In addition, PJM prohibited RegD resources with a benefits factor of less than 1.0 from clearing the Regulation market during certain morning and evening "excursion hours," which effectively capped the amount of RegD resources that could be procured, such that RegD could make up no more than 26.2%<sup>18</sup> of the resources procured to meet PJM's Regulation requirement.<sup>19</sup>

7. In January 2017, PJM also implemented software changes that altered the design of its RegA and RegD signals (January 2017 signal redesign).<sup>20</sup> According to a PJM staff

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<sup>15</sup> See Problem Statement ("This issue is caused by the RegD control signal moving in the opposite control direction than desired by dispatch. The reason for this is that the RegD signal is programmed to integrate to zero to accommodate the state of charge for energy-limited resources participating in the Regulation Market.").

<sup>16</sup> PJM Answer to Regulation Complaints at 10-11.

<sup>17</sup> 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)"); see also PJM Answer to Complaints at 9-10 (explaining that RegD resources could never account for more than 62% of the effective Regulation requirement because at greater amounts PJM would experience an overall decrease in ACE control).

<sup>18</sup> See PJM Answer to Regulation Complaints, Hsia Aff. ¶ 11.

<sup>19</sup> PJM Manual 11, Revision History (noting that version 78, effective December 14, 2015, "[u]pdated business rules to recognize hours of the day with need for more sustaining regulation (RegA) and where RegD with benefits factor less than 1 will not be considered in the regulation clearing because of its reduced benefits").

<sup>20</sup> See generally Implementation and Rationale for PJM's Conditional Neutrality Regulation Signals, PJM Staff (Jan. 17, 2017) (Signal White Paper) (included as Exhibit A to the PJM Answer to Regulation Complaints), <http://pjm.com/~media/committees-groups/task-forces/rmistf/postings/regulation-market-whitepaper.ashx>.

white paper, the Regulation signals as originally designed were flawed because they did not allow for coordinated ACE control between the two types of Regulation resources, the RegA signals could demand more performance than RegA resources were capable of providing, and the unconditional neutrality aspect of the RegD signal sent resources, at times, in the opposite direction of ACE control.<sup>21</sup> PJM revised the calculations underlying its AGC software to, among other things, cause the RegA and RegD signals to move together in the direction that minimizes ACE (previously, the signals were generated independently) and alter the RegD signal to be conditionally neutral.<sup>22</sup> PJM describes “conditional neutrality” as an approach under which managing ACE is PJM’s first priority, and neutrality for energy-limited resources such as storage resources is honored when system conditions permit.<sup>23</sup> PJM also adjusted the signals such that the RegA signal was no longer accelerated during large changes in ACE.<sup>24</sup>

8. On October 17, 2017, as amended on October 25, 2017, PJM filed proposed revisions to build upon the January 2017 signal redesign (Regulation Proposal). The Commission rejected the Regulation Proposal in March 2018.<sup>25</sup> We deny rehearing of the March 2018 Order in an order issued concurrently with this order.<sup>26</sup>

### **C. Complaints**

9. On April 13, 2017, ESA filed a complaint against PJM under section 206 of the Federal Power Act (FPA) in Docket No. EL17-64-000 (ESA Complaint). The ESA Complaint challenges a series of changes PJM implemented in its Regulation market, including PJM’s December 2015 change to the benefits factor curve, PJM’s implementation of a “cap” on RegD resources during excursion hours, and PJM’s

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<sup>21</sup> Signal White Paper at 6.

<sup>22</sup> *Id.* at 4, 6.

<sup>23</sup> PJM Answer to Regulation Complaints at 14.

<sup>24</sup> See Signal White Paper at 4, 22 (“[T]he Regulation A acceleration function present in the controller provided signals that could exceed resource expectations. . . . The new controller design slowed the Regulation A signal relative to the previous controller. . .”).

<sup>25</sup> *PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,295 (2018) (March 2018 Order).

<sup>26</sup> *PJM Interconnection, L.L.C.*, 170 FERC ¶ 61,259 (2020).

January 2017 signal redesign. ESA asserts that RegD resources have suffered harm from the benefits factor changes and cap.<sup>27</sup>

10. On April 14, 2017, RESA and Invenergy (collectively, RESA/Invenergy) filed a complaint against PJM under FPA section 206 in Docket No. EL17-65-000 (RESA/Invenergy Complaint and, together with the ESA Complaint, the Regulation Complaints). The RESA/Invenergy Complaint challenges one of the Regulation market changes that ESA's complaint raises—the January 2017 signal redesign. The Regulation Complaints both assert that PJM's January 2017 signal redesign is contrary to Commission precedent and inherently discriminates against RegD resources.<sup>28</sup> The Regulation Complaints allege that, following PJM's implementation of the January 2017 signal redesign, RegD resources began to be directed to operate outside of their design parameters,<sup>29</sup> thereby resulting in performance and efficiency issues, reduced compensation, and adverse impacts on the equipment.<sup>30</sup> Among other remedies, ESA and RESA/Invenergy ask that PJM be required to revert to the RegD signal methodology that was in effect prior to January 9, 2017, the date the January 2017 signal redesign was implemented.<sup>31</sup>

11. On March 30, 2018, the Commission issued an order that partially granted the ESA Complaint.<sup>32</sup> The Complaints Order found that ESA demonstrated that the PJM Tariff is unjust, unreasonable, unduly discriminatory, or preferential because it does not include the methodology for calculating the benefits factor (or other curve used to establish a common basis for clearing RegA and RegD MW in the Regulation market) or the parameters governing its RegD signal.<sup>33</sup> The Commission also found that the Regulation Complaints raise issues related to the PJM Regulation market that warrant further examination. Thus, the Commission directed Commission staff to establish a

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<sup>27</sup> ESA Complaint at 23-24, 26-27 (citing Smith Aff. at 5).

<sup>28</sup> *Id.* at 30-31; RESA/Invenergy Complaint at 12-14.

<sup>29</sup> ESA Complaint at 15-16.

<sup>30</sup> RESA/Invenergy Complaint at 10, 13-14 (citing Ma Aff. at 3; Oliver Aff. at 2-3); *see also id.* at 13-14 (alleging reduced compensation and financial harm); ESA Complaint at 15 n.45.

<sup>31</sup> ESA Complaint at 33; RESA/Invenergy Complaint at 15.

<sup>32</sup> *Energy Storage Ass'n v. PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,296 (2018) (Complaints Order).

<sup>33</sup> *Id.* P 102.

technical conference to explore those issues, in addition to the related issues raised regarding PJM's Regulation Proposal.<sup>34</sup>

12. On May 18, 2018, ESA, RESA/Invenergy and PJM jointly submitted a request to appoint a settlement judge to facilitate the resolution of the issues raised in the Regulation Complaints and postpone the technical conference that the Commission directed in the Complaints Order. On May 30, 2018, the Commission issued an order granting this request and establishing settlement judge proceedings.<sup>35</sup> On April 23, 2019, PJM submitted the Settlement in this proceeding.

## **II. Settlement**

13. Article I of the Settlement summarizes the background of the Regulation Complaints. Article II provides the definitions of terms utilized in the Settlement, including Affected Battery<sup>36</sup> and Affected Battery Owner,<sup>37</sup> and identifies the Affected Battery Owners and their assets subject to the Settlement. Article III defines the scope of the Settlement, and Article IV sets forth the Settlement term of 42 months.

14. Article V provides the terms and conditions for the Affected Battery Owners to participate in PJM's Regulation market under the Settlement, including compensation, suspension from the Settlement and obligations regarding PJM's efforts to enhance the Regulation market during the Settlement term. Section 5.1 provides that the terms and conditions of the PJM Tariff and Operating Agreement will apply to all Settling Parties, except that (i) to the extent the operative provisions under Article V conflict with other terms and conditions of the Tariff or Operating Agreement, Article V shall govern; and (ii) the terms of the Settlement shall apply notwithstanding any changes that may be

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<sup>34</sup> *Id.* P 111.

<sup>35</sup> *Energy Storage Ass'n v. PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,157 (2018).

<sup>36</sup> Affected Battery is defined in the Settlement as any short-duration battery unit interconnected with the PJM system that: (i) was operational prior to January 9, 2017; (ii) is designed to converge to neutrality within [15] minutes; (iii) was adversely affected by the January 9, 2017 implementation of the 30-minute conditional neutrality of PJM's [Regulation] signal; and (iv) continues to actively participate in the PJM Regulation market as of August 27, 2018. Settlement, § 2.1.1.

<sup>37</sup> Affected Battery Owner is defined in the Settlement as any legal or natural person that directly or indirectly owns or controls an Affected Battery or is owned or controlled by a legal or natural person that directly or indirectly owns or controls an Affected Battery. *Id.* § 2.1.2.

made to the provisions of the Tariff, Operating Agreement, or PJM's business practice manuals regarding participation in the PJM Regulation market.

15. Section 5.2 details how an Affected Battery may participate in the PJM Regulation market during the term of the Settlement. Specifically, Section 5.2 provides that the Affected Batteries may participate in the PJM Regulation market by following the Settlement Regulation Signal. The Settlement Regulation Signal is defined as the 30-minute conditional neutrality regulation signal in effect as of October 1, 2018.<sup>38</sup> During the Settlement term, each Affected Battery may offer MW into the Regulation market not to exceed its Original Battery Capacity,<sup>39</sup> as set forth in the table in Section 2.2; provided, however, that for any Affected Battery offering MW into the Regulation market above its Maximum Recent Regulation Offer<sup>40</sup> but less than or equal to its Original Battery Capacity, the total Regulation capability of the Affected Battery must be confirmed through a successful retest under section 4.5.4 of PJM Manual 12 (Increasing Regulation Capability on a Resource). In the absence of a successful retest, an Affected Battery's maximum offered MW into the Regulation market during the Settlement may not exceed the Affected Battery's Maximum Recent Regulation Offer. Section 5.2 further provides that in the event an Affected Battery makes an offer into the Regulation market in excess of the Affected Battery's Original Battery Capacity, that offer and the entire amount of MW offered into the Regulation market by the Affected Battery in that offer shall not be subject to the terms of Sections 5.2, 5.3, 5.4, and 5.5 of the Settlement. Section 5.2.1 outlines the manner in which an Affected Battery Owner not listed in Section 2.2 of the Settlement may opt into the Settlement in order for its Affected Batteries to participate in the Regulation market.

16. Section 5.3 provides that during the term of the Settlement, PJM will evaluate each Affected Battery's performance using a resource-specific performance score under the 30-minute conditional neutrality Regulation signal (Baseline Performance Score). PJM will calculate this Baseline Performance Score for each Affected Battery as a rolling average of actual performance for the last 100 hours a resource has operated as of October 1, 2018.

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<sup>38</sup> *Id.* § 2.1.3.

<sup>39</sup> Defined as the original installed MW capacity of the applicable Affected Battery, including any restorations, as tested and certified pursuant to PJM Manual 127 on or before January 9, 2017. *Id.* § 2.1.5.

<sup>40</sup> Defined as its single maximum hourly-offered MW offered into the Regulation market over the most recent 100 hours prior to October 1, 2018, during which the Affected Battery provided Regulation service and where there was not a full or partial outage of the Affected Battery.



17. Section 5.4 governs compensation for the Affected Batteries participating in the PJM Regulation market during the Settlement term. During the Settlement, assuming an Affected Battery meets certain Baseline Performance Score criteria, PJM agrees to treat offers from the Affected Battery as having cleared the Regulation market, regardless of whether such offers do, in fact, clear the market, provided such offers are made as price takers, either as self-scheduled Regulation with a zero offer or as a zero priced Regulation offer. Each Affected Battery agrees to follow PJM's Regulation signal and provide Regulation service as if its offer had cleared and PJM will compensate the Affected Batteries for participation in the Regulation market utilizing the greater of (i) the Affected Battery's current five-minute interval performance score, or (ii) the Affected Battery's resource-specific rolling average actual hourly performance score for the last 100 hours a resource operated prior to the January 9, 2017 implementation of the 30-minute conditional neutrality of PJM's frequency regulation signal.

18. Section 5.5 outlines the criteria for an Affected Battery's suspension from the Settlement. Specifically, for each Affected Battery, if at any point during the Settlement term the average hourly performance score for the last 100 hours of its operation is lower than the Baseline Performance Score by seven percent or more, the terms of the Settlement shall be suspended only as to that Affected Battery. An Affected Battery shall remain in suspension until it achieves an average performance score for the last 100 hours the resource has operated that is greater than or equal to the Baseline Performance Score while following the Settlement Regulation Signal. Section 5.5.1 clarifies that if an Affected Battery is suspended from the Settlement, the Affected Battery is not eligible for compensation under the Settlement.

19. Section 5.6 provides that in the event PJM files revisions to its Tariff and Operating Agreement to implement enhancements to the Regulation market, which may include elimination of the RegD Signal and replacement with a single Regulation signal that is technology agnostic with no firm commitment of neutrality, each Affected Battery Owner will not file any pleadings in opposition to such revisions on the basis that PJM's proposal: (i) utilizes a single Regulation signal; or (ii) employs a signal that is not designed to be energy neutral. Section 5.7 clarifies that the Settlement is binding on all parties to Docket Nos. EL17-64-000 and EL17-65-000, whether or not they are signatories to this Settlement.

20. Article VI provides that the Settlement, once approved by the Commission, will be filed through a compliance filing as an attachment to the Tariff and function as the filed rate for providing Regulation service under the terms of the Settlement. Article VII governs ESA's obligation to withdraw its complaint in Docket No. EL17-64-000. Specifically, except for Section 5.6 (for which ESA may withdraw without prejudice for its members that are not Settling Parties), ESA shall withdraw its complaint with prejudice within 10 business days of an order approving the Settlement that is final and non-appealable. Article VIII governs cost recovery for the provision of Regulation

service under the Settlement. Specifically, the costs of all Regulation service provided by an Affected Battery under the Settlement shall be included as part of the Regulation Obligation and recovered through the Regulation Charge set forth in Tariff, Attachment K-Appendix, section 3.2.2(a).

21. Article IX includes miscellaneous provisions. Section 9.14 provides that the standard of review for any modifications to the Settlement shall be the “public interest” version of the just and reasonable standard of review.

### **III. Comments**

22. Initial comments opposing the Settlement were filed by Dominion and Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM (IMM). Invenergy filed initial comments supporting the Settlement. Reply comments were filed by RESA, ESA, AES, on behalf of itself and its subsidiaries, and Duke, on behalf of itself and Duke Energy Beckjord Storage, LLC (together, AES and Duke), Invenergy, PJM, EDF, NextEra, Convergent Energy and Power LP (Convergent), Meyersdale Storage, LLC (Meyersdale), and the IMM.

#### **A. Initial Comments**

##### **1. Comment Supporting Settlement**

23. Invenergy argues that it and other RegD suppliers made significant investments to develop storage projects that would satisfy the operational characteristics reflecting the energy neutral RegD signal that PJM designed and employed in 2009 and that PJM’s January 2017 signal redesign severely and adversely impacted Invenergy and other RegD suppliers.<sup>41</sup> Specifically, Invenergy argues that the switch to a 30-minute conditionally neutral signal forced Invenergy to operate its projects outside their design parameters, which reduced their market performance, increased Invenergy’s production costs and caused severe and irreparable damage to its equipment.<sup>42</sup> Invenergy further argues that PJM’s January 2017 signal disproportionately affected storage projects because PJM did not require other types of generators to operate outside their design parameters.<sup>43</sup>

24. Invenergy states that the Settlement resolves all the issues presented in the complaint filed by Invenergy and RESA and that Commission policy strongly favors

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<sup>41</sup> Invenergy Comments at 2-3.

<sup>42</sup> *Id.* at 3.

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

settlement.<sup>44</sup> Invenergy also states that the Settlement represents a significant compromise for itself and other RegD suppliers.<sup>45</sup> Invenergy supports the Settlement, despite the continued exposure to the 30-minute conditionally neutral signal, because it believes that the limited window of market and operational stability the Settlement provides is preferable to continued litigation.<sup>46</sup>

## 2. Comments Opposing Settlement

25. Dominion requests that the Commission reject the Settlement or at least shorten the term of the agreement.<sup>47</sup> Dominion contends that the Settling Parties have not demonstrated that the Settlement is just and reasonable and have failed to meet any of the *Trailblazer* criteria for approval of a contested settlement.<sup>48</sup> Dominion primarily objects to the Settlement on the basis that it “appears to increase the cost of Regulation service for [load-serving entities (LSEs)] in PJM in exchange for questionable benefits, if any.”<sup>49</sup>

26. Dominion states that there is no evidence of the estimated costs of the Settlement, and thus Dominion is unable to assess the value of the Settlement.<sup>50</sup> Dominion also argues that the settling parties fail to provide any evidence of how the Settlement will affect the clearing of the Regulation market, such as how market prices will be affected and whether the Affected Batteries will be displacing other resources.<sup>51</sup> Dominion also argues that there is insufficient support for the three-and-a-half-year term, which it states is a significant amount of time to potentially impact the Regulation market, especially

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<sup>44</sup> *Id.* at 1.

<sup>45</sup> *Id.* at 2.

<sup>46</sup> *Id.* at 4.

<sup>47</sup> Dominion Protest at 9.

<sup>48</sup> *Id.* at 2 (citing *Trailblazer Pipeline Co.*, 85 FERC ¶ 61,345 (1998) (Trailblazer Order), *order on reh’g*, 87 FERC ¶ 61,110 (Trailblazer Rehearing Order), *reh’g denied*, 88 FERC ¶ 61,168 (1999)).

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

<sup>50</sup> *Id.*

<sup>51</sup> *Id.* at 3-4.

considering that the Settlement may deter new entry, which would raise the cost of the Settlement.<sup>52</sup>

27. Dominion also asserts that it is uncertain that the cost of continued litigation would be significant enough on its own to justify approving the Settlement as contested.<sup>53</sup> Dominion states that these dockets were designated for a staff-led technical conference to collect additional information and there is a significant difference in the costs of participating in a technical conference and the costs of actual litigation. Dominion also states that the Complaints Order did not conclude that PJM's changes to the Regulation market were unwarranted or that the Affected Batteries suffered damages.<sup>54</sup> Thus, Dominion argues that the Settling Parties' cost/benefit analysis for approval of the Settlement is insufficient when compared to the potential increased cost of Regulation service to PJM LSEs. Dominion also adds that there seem to be few, if any, benefits of the Settlement and that electric storage resources can and do already participate in the Regulation Market, including after the changes in the benefits factor and Regulation signal that were the impetus of the Regulation Complaints.

28. Dominion asserts that the Settlement fails under *Trailblazer*.<sup>55</sup> First, Dominion argues that there is not an adequate record, as evidenced by the fact that the Commission directed a technical conference because issues raised in the pleadings warranted "further examination" and by the fact that concerns raised by intervenors in the Regulation Complaints proceedings have not been resolved.<sup>56</sup> Second, Dominion states that the Settlement is not just and reasonable as a package because it fails a cost-benefit analysis and may be discriminatory by treating the Affected Batteries differently than, and potentially at the expense of, other RegD market participants.<sup>57</sup> Third, Dominion asserts that its interests cannot be considered attenuated because as an LSE, it will be required to pay a share of the costs of the Settlement, and as a Regulation provider, it will be directly affected to the extent the Settlement affects Regulation market clearing.<sup>58</sup>

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<sup>52</sup> *Id.* at 4.

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

<sup>54</sup> *Id.* at 5.

<sup>55</sup> *Id.* at 6.

<sup>56</sup> *Id.* at 6-7.

<sup>57</sup> *Id.* at 7-8.

<sup>58</sup> *Id.* at 8-9.

29. The IMM also filed initial comments opposing the Settlement. The IMM asserts that the Settlement is unjust, unreasonable and unduly discriminatory.<sup>59</sup> The IMM contends that the Settlement fails under *Trailblazer* approach one.<sup>60</sup> The IMM asserts that the Settlement does not address the issues raised in the complaint. The IMM states that there is no basis for a settlement because the Regulation Complaints failed to demonstrate, and the Commission did not find, that PJM acted outside of its authority in devising and implementing revised Regulation signals.<sup>61</sup> According to the IMM, no evidence exists demonstrating that PJM's RegD signal changes caused unjust or unreasonable market results and, moreover, the revised RegD signal is consistent with the physical limits of RegD resources and do not discriminate against RegD resources.<sup>62</sup> The IMM further claims that Regulation market design reform was expected and that the Settlement does not return the market results to the status quo prior to PJM's changes to the Regulation signal because it will provide RegD resources compensation in excess of what was available before 2017.<sup>63</sup>

30. The IMM argues that the Settlement should not be approved under *Trailblazer* approach two because the overall result is not just and reasonable.<sup>64</sup> The IMM contends that the time limit of three-and-a-half years, and inclusion of the RegD methodology in the Tariff, are not benefits.<sup>65</sup> The IMM also argues that the Settlement does not effectively preserve the status quo, does not facilitate continued participation in PJM by electric storage resources, and does not contain conditions on the Settling Parties' participation in the RegD market that will contribute to PJM's efforts to continue to control ACE during the Settlement term.<sup>66</sup> The IMM states that there is no basis for the assertion that the Settlement avoids significant costs of continued litigation because there is no basis for litigation.<sup>67</sup> The IMM also states that the Settlement will not facilitate any

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<sup>59</sup> IMM Comments at 2.

<sup>60</sup> *Id.* at 7.

<sup>61</sup> *Id.* at 8.

<sup>62</sup> *Id.* at 8-12.

<sup>63</sup> *Id.* at 12-15.

<sup>64</sup> *Id.* at 15.

<sup>65</sup> *Id.* at 17, 20-21.

<sup>66</sup> *Id.* at 17-20.

<sup>67</sup> *Id.* at 21.

effort to pursue forward-looking improvements to PJM's Regulation market, as PJM claims.<sup>68</sup>

31. The IMM contends that the Settlement cannot be approved under *Trailblazer* approach three because there is no basis for the assertion that the Settlement has any benefit to parties other than the Affected Batteries or that it provides cost savings to the market.<sup>69</sup> Finally, the IMM asserts that the Settlement cannot be approved under *Trailblazer* approach four because the issues cannot be severed.<sup>70</sup>

## **B. Reply Comments**

32. RESA filed reply comments supporting the Settlement and replying to the protests of the IMM and Dominion. According to RESA, the Settlement resolves all the issues raised in the Regulation Complaints.<sup>71</sup> In particular, RESA states that the Settlement eliminates the risk of reverting to pre-2017 market dispatch signals, ensures a level of regulatory certainty, and foregoes the likelihood of protracted litigation. RESA also asserts that the Settlement allows PJM to (1) maintain the current RegD signal (as opposed to the pre-January 2017 signal), (2) ensure that the Affected Batteries operate in the market under stringent parameters, and (3) eliminate the RegD signal (which the IMM has advocated for) by a date certain.<sup>72</sup> RESA argues that the Settlement may be approved under *Trailblazer*'s first approach because there is uncontested evidence in this proceeding to demonstrate financial harm to the Affected Batteries and degradation of battery resources.<sup>73</sup> RESA further contends that the Settlement may be approved under the second *Trailblazer* approach because it (1) alleviates issues raised in the Regulation Complaints, (2) is signed by all known RegD providers in PJM's region, as well as ESA and PJM, (3) was presented by PJM to the Markets Committee with only one of its members subsequently opposing the Settlement, (4) maintains a RegD market with strict

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<sup>68</sup> *Id.* at 22.

<sup>69</sup> *Id.* at 22-23.

<sup>70</sup> *Id.* at 24.

<sup>71</sup> RESA Reply Comments at 2.

<sup>72</sup> *Id.* at 4-5 (citing IMM Comments, Docket Nos. EL17-64-000 *et al.* (May 24, 2017)).

<sup>73</sup> *Id.* at 5-8.

performance benchmarks, and (5) is in effect for a limited period of time (during which PJM can propose Tariff changes to its Regulation market).<sup>74</sup>

33. ESA also filed reply comments supporting the Settlement. ESA asserts that the Settlement is the result of significant compromises among the Settling Parties and ultimately resolves the issues raised in the ESA Complaint.<sup>75</sup> ESA argues that the Settlement is consistent with the first approach set forth in *Trailblazer* because there is ample uncontested record evidence to demonstrate that modifying the Regulation market without Commission approval resulted in financial harm to the Affected Batteries, and that protestors fail to raise genuine issues of material fact regarding the merits of the Settlement.<sup>76</sup> ESA also contends that the Settlement should be approved under the second *Trailblazer* approach because the Settlement, overall, is just and reasonable.<sup>77</sup>

34. AES and Duke filed joint reply comments in support of the Settlement.<sup>78</sup> In response to Dominion's protest, they assert that "Dominion has been totally silent throughout until this late stage of the case; filing only document-less motions to intervene but no other pleadings."<sup>79</sup> AES and Duke also question whether the same Dominion entity that filed comments is a party to the case. They further argue that the lengthy Settlement process was a compromise and does not represent a "win" for AES and Duke in achieving a roll-back for all RegD assets to pre-2017 price signals or in achieving a grandfathering provision that would have applied the pre-2017 price signals to then-existing assets. AES and Duke also contend that the Regulation Complaints presented sufficient evidence to demonstrate the economic and physical harm that PJM's RegD changes imposed on existing battery installations that were designed to operate to meet a 15-minute energy neutral signal. They further claim that the three-and-a-half year settlement term is appropriate and should have been part of PJM's original proposal.<sup>80</sup>

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<sup>74</sup> *Id.* at 6-8.

<sup>75</sup> ESA Reply Comments at 1, 4.

<sup>76</sup> *Id.* at 5-6.

<sup>77</sup> *Id.* at 6-8.

<sup>78</sup> AES/Duke Reply Comments at 2.

<sup>79</sup> *Id.* at 4.

<sup>80</sup> *Id.* at 5-9.

Finally, they assert that the *Trailblazer* standards are met and justify approval of the Settlement.<sup>81</sup>

35. Invenergy filed reply comments supporting the Settlement. Invenergy contends that the comments opposing the Settlement underestimate the benefits that the Settlement provides, and that the record contains evidence of damages incurred as a result of PJM's signal changes.<sup>82</sup> Invenergy argues that the comments opposing the Settlement fail to assess the Settlement's potential effect on Regulation market clearing prices. According to Invenergy, PJM indicated to stakeholders that the monetary impact over the Settlement term likely would be in the range of eight million dollars, which equates to about \$190,000 per month for the entire PJM region over that period and only 0.0046% of PJM's total billings.<sup>83</sup>

36. Invenergy states that the Settlement is intended to remedy discrimination that occurred when PJM unilaterally changed the RegD signal and required electric storage resources to operate in a manner inconsistent with their design and, at times, outside of their design parameters. Invenergy further asserts that the Settlement will provide confidence to PJM investors by showing them that PJM recognizes that it must consider the potential harms its future rule changes may have on existing asset owners. Invenergy also claims that the Settlement term reasonably balances the Affected Batteries' interest in recovering a portion of their damages with PJM's interest in reducing its financial exposure to pay those damages.<sup>84</sup> Finally, Invenergy argues that the Settlement should be approved under *Trailblazer* approaches one, two, and/or three.<sup>85</sup>

37. In its reply comments in response to Dominion's and the IMM's protests opposing the Settlement, PJM states that the Settlement should be approved under *Trailblazer* one, two, or three.<sup>86</sup> As to the first approach, PJM argues that this proceeding resolves a policy question. Regarding the second approach, PJM contends that Commission approval is appropriate because the benefits of settlement far outweigh the costs and

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<sup>81</sup> *Id.* at 15-17.

<sup>82</sup> Invenergy Reply Comments at 3.

<sup>83</sup> *Id.* at 5-6.

<sup>84</sup> *Id.* at 8.

<sup>85</sup> *Id.* at 9-13.

<sup>86</sup> *See generally* PJM Reply Comments.



potential effects of continued litigation. Finally, with respect to the third *Trailblazer* approach, PJM argues that the IMM's interests are too attenuated.<sup>87</sup>

38. EDF submitted reply comments in support of the Settlement asserting that the opposition comments “unfairly dismiss or minimize the evidence presented by the Affected Battery Owners regarding the impacts of PJM’s rule changes on their facilities, exaggerate the potential costs to PJM participants, and disregard or ignore the Settlement’s inherent protections and limitations, as well as the benefits of reduced litigation costs and going-forward certainty.”<sup>88</sup> EDF argues that the record contains sufficient and credible evidence concerning the impacts of the Regulation signal change on the Affected Batteries and that the Settlement should be approved under the first and second *Trailblazer* approaches.<sup>89</sup>

39. NextEra filed reply comments supporting the Settlement that contend that the Commission should reject the IMM’s narrow view that the Settlement exceeds the scope of these proceedings. NextEra explains that nothing in the Commission’s rules require a settlement to track the issues raised in a complaint but rather a settlement represents an equitable compromise between the parties.<sup>90</sup> NextEra further argues that the Commission may approve the Settlement under *Trailblazer*’s first three approaches. NextEra refutes Dominion’s contention that the Settlement is discriminatory to RegD resources.<sup>91</sup>

40. Convergent’s reply comments supporting the Settlement similarly request that the Commission accept the Settlement. In particular, Convergent argues that the Settlement is not beyond the scope of these proceedings.<sup>92</sup> Convergent also asserts that the Settlement may be approved under *Trailblazer* approaches one, two and/or three.

41. Meyersdale’s reply comments supporting the Settlement argue that the Settlement is clearly in the public interest and should be approved under the first three *Trailblazer*

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<sup>87</sup> *Id.* at 2-7.

<sup>88</sup> EDF Reply Comments at 2; *see also id.* at 16-19 (discussing Settlement’s benefits).

<sup>89</sup> *Id.* at 9-19.

<sup>90</sup> NextEra Reply Comments at 2.

<sup>91</sup> *Id.* at 5, 7.

<sup>92</sup> Convergent Reply Comments at 5-6.

approaches.<sup>93</sup> Meyersdale asserts that approval of the Settlement does not require a precise quantification of harm suffered by the Affected Batteries as a result of the RegD methodology. It states that the black box Settlement and Regulation Complaints address policy matters, and the Commission may find that a return to the status quo for the Affected Batteries is a just and reasonable outcome. It further argues that the Commission can find that there are no issues of material fact because the IMM's comments do not include an affidavit as required by the Commission's rules.<sup>94</sup> Meyersdale also asserts that the benefits under the Settlement vastly outweigh any speculative benefit that may result from litigation.<sup>95</sup> Meyersdale further believes that the objecting parties' interests are sufficiently attenuated that approval is appropriate over their objections.<sup>96</sup>

42. In its reply to Invenergy, the IMM argues that Invenergy fails to provide any evidence of the claimed physical or financial damages and that such evidence would nevertheless be irrelevant.<sup>97</sup> The IMM contends that Invenergy provides no basis for a settlement.<sup>98</sup> Additionally, the IMM argues that Invenergy fails to support the subsidy payments to the settling resources, including that as a result of the changes made by PJM to the Regulation signals or to the amount of Regulation cleared, it was unable to offer in its resources or to submit offers that reflected its costs of providing Regulation service.<sup>99</sup> According to the IMM, the Settlement would require load to make out-of-market payments to resources that are parties to the Settlement.

#### **IV. Discussion**

43. We approve the Settlement. Under Rule 602 of the Commission's Rules of Practice and Procedure, the Commission may decide the merits of a contested settlement if the record contains substantial evidence upon which to base a reasoned decision or the

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<sup>93</sup> Meyersdale Reply Comments at 2.

<sup>94</sup> *Id.* at 5-6.

<sup>95</sup> *Id.* at 8-9.

<sup>96</sup> *Id.* at 10-12.

<sup>97</sup> IMM Reply Comments at 2.

<sup>98</sup> *Id.* at 3.

<sup>99</sup> *Id.* at 4.

Commission determines there is no genuine issue of material fact.<sup>100</sup> In *Trailblazer*, the Commission identified four approaches it may use to approve contested settlements.<sup>101</sup> Under the second approach described in *Trailblazer*, the Commission may approve the contested settlement as a package if the overall result of the settlement is just and reasonable.<sup>102</sup> Under this approach, the Commission does not need to render a merits decision on whether each element of a settlement package is just and reasonable, so long as the overall package falls within a broad ambit of various rates which may be just and reasonable.<sup>103</sup> As the Commission explained, this approach may involve some analysis of the specific issues raised by a settlement in order to determine whether the result under the settlement is no worse for the contesting party than the likely result of continued litigation.<sup>104</sup> The Commission clarified that this approach “focuses on the end result of the overall settlement, and involves a balancing of the benefits of a settlement against the costs and potential effect of continued litigation.”<sup>105</sup> We apply this approach in reviewing the Settlement now before us.

44. We find that the instant record contains sufficient evidence to support a finding that the overall effect of the Settlement is just and reasonable. Specifically, we find that the benefits of the Settlement, which resulted from a compromise between PJM and the Affected Battery Owners, outweigh the expense and uncertainties of further litigation, which could result in a very different Regulation market design. The Settlement supports grid reliability by facilitating the continued operation of short-duration resources on the

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<sup>100</sup> 18 C.F.R. § 385.602 (2019).

<sup>101</sup> The four approaches laid out in *Trailblazer* are: (1) the Commission renders a binding merits decision on each contested issue, (2) the Commission approves the settlement based on a finding that the overall settlement as a package is just and reasonable, (3) the Commission determines that the benefits of the settlement outweigh the nature of the objections and the interests of the contesting party are too attenuated, and (4) the Commission approves the settlement as uncontested for the consenting parties, and severs the contesting parties to allow them to litigate the issues raised. *See Trailblazer Order*, 85 FERC ¶ 61,345 at 62,342-62,345.

<sup>102</sup> *Id.* at 62,342.

<sup>103</sup> *Id.* at 62,343.

<sup>104</sup> *Trailblazer Rehearing Order*, 87 FERC ¶ 61,110 at 61,439.

<sup>105</sup> *Id.*

PJM system,<sup>106</sup> which reduces the potential for sharp market disruptions. The Settlement also supports PJM's efforts to control ACE by placing conditions and limitations on the Settling Parties' participation in the Regulation market. Further, the Settlement provides market participants with rate certainty and stability in the near term while also allowing PJM to continue developing any necessary reforms to the design of the Regulation market.<sup>107</sup>

45. We also find that the result under the Settlement is no worse for Dominion and the IMM than the likely result of continued litigation. The record supports a conclusion that all market participants, including load serving entities like Dominion, will benefit from the Settlement's contribution to controlling ACE while the cost of the Settlement to load is minimal.<sup>108</sup> Therefore, we find any benefit that might "occur from litigating th[e] case is too speculative to undermine the conclusion that [the contesting parties] would be no worse off."<sup>109</sup>

46. Although the IMM asserts that the compensation under the Settlement (i.e., the cost) exceeds that which was available to the Affected Batteries before 2017, the IMM does not provide any evidence to support this assertion. Further, the Commission need not find that the Settlement rate is exactly the same as the rate the Commission would establish on the merits after litigation. Settlements by nature are compromises, and the Commission typically does not require settling parties to justify individual elements of a settlement package.<sup>110</sup> Even if it were established that the Settlement provides compensation in excess of that which the Affected Batteries received before the January 2017 signal change,

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<sup>106</sup> See Complaints Order, 162 FERC ¶ 61,296 at P 107 (finding that PJM's 2017 signal change affected the ability of numerous resources to continue to participate in the Regulation market).

<sup>107</sup> See *Northern Nat. Gas Co.*, 51 FERC ¶ 61,157, at 61,432 (1990) (finding that "one of the primary purposes of settlements is to provide regulatory and rate certainty, so that parties can plan their affairs without the uncertainties that would result from lengthy litigation"); see also *El Paso Nat. Gas Co.*, 120 FERC ¶ 61,208, at P 55 (2007) (approving a settlement that provided shippers with rate stability for the term of the settlement).

<sup>108</sup> See, e.g., Invenergy Comments at 5-6, 12. PJM's estimated cost of \$8 million over the Settlement term constitutes 0.0046% of PJM's total billings and less than \$0.04/day/MW of Dominion's load.

<sup>109</sup> *El Paso Nat. Gas Co.*, 132 FERC ¶ 61,139, at P 93 (2010).

<sup>110</sup> See *id.* P 82 (denying rehearing of Commission order approving contested settlement under *Trailblazer* Approaches (1) and (2)).

that factor alone would not change our determination that the benefits of the Settlement outweigh the costs of continued litigation.

47. We also are not persuaded by arguments that the Settlement is unduly discriminatory toward Regulation resources other than the Affected Batteries. The Settlement appropriately focuses on Affected Batteries because its purpose is to remedy the effect on the Affected Batteries' ability to participate in the Regulation market, which the Commission found was affected by the January 2017 signal redesign that PJM improperly made through its manuals.<sup>111</sup> Also, unlike other market participants, the Affected Battery Owners will be limited in their ability to challenge future Regulation market rule changes.

48. The Settlement resolves all issues set for hearing in Docket Nos. EL17-64-000 and EL17-65-000.

49. Consistent with the terms of the Settlement, PJM is directed to make a compliance filing within 30 days of the date of this order to include the Settlement as an attachment to the Tariff.

The Commission orders:

The Settlement is hereby approved, as discussed in the body of this order.

By the Commission.

( S E A L )

Nathaniel J. Davis, Sr.,  
Deputy Secretary.

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<sup>111</sup> See Complaints Order, 162 FERC ¶ 61,296 at PP 102, 107 ("PJM's decisions to alter the basic parameters of its Regulation signals, for instance, to replace an unconditionally energy-neutral RegD signal with a conditionally neutral model, alter the parameters under which resources, particularly electric storage resources, provide Regulation service and have affected the ability of numerous resources to continue to participate in the Regulation market.").