

147 FERC ¶ 61,135  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Cheryl A. LaFleur, Acting Chairman;  
Philip D. Moeller, John R. Norris,  
and Tony Clark.

ISO New England Inc.

Docket No. ER14-1537-000

ORDER REJECTING PROPOSED TARIFF CHANGES

(Issued May 20, 2014)

1. On March 20, 2014, ISO New England Inc. (ISO-NE) and the New England Power Pool (NEPOOL) Participants Committee (together, Filing Parties), jointly filed tariff revisions to ISO-NE's Regulation Market that is currently set to become effective on October 1, 2014. Filing Parties propose several modifications to the Regulation Market design and request that the modifications, as well as the Regulation Market tariff provisions previously accepted with the October 1, 2014 effective date, become effective on May 21, 2014.<sup>1</sup> As discussed below, we reject the proposed tariff revisions.

**I. Background and Description of the Filing**

2. In 2011, the Commission issued Order No. 755 to address market design issues involving compensation for frequency regulation service provided by participants in the organized wholesale electricity markets.<sup>2</sup> ISO-NE submitted tariff changes to implement

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<sup>1</sup> ISO New England Inc., ISO New England Inc. Transmission, Markets and Services Tariff, [III.13.7](#), [III.13.7 Performance, Payments and Charges in the FCM, 24.0.0](#) and [III.14 Regulation Market, III.14 Regulation Market, 2.0.0](#). Capitalized terms have the meaning set forth in the tariff.

<sup>2</sup> *Frequency Regulation Compensation in the Organized Wholesale Power Markets*, FERC Stats. & Regs. ¶ 31,324 (2011) (Cross-Referenced at 137 FERC ¶ 61,064 (2011)) (Order No. 755), *reh'g denied*, 138 FERC ¶ 61,123 (2012) (Order No. 755-A).

the Regulation Market design in accordance with Order No. 755, and the Commission accepted the changes to become effective on October 1, 2014, as requested.<sup>3</sup>

3. In this proceeding, Filing Parties state that ISO-NE is in the last stages of implementing the Regulation Market design and it is expected to be completed several months ahead of the original estimate and the current effective date. Consequently, Filing Parties submit revised tariff sheets reflecting the requested effective date of May 21, 2014.<sup>4</sup> Filing Parties also submit several changes to the rules that will go into effect along with the new design including changes to Automatic Generation Control (AGC) dispatch, Alternative Technology Regulation Resources (ATRR)<sup>5</sup> registration, deferral of ATRR size requirements, and several clarification and error correction changes in the tariff language.<sup>6</sup>

4. ISO-NE states that as previously proposed, the Regulation Market would utilize a “continuous” AGC dispatch method for generation resources and a separate “trinary dispatch” method for ATRRs, which was developed for and used in the ATRR Pilot Program.<sup>7</sup> ISO-NE explains that under the Pilot Program, coordination was not necessary to ensure reliable operation because the amount of participating capacity was limited. However, ISO-NE now states that under the Regulation Market, there is no limit on the amount of ATRRs that can participate. Consequently, ISO-NE asserts a lack of

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<sup>3</sup> *ISO New England Inc.*, 143 FERC ¶ 61,250 (2013), *ISO New England Inc.*, Notice of Extension of Time, Docket No. ER12-1643-002, issued July 29, 2013.

<sup>4</sup> While NEPOOL voted to support the Regulation Market Changes filed, NEPOOL did not vote on the specific effective date requested by ISO-NE in this filing. *See* Transmittal at 5.

<sup>5</sup> On August 5, 2008, the Filing Parties submitted tariff revisions establishing the ATRR Pilot Program (Pilot Program) in order to permit Market Participants with resources incorporating new, alternative technologies to provide and be paid for regulation services on a trial basis. *See ISO New England Inc. and New England Power Pool*, 129 FERC ¶ 61,213, at P 4 (2009).

<sup>6</sup> ISO-NE Transmittal at 5.

<sup>7</sup> Continuous dispatch is the existing AGC dispatch algorithm used for generation resources in the existing regulation market. Trinary dispatch is the currently utilized dispatch algorithm for ATRRs in the Pilot Program, which was designed to approximate dispatch that a generator with similar characteristics would receive under continuous dispatch. *See* Lowell Testimony at 3-4.

coordination between the existing AGC dispatch used for generators and the trinary dispatch used for ATRRs could result in over-control or under-control that would degrade ISO-NE's ability to comply with NERC Control Performance Standards governing Area Control Error and frequency regulation. ISO-NE states that, to compensate for this challenge, its vendor developed a single dispatch system, reflected in the tariff changes proposed here, that dispatches both generators and ATRRs using the same algorithm currently used by ISO-NE for generators. ISO-NE explains that the single dispatch system is beneficial because it eliminates the need to coordinate between two different dispatch algorithms as all resources can be dispatched in exactly the same manner, in accordance with their offers, and potential problems of over-and under-control are eliminated.<sup>8</sup>

5. Filing Parties also propose tariff revisions that allow ATRRs to be registered as combinations of various asset types and allow for flexibility and reregistration as a market participant's circumstances change.<sup>9</sup> In support of these changes, ISO-NE explains that unlike generators that inject power onto the grid at a single location, ATRRs reflect a variety of technologies, including storage, demand response, and hybrids representing a combination of technologies that may be an aggregation of sub-resources across multiple locations. During preparations to implement the Regulation Market, ISO-NE noticed that the previously filed rules did not adequately specify the range of registration and settlement options to meet the diverse needs of ATRRs, and the proposed tariff changes are intended to address this issue.

6. Further, in order to accommodate market participants with ATRRs that were expecting to have until October 1, 2014 to satisfy the minimum 1 MW regulation capacity size requirement, as previously filed, Filing Parties propose deferring the minimum 1 MW regulation capacity size for ATRRs until October 1, 2014.<sup>10</sup> Filing Parties state the proposed change will defer the increase in the minimum regulation capacity from 0.1 MW in the Pilot Program to 1.0 MW for ATRRs in the new Regulation Market. Filing Parties also submit minor changes to clarify and correct language in the tariff regarding energy opportunity costs, minimum regulation capacity, and the calculations of Capacity Load Obligations.<sup>11</sup>

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<sup>8</sup> Lowell Testimony at 3-5.

<sup>9</sup> *Id.* at 6-8.

<sup>10</sup> *Id.* at 9-10.

<sup>11</sup> *Id.* at 11-13.

7. Filing Parties also propose to clarify the rules relating to changes to frequency regulation offer parameters, to better allow market participants to update their regulation offers at any time, as often as desired. Specifically, a selected offer will remain in effect through the end of the settlement period and an offer that is updated after resources have been selected will not be used until the next resource selection process is conducted.<sup>12</sup>

## **II. Notice of Filing and Responsive Pleadings**

8. Notice of the filing was published in the *Federal Register*, 79 Fed. Reg. 17,526 (2014), with interventions and protest due on or before April 10, 2014. Timely-filed motions to intervene were filed by NRG Companies, Exelon Corporation, and Northeast Utilities Service Company. On April 10, 2014, timely-filed motions to intervene and protest were filed by Beacon Power, LLC (Beacon) and the Electricity Storage Association (together, Protestors). ISO-NE and NEPOOL filed answers on April 23, 2014 and April 25, 2014, respectively. Protestors filed answers on May 9, 2014. ISO-NE filed a supplemental answer on May 15, 2014.

### **A. Protests**

9. Protestors argue that the proposed tariff changes unduly discriminate against limited energy storage resources, such as flywheels, and result in preferential treatment of traditional generating resources. Beacon objects to the tariff provisions that (1) clarify when changes to the offer parameters of regulation resources will be put into effect for purposes of settlement; and (2) provide for the use of a single method of dispatching all resources providing regulation.<sup>13</sup>

10. Protestors posit that the ATRR Pilot Program was established in 2008 “to accommodate the unique characteristics of alternative technologies and remove barriers that may preclude alternative technologies from participating in the Regulation Market on a comparable basis with other regulation providers.”<sup>14</sup> Protestors state the Pilot Program progressed through two phases to identify the operating parameters that balance system reliability, system-wide costs of regulation, and the economic performance of the resource, and then approximate how the facility would operate in the competitive Regulation Market.

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<sup>12</sup> *Id.* at 11.

<sup>13</sup> Beacon Protest at 3.

<sup>14</sup> *Id.* at 4.

11. Protestors contend it became clear during the Pilot Program that energy “drift”<sup>15</sup> in the regulation signal was not workable for flywheels because the dispatch mechanism assumes the flywheel had the ability to continuously generate energy. Protestors contend that, consequently, ISO-NE worked to develop a dispatch mechanism that recognized that although the flywheel could not continuously generate energy, it could continuously supply regulation if ISO-NE took into account its state-of-charge, or its stored energy level, in the dispatch. Furthermore, Protestors state that in April 2009, ISO-NE began allowing Beacon to telemeter its operating range to ISO-NE every five minutes so that ISO-NE could adjust the dispatch signal to account for the available operating range.<sup>16</sup>

12. Protestors argue Filing Parties’ proposed single dispatch method is inefficient and unduly discriminatory because it provides comparable treatment to only those resources that have the operational characteristics of a generator, resulting in non-comparable treatment of all resources. According to Protestors, the proposed changes do not take into account the operational characteristics of storage resources such that storage resources will no longer be able to manage their state of charge and thus will be at risk of having poor performance and reduced payments.<sup>17</sup> Beacon also argues that ISO-NE stated in its original Order No. 755 compliance filing that it would keep the same dispatch method when the Pilot Program ended.<sup>18</sup> Beacon argues that ISO-NE’s last-minute dispatch change on the eve of the implementation of its Order No. 755 market creates an unreasonable barrier to entry for flywheels and other limited energy resources.

13. Furthermore, Protestors contend that ISO-NE’s plan to make all resources follow the same signal used for generators is not consistent with Commission precedent. Protestors argue that in regional transmission operator markets that have implemented Order No. 755, the Commission has approved tariffs to integrate limited energy storage resources into the Regulation Market by accounting for their operational characteristics in the regulation dispatch signal. For example, Protestors posit that the New York Independent System Operator (NYISO) and Midcontinent Independent Transmission System Operator, Inc. (MISO) manage the state of charge on a five-minute basis to take

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<sup>15</sup> *Id.* at 5. Drift describes when, at the end of an interval, the amount of upward dispatch instruction given is not offset by the amount of downward dispatch instruction (or vice versa). *See* Order No. 755, 137 FERC ¶ 61,064 at P 174.

<sup>16</sup> *Id.* at 6.

<sup>17</sup> *Id.* at 12.

<sup>18</sup> Beacon Protest at 14 (citing ISO-NE, Compliance Filing, Docket No. ER12-1643-000, at 9 (filed Apr. 30, 2012)).

advantage of the benefits of limited energy storage resources in a manner that treats them comparably to other generation facilities.<sup>19</sup>

14. Lastly, Protestors also argue the Filing Parties' proposal is not just and reasonable for rate payers because it creates unreasonable barriers to entry to fast, accurate storage resources that have the potential to reduce the amount of regulation resources and lower costs for ratepayers. They argue that it is unjust and unreasonable to not incorporate the lessons learned from the Pilot Program after ratepayers have funded this program for over five years.<sup>20</sup>

**B. Answers**

15. In its answer, ISO-NE argues that Protestors have made a prohibited collateral attack on the Commission's prior orders accepting the substance of section III.14.4 regarding offer parameters.<sup>21</sup> ISO-NE states the original text was submitted and accepted and is substantially the same as the clarified text in this proceeding, that is, the new wording merely continues to provide that regulation offer parameters may be modified at any time, but provides that modified offers will not be used until a new selection process is complete. ISO-NE notes that the original text did not explicitly state that the offer parameters applied to the settlement process as well as to operation of the resource, so the text changes seek to make this clear.<sup>22</sup> ISO-NE argues that, consequently, if Protestors had concerns about ISO-NE's new offer parameters, they should have raised their concerns in response to ISO-NE's Order No. 755 compliance filing. ISO-NE asserts that the protests here are in essence an untimely request for rehearing or an impermissible collateral attack on the June 20 Order.<sup>23</sup>

16. ISO-NE further argues that regulation providers with energy storage devices have reasonable means to manage their resources to ensure appropriate performance in the

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<sup>19</sup> Beacon Protest at 14-15 (citing *New York Independent System Operator, Inc.*, 127 FERC ¶ 61,135 (2009) and *Midwest Independent Transmission System Operator, Inc.*, 129 FERC ¶ 61,303 (2009)).

<sup>20</sup> *Id.* at 16.

<sup>21</sup> ISO-NE Answer at 4 (citing *ISO New England, Inc. and New England Power Pool*, 143 FERC ¶ 61,250 (2013) (June 20 Order)).

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

<sup>23</sup> *Id.* at 7.

Regulation Market. ISO-NE maintains that market participants with energy storage devices have several options available to ensure that their resources are able to perform appropriately without “fading”<sup>24</sup> and without having the need for changed offer parameters to become effective before the end of the selection interval. ISO-NE states market participants with energy storage devices may use the offer parameters specified in section III.14.3 – Automatic Response Rate, Regulation High Limit and Regulation Low Limit – to properly manage the operation of their resources to maximize potential revenue, while reflecting the risk of non-performance that may be associated with higher or lower offer parameter values. As ISO-NE explains:

an energy storage device with very limited storage capacity and a very fast Automatic Response Rate would fade quickly and be unable to continue to provide regulation in conditions when the ACE remains persistently above (or below) 0 MW. Under the proposed rules, a market participant manages this risk by setting a resource’s Automatic Response Rate in a manner that reflects the market participant’s own balancing of the risk of fading (if the Automatic Response Rate is too fast) and the potential for lower revenues (if the Automatic Response Rate is too slow).<sup>25</sup>

17. ISO-NE explains the Pilot Program demonstrated that the modification of parameters between selection intervals sometimes forced the regulation dispatch software to send AGC SetPoints<sup>26</sup> directing resources to move in the opposite direction from what was needed to comply with reliability criteria. However, ISO-NE argues this approach would be problematic in the Regulation Market because it could impact system reliability and invalidate the results of the selection process.<sup>27</sup> ISO-NE contends that, for example,

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<sup>24</sup> Fading, also called “drift,” refers to when a storage resource either fills up or runs out of energy and is therefore unable to follow AGC dispatch instruction until such time as the Area Control Error (ACE) reverses and the resource is dispatched in the opposite direction. Beacon at 8. *See* ISO-NE Answer at n.27 (citing ISO-NE, Compliance Filing, Docket No. ER12-1643-000, at 11-13 (Lowell Testimony) (Apr. 30, 2012)).

<sup>25</sup> *Id.* at 10.

<sup>26</sup> SetPoints refers to the three possible points an ATRR could be set to under the trinary dispatch method: Regulation High Limit, Regulation Low Limit, or the midpoint between the high and low limits. *See* Lowell Testimony at 4.

<sup>27</sup> ISO-NE Answer at 11.

if the offer parameters are modified and the modifications become effective prior to the next selection, the initial selection process can no longer be relied upon to produce the required amount of frequency regulation capacity and regulation service. ISO-NE reiterates that proper use of the regulation offer parameters can ensure that the necessary quantity of storage relative to the offered regulation capacity is available to ensure that storage-based devices will not frequently or routinely “fade.”

18. Furthermore, ISO-NE disputes challenges to the proposed single dispatch. ISO-NE contends that the function of the dispatch algorithm, whether it is the proposed single dispatch method or the separate dispatch method originally envisioned, is simply to determine the AGC SetPoints for each selected resource. Consequently, ISO-NE argues, Protestors’ concerns with the flexibility of offer parameters have nothing to do with whether dispatch is accomplished based on a single dispatch or separate method for generation and non-generation resources.<sup>28</sup>

19. In the event the Commission determines there is merit in the protests, ISO-NE requests a Commission order by May 12, 2014 in order to prepare to either implement the new Regulation Market on May 21, 2014 or continue to operate the existing regulation market. Furthermore, ISO-NE states that granting the protests could disrupt the implementation of the energy market offer flexibility changes, which, according to ISO-NE would have significant consequences on the reliability and market efficiency of the region.<sup>29</sup>

20. In its answer, NEPOOL asserts that Protestors’ arguments are beyond the scope of this proceeding, positing that their concerns address implementation details, rather than the Regulation Market changes themselves, and those details have not been before NEPOOL for vote and are not before the Commission for consideration here. As to the changes relating to single dispatch, NEPOOL states that Beacon provided an amendment during the NEPOOL stakeholder process which would have retained the final sentence of current section III.14.6 of Market Rule 1, “[d]ispatch will be coordinated with the objective of achieving consistent and non-discriminatory treatment of Resources providing similar offer parameters.”<sup>30</sup> However, according to NEPOOL, ISO-NE opposed it and after stakeholder discussion, NEPOOL approved the Regulation Market changes with only one opposition noted, which was from Beacon.

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<sup>28</sup> *Id.*

<sup>29</sup> *Id.* at 15.

<sup>30</sup> NEPOOL Answer at 3.

21. In their answers, Protestors again argue that certain elements of the Pilot Program should be extended and that ISO-NE's tariff changes fundamentally change the way storage resources will be treated, and therefore are more than just clarifications as ISO-NE claims. Protestors also dispute ISO-NE's assertion that continuing the Pilot Program dispatch method would be problematic, asserting that, like storage resources, generating resources also have ramp limitations and requiring only storage resources to have dispatch signals in the same direction as ACE at all times fails to result in comparable treatment for similarly situated resources in ISO-NE's Regulation Market.<sup>31</sup> Furthermore, Protestors contend this issue was addressed in Order No. 755-A in response to a request for rehearing by Southern California Edison,<sup>32</sup> wherein the Commission found that resources should not be penalized when dispatched in the opposite direction of ACE.

22. In its supplemental answer, ISO-NE provides updates regarding the timing and sequence of steps for implementing the Regulation Market following the issuance of an order. ISO-NE states that since the Commission did not issue an order by May 12, 2014, as ISO-NE requested, it cannot make the market changes sought by Protestors and meet the requested effective date of May 21, 2014. ISO-NE further states that a key factor affecting Regulation Market implementation is having a network model in place for the software that reflects updated representation of regulation-capable resources and manages the real-time operation of the system and the energy, reserves and regulation markets, a model which, according to ISO-NE, is a work in progress.

23. ISO-NE contends that if the Commission issues an order by May 16, 2014 accepting ISO-NE's proposal as filed, ISO-NE will implement the Regulation Market changes as planned on May 21, 2014. ISO-NE further contends that it will take steps to keep the existing market and the associated Pilot Program in place if, in the alternative, the Commission issues an order conditioning acceptance on changes to the market similar to the changes sought by Protestors or if the Commission issues an order after May 16, 2014. ISO-NE states that, at this time, it is not able to estimate when it would be able to implement a new Regulation Market incorporating any changes reflecting the concerns raised by Protestors, and if such changes are required by the Commission, ISO-NE requests the Commission allow ISO-NE to assess the changes for the purpose of proposing an implementation schedule.<sup>33</sup>

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<sup>31</sup> Protestors' Answer at 8.

<sup>32</sup> *Id.* at 9 (citing Order No. 755-A, 138 FERC ¶ 61,123 at P 130).

<sup>33</sup> ISO-NE May 15 Supplemental Answer at 1-5.

### **III. Discussion**

#### **A. Procedural Matters**

24. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2013), the timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding. Pursuant to Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2013), the Commission prohibits an answer to a protest or an answer unless otherwise ordered by the decisional authority. We will accept the answers filed by ISO-NE and NEPOOL, because they have provided information that has assisted us in our decision-making process.

#### **B. Commission Determination**

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26. We find that ISO-NE has failed to support the proposed tariff revisions as just and reasonable, and not unduly discriminatory or preferential, and therefore we will reject them. As noted above, ISO-NE developed a trinary dispatch algorithm to dispatch ATRRs in the Pilot Program, and the Commission accepted that dispatch method as part of the Regulation Market rules due to become effective on October 1, 2014. ISO-NE now seeks to implement tariff revisions that would restrict the ability of limited-energy resources, such as storage devices, to participate in the Regulation Market to the fullest extent possible while other resources would face no such restrictions. Specifically, in order to avoid penalties for potential non-performance due to fading or drift, only limited-energy resources effectively would be required to limit the amount of capacity they offer. ISO-NE seeks to counter arguments that the tariff revisions unduly discriminate against storage resources, by contending that the tariff revisions require all market participants, including storage devices and other limited-energy resources, to determine their own optimal combination of offer parameters that balances their revenues and performance risks given the physical characteristics of the resource, the costs of operating at different levels, and the variable and unpredictable needs of the market. However, ISO-NE's response fails to take into account the operational characteristics of storage resources – namely, limited energy.

27. Thus, under the proposed tariff revisions, only limited-energy resources face an unnecessary barrier to entry in determining whether and how they can formulate an offer from the outset. Regional Transmission Organization (RTO) and Independent System Operator (ISO) market experience shows that there are at least two ways to allow limited-energy resources to participate in a not unduly discriminatory manner: (i) active charge

state management<sup>34</sup> of storage resources that accounts for their availability; and (ii) separate AGC signals such as is used in PJM Interconnection, L.L.C. (PJM) and the appropriate coordination between AGC signals.<sup>35</sup> Active charge state management is used by the California Independent System Operator (CAISO), MISO, and NYISO in order to allow storage resources to participate in their frequency regulation market on a not unduly discriminatory manner.<sup>36</sup>

28. Indeed, in *California Independent System Operator, Inc.*,<sup>37</sup> CAISO proposed its regulation energy management program noting that without such a program, non-generator resources would be limited to providing only a portion of their available capacity to the Regulation Market. CAISO stated that regulation energy management program will allow non-generator resources to offer their capacity more effectively.<sup>38</sup> In accepting this proposal, the Commission stated that the implementation of the regulation energy management program would reduce barriers that otherwise prevent comparable treatment of non-generator resources in CAISO's ancillary services markets, consistent with Order No. 890,<sup>39</sup> thereby allowing non-generator resources to participate more fully in CAISO's regulation market.<sup>40</sup>

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<sup>34</sup> Active charge state management (or just charge state management) is when the system operator specifically monitors the charge state of a storage resource and gives it dispatch instructions to maintain a certain charge level. *See, e.g.* CAISO, Business Practice Manual for Market Operations, Stored Energy Management for Non-Generator Resources in Real-Time, § 7.8.2.5.

<sup>35</sup> We note our agreement with ISO-NE, however, that allowing a resource to change its physical parameters intra-hour would be tantamount to nullifying the market-clearing process by which resources are chosen to provide regulation service.

<sup>36</sup> *See* MISO, Energy and Operating Reserve Markets Business Practice Manual, Attachment D, § 3.26; NYISO, Ancillary Services Manual, §4.3.2.

<sup>37</sup> *California Independent System Operator, Inc.*, 137 FERC ¶ 61,165 at P 28 (2011).

<sup>38</sup> CAISO, Regulation Energy Management for Non-Generator Resources, Docket No. ER11-4353, at 3 (filed August 22, 2011).

<sup>39</sup> *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, FERC Stats. & Regs. ¶ 31,241, *order on reh'g*, Order No. 890-A, FERC Stats. & Regs. ¶ 31,261 (2007), *order on reh'g*, Order No. 890-B, 123 FERC ¶ 61,299

(continued...)

29. Finally, we note our disagreement with ISO-NE that the Protesters' challenges here constitute a collateral attack on the Commission's June 20, 2013 order accepting subject to condition, ISO-NE's Order No. 755 compliance filing.<sup>41</sup> Nothing in that order or Order No. 755 addresses the issue of fading, or "drift," and rejecting the proposed tariff revisions here does not impact ISO-NE's ability to implement the Regulation Market by October 1, 2014 as required by the June 20, 2013 order.

The Commission orders:

The proposed tariff revisions are hereby rejected, 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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(2008), *order on reh'g*, Order No. 890-C, 126 FERC ¶ 61,228 (2009), *order on clarification*, Order No. 890-D, 129 FERC ¶ 61,126 (2009).

<sup>40</sup> *California Independent System Operator, Inc.*, 137 FERC ¶ 61,165 at P 28.

<sup>41</sup> *ISO New England Inc.*, 143 FERC ¶ 61,250 (2013).