

147 FERC ¶ 61,211
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

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

Southwest Power Pool, Inc.

Docket Nos. ER13-1748-000
ER13-1748-001

ORDER ON COMPLIANCE FILING

(Issued June 19, 2014)

1. On June 21, 2013, Southwest Power Pool, Inc. (SPP) filed proposed revisions to its Open Access Transmission Tariff (Tariff) to comply with the directives in Order No. 755,¹ including the adoption of a two-part compensation methodology for resources that provide regulation-up and regulation-down operating reserve products in the SPP Integrated Marketplace.

2. In this order, we conditionally accept SPP's proposed Tariff revisions,² subject to certain conditions outlined below, to become effective March 1, 2015, as requested. We also require SPP to make an additional compliance filing within 30 days of the date of this order and file an informational report within 14 months of the effective date of the proposed Tariff revisions, as discussed herein.

I. Background

A. Frequency Regulation Service

3. Frequency regulation is an ancillary service, as required by Order Nos. 888 and 890, under the Commission's *pro forma* open access transmission tariff.³ It is relied

¹ *Frequency Regulation Compensation in the Organized Wholesale Power Markets*, Order No. 755, FERC Stats. & Regs. ¶ 31,324, *reh'g denied*, Order No. 755-A, 138 FERC ¶ 61,123 (2012).

² See eTariff citations in the attached Appendix.

³ See *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities and Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, FERC Stats. & Regs.

(continued...)

upon by system operators to control both actual and anticipated frequency deviations. A frequency deviation is caused when the supply of dispatched generation and demand response, as measured in Hertz, fails to equal the amount of electricity actually consumed (i.e., load plus losses) at a given moment. When such a deviation exceeds an acceptable range, the system can be impaired, with major deviations causing generation and transmission equipment to disconnect from the grid.

B. Order No. 755

4. In Order No. 755, the Commission found that the resources relied upon by regional transmission organizations (RTO) and independent system operators (ISO) to provide frequency regulation service differed in both their ramping ability, which is their ability to increase or decrease their provision of frequency regulation service, and the accuracy with which these resources could respond to the system operator's dispatch signal.⁴ Order No. 755 further found that compensation policies at the time failed to acknowledge these operational differences. Specifically, Order No. 755 found that existing RTO and ISO compensation methods result in rates that are unjust, unreasonable, and unduly discriminatory or preferential, given that resources are compensated at the same level even when providing different amounts of frequency regulation service.⁵ Order No. 755 further found that paying a uniform clearing price that included opportunity costs would send efficient price signals reflecting the true cost of providing frequency regulation service.⁶

5. To accomplish this objective, Order No. 755 required each RTO and ISO to use market-based mechanisms to select and compensate frequency regulation resources based on a two-part payment methodology. First, Order No. 755 required that a capacity

¶ 31,036 at 31,705 (1996), *order on reh'g*, Order No. 888-A, FERC Stats. & Regs. ¶ 31,048 (1997), *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶ 61,046 (1998), *aff'd in part and rev'd in part sub nom. Transmission Access Policy Study Group v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom. New York v. FERC*, 535 U.S. 1 (2002). *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, FERC Stats. & Regs. ¶ 31,241 at P 135, *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 (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).

⁴ Order No. 755, FERC Stats. & Regs. ¶ 31,324 at P 1.

⁵ *Id.* P 64.

⁶ *Id.* P 99.

payment be made to a resource to keep its capacity in reserve in the event that it is needed to provide real-time frequency regulation service.⁷ Second, Order No. 755 required that performance payments be made, which reflect the amount of work each resource performs in real-time in response to the system operator's dispatch signal.⁸ Order No. 755, however, gave each RTO and ISO discretion in identifying the manner by which it would implement Order No. 755's required two-part payment methodology.⁹ Order No. 755 also acknowledged that the market rule revisions required by Order No. 755 contemplated fundamental changes in the way RTOs and ISOs procure and compensate frequency regulation services and that these rule changes may render existing RTO and ISO market power mitigation provisions insufficient to address market power concerns.¹⁰ Accordingly, Order No. 755 required each RTO and ISO to submit revised market power mitigation provisions, as appropriate to their redesigned frequency regulation markets, or explain how their current mitigation methods are sufficient to address market power concerns.

C. SPP Integrated Marketplace Proceeding

6. On February 29, 2012, SPP submitted its initial Integrated Marketplace filing, which proposed implementing day-ahead and real-time energy markets and an operating reserve market in the SPP region beginning March 1, 2014. In this filing, SPP stated that it would submit an additional filing to comply with the requirements of Order No. 755 at a later time. On October 18, 2012, the Commission conditionally accepted SPP's Integrated Marketplace proposal, subject to further compliance.¹¹ As part of this compliance, the Commission directed SPP to submit, by June 30, 2013, a proposal for the procurement and compensation of resources providing regulation-up and regulation-down services that was compliant with Order No. 755.¹² In a rehearing request, SPP stated that while it intended to submit an Order No. 755 compliance filing by June 30, 2013, it needed additional time to develop software, perform testing, and complete the configuration necessary to integrate the changes required by the rule, further requesting

⁷ *Id.* P 198.

⁸ *Id.* P 199.

⁹ *Id.* P 185.

¹⁰ *Id.* P 136.

¹¹ *Southwest Power Pool, Inc.*, 141 FERC ¶ 61,048 (2012) (Integrated Marketplace Order), *order on reh'g*, 142 FERC ¶ 61,205 (2013) (Rehearing Order).

¹² Integrated Marketplace Order, 141 FERC ¶ 61,048 at P 222.

that these changes become effective one year after market launch, on March 1, 2015. The Commission granted this request.¹³

II. SPP Filing

7. On June 21, 2013, SPP submitted its Order No. 755 compliance filing for its Integrated Marketplace. SPP proposes establishing a two-part methodology for regulation-up and regulation-down offers and compensation. SPP states that the capacity portion of the offer will be based on SPP's current methodology, while the performance component will be based on a resource's regulation-up and regulation-down mileage.¹⁴ SPP asserts that its proposed two-part offer and compensation mechanism, with additional charges and credits in real-time to account for the performance component of the compensation, is substantively similar to the mechanism approved by the Commission for frequency regulation compensation in the Midcontinent Independent System Operator, Inc. (MISO) region.¹⁵

8. SPP states that a resource offering regulation products in the day-ahead or real-time market will be required to submit a two-part offer consisting of: (1) a regulation-up or regulation-down offer (in \$/MW), representing the price at which the resource has agreed to hold capacity in reserve to provide regulation-up or regulation-down services; and (2) a regulation-up or regulation-down mileage offer (in \$/MW), representing the price at which the resource has agreed to sell regulation mileage (termed Expected Regulation-Up/-Down Mileage). SPP proposes multiplying the regulation mileage offer by a regulation mileage factor, which SPP states it will determine through a historical, system-wide regulation deployment analysis that represents the ratio of cleared regulation service to the instructed regulation mileage. SPP will add the product of the regulation mileage offer and regulation mileage factor to the regulation offer to determine the overall regulation service offer, which SPP states will be used in the market clearing engine to determine the least-cost commitment and dispatch of regulation resources in the Integrated Marketplace.¹⁶

¹³ Rehearing Order, 142 FERC ¶ 61,205 at P 40.

¹⁴ SPP Transmittal at 10. SPP indicates that mileage is equal to the sum of the absolute value of movements by a resource in response to regulation deployment instructions provided through Automatic Generation Control every four seconds. SPP states it will measure mileage for each five minute dispatch interval. *Id.*

¹⁵ *Id.* at 12 (citing *Midwest Indep. Transmission Sys. Operator, Inc.*, 140 FERC ¶ 61,224, at PP 7-13 (2012) (MISO 755 Order)).

¹⁶ *Id.* at 11.

9. SPP states that regulation service offers will be used to meet regulation requirements, as well as produce regulation service market clearing prices. SPP indicates that deployment of regulation reserves will remain the same in the Integrated Marketplace. For the day-ahead period, cleared regulation resources will be compensated at the applicable day-ahead market clearing price.¹⁷ For the real-time period, SPP states it will determine the appropriate charge or credit for a regulation resource as the sum of: (1) deviations between cleared real-time regulation and cleared day-ahead regulation; (2) excess mileage;¹⁸ and (3) unused mileage.¹⁹

10. SPP states that, because real-time settlements are based on expected mileage market clearing prices, it proposes incorporating a make whole payment for unused mileage,²⁰ which SPP indicates will compensate the resource for the difference between its mileage offer and the settled amount charged at the market clearing price. SPP asserts that this make whole payment will ensure that resources are not penalized for unused mileage when the market clearing price exceeds their regulation mileage offer (i.e., when the resource's offer did not set the market clearing price). SPP proposes recovering the costs of the make whole payment on a load ratio share basis. SPP asserts that the Commission has previously accepted a make whole payment mechanism to address similar circumstances when a resource is charged for real-time mileage deployment that differs from the expected mileage amount.²¹

11. To ensure that a resource's accuracy in following Automatic Generation Control dispatch signals is incorporated into its performance compensation, SPP also proposes modifying its current real-time Regulation Non-Performance Amount charge for

¹⁷ Because regulation resources are not actually deployed in the day-ahead period, SPP explains that mileage is a concept only applicable to the real-time period. *Id.* at 12.

¹⁸ SPP states that excess mileage occurs if the lesser of the actual mileage or instructed mileage exceeds the expected mileage. In the event of excess mileage, SPP states that the resource receives a credit for the excess. *Id.*

¹⁹ SPP states that unused mileage occurs when the lesser of the actual mileage or instructed mileage is less than the expected mileage. In the event of unused mileage, SPP states that the resource is charged for the unused mileage for which it is compensated. *Id.*

²⁰ SPP's Tariff accounts for a resource's operating reserve offer and revenues in its make whole payment methodology but does not account for regulation performance (i.e., mileage). *See* SPP Tariff, Attachment AE section 8.6.5.

²¹ SPP Transmittal at 12 (citing MISO 755 Order, 140 FERC ¶ 61,224 at PP 34-36 & nn.37-38; *Midwest Indep. Transmission Sys. Operator, Inc.*, Docket No. ER12-1664-001 (unpublished letter order) (Jan. 25, 2013)).

resources that operate outside of their operating tolerance²² by including excess mileage payments and unused mileage charges. SPP states that if resources operate outside of their operating tolerance, they will, in addition to forfeiting their regulation capability payments, forfeit all mileage-based charges and credits. Further, SPP proposes calculating and paying for excess mileage and proposes to calculate and charge for unused mileage using the lesser of the actual mileage or instructed mileage, which SPP maintains will provide a market incentive for resources to perform at their instructed mileage. SPP asserts that these economic signals will provide incentives for resources to follow Automatic Generation Control dispatch instructions, consistent with the directives of Order No. 755.²³

12. SPP requests a March 1, 2015 effective date for all proposed Tariff revisions, consistent with the effective date granted in the Rehearing Order.²⁴

13. On March 7, 2014, Commission staff issued a deficiency letter directing SPP to provide additional information regarding its Order No. 755 compliance filing (Deficiency Letter). On April 7, 2014, SPP filed its response to the deficiency letter, as well as additional Tariff amendments (Deficiency Response).

III. Notice of Filings and Responsive Pleadings

14. Notice of SPP's June 21, 2013 filing was published in the *Federal Register*, 78 Fed. Reg. 39,722 (2013), with interventions and protests due on or before July 12, 2013. East Texas Electric Cooperative, Inc., Northeast Texas Electric Cooperative, Inc., and Tex-La Electric Cooperative of Texas, Inc. (collectively, East Texas Cooperatives) and Beacon Power, LLC submitted timely motions to intervene. Energy Storage Association d/b/a Electricity Storage Association (ESA) submitted a motion to intervene and comments. SPP submitted an answer.

15. Notice of SPP's April 7, 2014 Deficiency Response was published in the *Federal Register*, 79 Fed. Reg. 21,221 (2014), with interventions and protests due on or before April 28, 2014. None was filed.

²² SPP proposes a five percent Regulation Mileage Operating Tolerance to account for latency associated with receiving a regulation Automatic Generation Control signal. *Id.* at 20.

²³ *Id.* at 13 (citing Order No. 755, FERC Stats. & Regs. ¶ 31,324 at PP 152-153).

²⁴ *Id.* at 1-2.

IV. Procedural Matters

16. 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.

17. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2013), prohibits an answer to a protest unless otherwise ordered by the decisional authority. We will accept SPP's answer because it provided information that assisted us in our decision-making process.

V. Discussion

A. Capacity Payment

1. Order No. 755

18. Order No. 755 required that RTOs and ISOs provide for the payment of a uniform clearing price for capacity to all cleared frequency regulation resources that include the marginal resource's opportunity costs.²⁵ Order No. 755 also required that this uniform clearing price be market-based, as derived from market participants' bids for the provision of frequency regulation capacity.

19. Order No. 755 further required RTOs and ISOs to calculate each resource's cross-product opportunity costs²⁶ and to add this cost to each resource's frequency regulation capacity offer.²⁷ In addition, Order No. 755 directed each RTO and ISO to allow a resource to include its inter-temporal opportunity costs²⁸ in its offer, to the extent the resource has such costs and such costs are verifiable.²⁹

²⁵ Order No. 755, FERC Stats. & Regs. ¶ 31,324 at P 99.

²⁶ A resource's cross-product opportunity costs reflect the resource's foregone opportunity to participate in the energy or ancillary services markets.

²⁷ Order No. 755, FERC Stats. & Regs. ¶ 31,324 at P 102.

²⁸ Inter-temporal opportunity costs reflect the foregone value when a resource must operate at a given time and therefore must either forego a profit from selling energy at a later time or incur costs due to consuming at a later time.

²⁹ Order No. 755, FERC Stats. & Regs. ¶ 31,324 at P 102.

2. SPP's Proposal

20. SPP asserts that its current compensation methodology for regulation service already complies with the Order No. 755 requirement that RTOs compensate all cleared frequency regulation resources at a uniform, market-based (i.e., offer-based) capacity clearing price that includes the marginal resource's cross-product opportunity costs, as well as inclusion of inter-temporal opportunity costs. SPP states that it accepts offers for regulation-up and regulation-down services, which SPP explains are used to calculate the market clearing prices that are then used to compensate cleared resources in both the day-ahead³⁰ and real-time markets.³¹ SPP explains that the co-optimization logic used in both the day-ahead and real-time markets calculates market clearing prices for operating reserves that include lost opportunity costs incurred as a result of operating reserve clearing.³² Thus, SPP asserts, this process already accounts for cross-product opportunity costs.³³ Similarly, SPP is not proposing revisions to its Tariff to account for inter-temporal opportunity costs because, as SPP explains, its Tariff already allows market participants to include inter-temporal opportunity costs in their offers. SPP states that the Market Monitor has the ability to review and analyze such offers for potential market manipulation.³⁴

3. Commission Determination

21. We find that SPP's compliance proposal satisfies the Order No. 755 requirement that all cleared frequency regulation resources be paid a uniform clearing price that includes the marginal resource's opportunity costs. In the operating reserve market in the Integrated Marketplace, the compensation methodology for regulation service requires that SPP compensate cleared frequency regulation resources at a uniform, market-based clearing price that includes the marginal resource's cross-product opportunity costs (as

³⁰ SPP Transmittal at 13 (citing SPP Tariff, Attachment AE section 8.5.2, which sets forth the methodology for calculating the Day-Ahead Regulation Amount based on the day-ahead market clearing price).

³¹ *Id.* (citing SPP Tariff, Attachment AE section 8.6.2, which sets forth the methodology for calculating the Real-Time Regulation Amount based on the real-time market clearing price).

³² *Id.* (citing SPP Tariff, Attachment AE sections 5.1.2(2)(d) and 6.2.2(5)).

³³ *Id.* at 13-14.

³⁴ *Id.* at 14.

well as inter-temporal opportunity costs, if included by the market participant in its offer). Accordingly, we find SPP compliant with this aspect of Order No. 755.

B. Payment for Performance

1. Order No. 755

22. Order No. 755 required that the second part of the two-part payment to be provided to frequency regulation resources be a performance payment that reflected the quantity of frequency regulation provided by a resource when the resource accurately followed the dispatch signal. Specifically, Order No. 755 required that the cleared performance price be: (1) market-based;³⁵ (2) paid uniformly to all resources cleared during the same settlement period;³⁶ (3) measured based on the absolute (rather than the net) amount of energy injected or withdrawn from the system, as provided by the resource in response to the system operator's dispatch signal;³⁷ and (4) calculated relative to the resource's accuracy in following the dispatch signal.³⁸ Order No. 755 also required that the performance payment reflect the amount of work each resource performed in real time.³⁹

2. SPP's Proposal

23. SPP proposes a number of revisions and new definitions to Attachment AE in its Tariff to comply with the Order No. 755 performance payment compliance directives.⁴⁰

³⁵ Order No. 755, FERC Stats. & Regs. ¶ 31,324 at P 128.

³⁶ *Id.* P 131.

³⁷ *Id.* P 133.

³⁸ *Id.* P 151.

³⁹ *Id.* P 199.

⁴⁰ SPP proposes adding definitions for the following terms within section 1.1 of Attachment AE: Actual Regulation-Down Mileage, Actual Regulation-Up Mileage, Excess Regulation-Down Mileage, Excess Regulation-Up Mileage, Expected Regulation-Down Mileage, Expected Regulation-Up Mileage, Instructed Regulation-Down Mileage, Instructed Regulation-Up Mileage, Regulation-Down Mileage Factor, Regulation-Down Mileage Offer, Regulation-Down Service, Regulation-Down Service Offer, Regulation Mileage Operating Tolerance, Regulation-Up Mileage Factor, Regulation-Up Mileage Offer, Regulation-Up Service, Regulation-Up Service Offer, Unused Regulation-Down Mileage, and Unused Regulation-Up Mileage. SPP states that the adoption of these terms also requires conforming changes throughout Attachment AE of its Tariff. SPP Transmittal at 17 & n.76.

SPP states it will compensate resources based on the Expected Regulation-Up/-Down Mileage and will credit or charge the resource based on whether there is Excess Regulation-Up/-Down Mileage or Unused Regulation-Up/-Down Mileage in the real-time market. SPP asserts that because the terms Actual Regulation-Up/-Down Mileage and Instructed Regulation-Up/-Down Mileage include the absolute value of all up and down movements, it is in compliance with the requirement that the performance payment be based on the measurement of the resource's absolute amount of provided regulation service. SPP further asserts that the adoption of the terms Regulation-Up/-Down Service incorporates both the capacity and mileage concepts required by Order No. 755.⁴¹

24. SPP proposes adding sections 8.3.4(3) and 8.3.4(4) to Attachment AE, which specify that market clearing prices for Expected Regulation-Up/-Down Mileage are equal to the highest Regulation Mileage Offer of all resources economically cleared to provide regulation service in a particular dispatch interval, multiplied by the mileage factor.⁴² SPP also proposes revising the following definitions in section 1.1 of Attachment AE: Market Clearing Price, to account for Regulation-Up/-Down Service and Expected Regulation-Up/-Down Mileage; and Regulation-Down Qualified Resource, Regulation Qualified Resource, and Regulation-Up Qualified Resource, to include the regulation mileage concept. Additionally, SPP proposes revising section 4.1(9) of Attachment AE, which contains resource offer parameters, to include Regulation-Up/-Down Mileage Offers. Further, SPP proposes to modify sections 3.5, 6.2.3, and 8.3.4 of Attachment AE to update the calculation of market clearing prices for regulation service to incorporate the mileage concept. SPP asserts that these changes will ensure that all resources providing regulation service are compensated at a uniform, market-based price, consistent with the requirements of Order No. 755.⁴³

25. SPP proposes changes to section 8.6.2 of Attachment AE to account for a resource's performance payment within the existing Real-Time Regulation Service Amount mechanism. SPP explains that the component of the real-time payment or charge attributable to a resource's regulation performance is calculated based on the extent to which the resource's Actual Regulation-Up/-Down Mileage (or corresponding instructed mileages) deviates from the Expected Regulation-Up/-Down Mileage, which results in either excess mileage or unused mileage. SPP states that the Unused Regulation-Up/-Down Mileage charge is calculated by multiplying the unused mileage

⁴¹ *Id.* at 17.

⁴² Given the lack of historical data prior to the launch of the Integrated Marketplace, SPP proposes that the regulation mileage factor be 1.0 for both regulation-up and regulation-down services. SPP states that it will periodically update this factor in the Integrated Marketplace Protocols. *Id.* at 11.

⁴³ *Id.* at 18.

by the market clearing prices for expected mileage. SPP asserts that this calculation ensures that a resource will not be overcompensated for the regulation mileage it actually provides. Similarly, SPP explains that excess mileage credits are calculated using market clearing prices for expected mileage and are paid to resources, ensuring that the resource is compensated for its full response to Automatic Generation Control dispatch instructions.⁴⁴

26. Further, SPP states that, unless a resource's regulation mileage offer sets the market clearing price, the resource will experience a loss from being charged for unused mileage. Thus, SPP proposes a make whole payment for unused mileage to compensate the resource for the difference between its mileage offer and the settled amount charged at the market clearing price, which SPP asserts will ensure that resources are not penalized for their unused mileage.⁴⁵ SPP proposes allocating the costs for paying make whole payments associated with regulation service and mileage based on a load ratio share basis, including costs associated with unused mileage make whole payments.⁴⁶

27. Overall, SPP contends that its performance payment proposal complies with the requirements of Order No. 755. SPP notes that its proposed performance payment methodology is similar to the methodology adopted in MISO, in which a resource is paid for regulation capacity and an expected amount of regulation mileage, then credited or charged based on the actual mileage used in real-time.⁴⁷

3. Deficiency Response

28. In the Deficiency Letter, Commission staff requested that SPP provide detailed, step-by-step numerical examples of the entire frequency regulation compensation process, starting with bids for capacity and mileage and ending with the settlement statement.⁴⁸ SPP includes these examples in its Deficiency Response.⁴⁹

⁴⁴ *Id.* at 18-19.

⁴⁵ *Id.* at 19 (citing SPP Tariff, Attachment AE sections 8.6.19, 8.6.20, and 8.6.5(4)(b)).

⁴⁶ *Id.* (citing SPP Tariff, Attachment AE sections 8.5.5, 8.5.6, and 8.6.8).

⁴⁷ *Id.* (citing MISO 755 Order, 140 FERC ¶ 61,224 at PP 7-13, 25, 29, and 33).

⁴⁸ Deficiency Letter at 1-2.

⁴⁹ *See* Deficiency Response, Attachment I.

29. In the Deficiency Letter, Commission staff asked a number of questions regarding SPP's proposed regulation mileage factor. With regard to having an initial regulation mileage factor of 1.0, SPP explains that one full deployment of regulation capacity cleared in a single (five-minute) dispatch interval means that instructed mileage equals cleared regulation capacity, which SPP states is equivalent to a regulation mileage factor of 1.0. SPP elaborates that it chose this value because it requires Regulation Qualified Resources to be able to deploy their entire amount of regulation-up/-down service cleared in a single dispatch interval. SPP states that it will apply the regulation mileage factor to each five-minute dispatch interval within an hour. Further, SPP states that it anticipates performing its first historical, system-wide regulation deployment analysis in September of 2014 and expects to conduct these analyses on a monthly basis thereafter. Because of these monthly analyses, SPP asserts that it is appropriate to include the regulation mileage factor in the Integrated Marketplace Protocols to avoid unnecessary filings with the Commission. SPP also asserts that including them in the Integrated Marketplace Protocols will provide a more dynamic optimization between expected and unused mileage, which will minimize unused mileage make whole payments.⁵⁰ Additionally, SPP notes errors in Tariff language submitted in its June 21, 2013 filing. Specifically, SPP states that the terms "instructed mileage" and "cleared MWs" are reversed within the definitions for Regulation-Up Mileage Factor and Regulation-Down Mileage Factor (as a result, the error suggests that the mileage factors represent the ratio of cleared MW to instructed mileage, rather than the reverse). SPP states that it will correct this error in a future compliance filing, if so ordered by the Commission.⁵¹

30. Further, in the Deficiency Letter, Commission staff noted that several of the calculations described in section 8.6.2 of Attachment AE used a negative one (-1) multiplier and asked SPP to explain its significance and whether it was appropriate to include the multiplier for both charges and payments. In its Deficiency Response, SPP explains that, under the sign conventions adopted in SPP's settlement system, a negative dollar value represents a payment by SPP to a market participant, whereas a positive dollar value represents a charge to a market participant. SPP states that it uses the negative one multiplier to attain the proper sign convention, where needed.⁵²

31. SPP confirms errors in sections 8.6.2(1)(a)(iv) and 8.6.2(1)(a)(v) of Attachment AE. SPP proposes Tariff amendments to correctly reference

⁵⁰ *Id.* at 2-4.

⁵¹ *Id.* at 3 & n.5.

⁵² *Id.* at n.5. SPP provides an example in its Deficiency Response, further noting that settlement sign conventions are explained in section 8.1 of Attachment AE in its Tariff. *Id.* at 5.

sections 8.3.4(3) and 8.3.4(4) of Attachment AE within section 8.6.2.⁵³ SPP requests that these Tariff changes also become effective on March 1, 2015. Finally, SPP notes that sections 8.3.4(3) and 8.3.4(4) of Attachment AE erroneously state that the Regulation-Up/-Down Mileage market clearing price will be multiplied by the mileage factor. SPP states that it will correct this error in a future compliance filing, if so directed by the Commission.⁵⁴

4. Commission Determination

32. We find that SPP's payment for performance proposal (i.e., mileage) is generally consistent with the requirements of Order No. 755. By adding a performance payment that pays a resource based on the actual amount of regulation-up and regulation-down service it is dispatched to provide, SPP will help remedy potential undue discrimination in the operating reserve market in the Integrated Marketplace.

33. We will accept SPP's proposed 1.0 mileage factor and the assumption that instructed mileage will equal cleared regulation capacity. We note that there appears to be a discrepancy between the Tariff and the example calculations provided in SPP's Deficiency Response.⁵⁵ Given this apparent discrepancy, we expect SPP to follow its Tariff and apply the 1.0 mileage factor for each interval rather than for each hour. We will also accept SPP's proposal to conduct historical, system-wide regulation deployment analyses on a monthly basis as it continues to gain market experience and accumulate data on market operations.⁵⁶ As part of this ongoing analysis, we will require SPP to submit, in an informational report due 14 months after March 1, 2015, information on how the mileage factor has evolved, based on its system-wide regulation deployment analyses, and whether changes in the mileage factor have had an effect in reducing

⁵³ *Id.* at 4.

⁵⁴ *Id.*, Attachment I at 6, n.2.

⁵⁵ According to the Tariff, the "Transmission Provider will employ a simultaneous co-optimization methodology...in order to clear the Day-Ahead Market for *each hour* of the upcoming Operating Day" (SPP Tariff, Attachment AE section 5.1.2 (emphasis added)). SPP states in its Deficiency Response that offers are used to clear regulation-up service for each dispatch interval in the operating hour. However, SPP provides an example showing day-ahead clearing results for a dispatch interval, rather than for an operating hour. Thus, the numerical example appears to be inconsistent with the Tariff requirements.

⁵⁶ We also find that it is reasonable to include the value of the mileage factor in the Integrated Marketplace Protocols based on the frequency with which SPP intends to conduct its analyses.

unused mileage make whole payments (thus indicating more efficient clearing and equitable settlement in the regulation market).⁵⁷

34. With regard to proposed Tariff provisions in sections 8.6.19 and 8.6.20 of Attachment AE, which provide for a real-time make whole payment associated with regulation performance based on unused regulation mileage, it is not apparent why SPP proposes to include only one component of regulation service costs for the purpose of calculating a make whole payment when regulation service payments in the day-ahead market are bundled and cannot be separated. Accordingly, we will conditionally accept the proposed revisions and require SPP to either (1) explain why it is appropriate to use such a narrow accounting of a resource's costs and revenues, looking only at a resource's regulation mileage offer and mileage revenue, rather than a broader accounting of all regulation service revenues, or even all energy and ancillary service revenues, for the settlement period; or (2) amend its proposed make whole payment methodology to incorporate a broader accounting of revenues, in a compliance filing due 30 days after the date of this order. Additionally, in the 14-month informational report, we will require SPP to report on its unused mileage make whole payment methodology by assessing any trends suggesting that the methodology over- or under- compensates resources compared to actual frequency regulation service provided.

35. As suggested by SPP in its Deficiency Response, we will require SPP to revise the definitions of Regulation-Up Mileage Factor and Regulation-Down Mileage Factor to state that the mileage factor represents the ratio of instructed mileage to cleared regulation service MW. We also will require SPP to revise sections 8.3.4(3) and 8.3.4(4) of Attachment AE to state that the Regulation-Up Mileage Market Clearing Price and the Regulation-Down Market Clearing Price will not be multiplied by the mileage factor. We will require SPP to make these changes in a compliance filing due 30 days after the issuance of this order.

36. Finally, we will accept proposed revisions to section 8.6.2 of Attachment AE submitted by SPP in its Deficiency Response because these changes correct erroneous references to non-existent sections of the Tariff.

C. Accuracy

1. Order No. 755

37. Order No. 755 required that the RTO or ISO measure the accuracy of a resource's provision of regulation service in relation to the system operator's dispatch signal. Under Order No. 755, RTOs and ISOs are required to link the measurement of a resource's accuracy in meeting the system operator's Automatic Generation Control dispatch signal

⁵⁷ The Commission does not intend to issue a public notice, accept comments, or issue an order on the informational report.

and to reflect the resource's performance accuracy in the resource's compensation procedures.⁵⁸

2. SPP's Proposal

38. To ensure resource accuracy in following Automatic Generation Control dispatch signals, SPP proposes modifying its current Real-Time Regulation Non-Performance Amount charge, described in section 8.6.11 of Attachment AE, for resources that operate outside of their operating tolerance.⁵⁹ SPP proposes including excess mileage payments and unused mileage charges in this charge and calculating mileage based on the lesser of actual or instructed mileage, which SPP asserts is consistent with Order No. 755. SPP also proposes a five percent Regulation Mileage Operating Tolerance to account for latency associated with receiving a regulation Automatic Generation Control signal via a four second setpoint instruction.⁶⁰

3. Deficiency Response

39. In the Deficiency Letter, Commission staff requested that SPP provide a reasoned explanation for why a five percent Regulation Mileage Operating Tolerance was initially appropriate. SPP states that it designed this tolerance to compensate for signal latency from the time SPP issues a Regulation Deployment Setpoint Instruction until the time that a resource actually receives the instruction, which SPP estimates may be up to 15 seconds. SPP states that, given the five-minute dispatch interval for regulation, a 15-second latency equates to a five percent delay in receiving a signal (i.e., 15 seconds divided by 300 seconds).⁶¹

⁵⁸ Order No. 755, FERC Stats. & Regs. ¶ 31,324 at PP 151-154, 200.

⁵⁹ This charge is applied when a resource with cleared real-time regulation service operates outside of its operating tolerance and is calculated at each resource settlement location for each asset owner for each dispatch interval. *See* SPP Tariff, Attachment AE section 8.6.11.

⁶⁰ As an example, SPP states that if a resource's instructed mileage was 100 MW, but its actual mileage was 96 MW, then SPP will use the 100 MW to calculate the resource's excess/unused mileage. However, if the resource's actual mileage is 94 MW, then SPP would use 94 MW to calculate the resource's excess/unused mileage. SPP Transmittal at 20.

⁶¹ Deficiency Response at 5. SPP also provides an additional example demonstrating how it will implement the Regulation Mileage Operating Tolerance in its Deficiency Response. *Id.* at 5-6.

4. Commission Determination

40. We find that SPP's proposed accuracy provisions satisfy the requirements of Order No. 755. SPP's proposed Tariff revisions include a means of measuring the accuracy of a resource's response, compensating the resource for the accuracy of its response, and penalizing the resource if it operates outside of its operating tolerance. We find that these provisions should improve overall frequency regulation market performance by encouraging all resources to improve the speed and accuracy of their response. We will accept SPP's use of a five percent Regulation Mileage Operating Tolerance, but we will require SPP to evaluate the continued appropriateness of using such a tolerance band, based on its market experience, in its informational report due 14 months after March 1, 2015. In particular, we will require SPP to examine whether its accuracy threshold accounts for measurement noise and delays caused by non-linear response and/or signal latency.

D. Market Power and Mitigation

1. Order No. 755

41. Order No. 755 found that the changes it required may render existing RTO and ISO market power mitigation rules insufficient to address market power concerns.⁶² Accordingly, Order No. 755 required each RTO and ISO to submit revised market power mitigation provisions, as appropriate, to conform to the Commission's required rule changes or explain how its current market power mitigation methods will continue to be sufficient to address market power concerns.⁶³

2. SPP's Proposal

42. SPP proposes several revisions to Attachment AE in its Tariff to address the potential for market manipulation. SPP states that, to prevent market participants from making artificially low capacity offers with artificially high mileage offers, it proposes requiring the corresponding regulation mileage offer be set to zero when a regulation offer (up or down) is negative.⁶⁴ SPP also proposes adding Regulation-Up/-Down Mileage Offer floors of \$0/MW to section 4.1.1 of Attachment AE to prevent the submission of negative regulation mileage offers.⁶⁵ SPP also proposes clarifying that the existing regulation offer cap of \$500/MW applies to both Regulation-Up Service Offers

⁶² Order No. 755, FERC Stats. & Regs. ¶ 31,324 at P 136.

⁶³ *Id.*

⁶⁴ SPP Tariff, Attachment AE section 4.1(7).

⁶⁵ SPP Tariff, Attachment AE sections 4.1.1(7) and 4.1.1(8).

and Regulation-Down Service Offers (which contains both capacity and mileage offers by definition).⁶⁶ Further, for resources cleared in the day-ahead market for regulation service, SPP proposes requiring that the Regulation-Up/-Down Mileage Offers for resources submitted for use in the real-time market equal the same mileage offers submitted by the resource in its cleared day-ahead offer. SPP notes that the Commission accepted similar mitigation measures in MISO's Order No. 755 compliance proceeding.⁶⁷

43. Additionally, SPP states that in its stakeholder process it developed protocols⁶⁸ for enhanced mitigation of regulation mileage offers, based on the mitigated regulation offer provisions proposed in SPP's February 2013 Integrated Marketplace compliance filing.⁶⁹ Specifically, SPP states that it has adopted definitions for Mitigated Regulation-Down Mileage Offer and Mitigated Regulation-Up Mileage Offer and has incorporated these offers into the existing Mitigated Resource Offers, which SPP notes it requires market participants to develop in accordance with section 3 of Attachment AF and appendix G of the Integrated Marketplace Protocols. SPP also states that it has incorporated Mitigated Regulation-Up Mileage Offers and Mitigated Regulation-Down Mileage Offers into the resource offer parameter requirements of section 4.2.2.1 of the Integrated Marketplace Protocols. Further, SPP states that, consistent with existing procedures for mitigated offers, its automatic offer mitigation procedures will check all market price impacts of any combined regulation capability and mileage offers submitted by resources with local market power that exceed the applicable conduct threshold. SPP states that if such an offer fails the market impact test, both the regulation capability and mileage offers will be replaced by the corresponding mitigated offers, which SPP states represent the short-run marginal costs of providing regulation service.⁷⁰

44. SPP explains that its stakeholder process is reviewing its mitigated mileage offer procedures, which are contained in the Integrated Marketplace Protocols, for possible refinement and inclusion within the SPP Tariff.⁷¹ SPP asserts that these provisions,

⁶⁶ SPP Tariff, Attachment AE sections 4.1.1(2) and 4.1.1(3).

⁶⁷ SPP Transmittal at 21 (citing MISO 755 Order, 140 FERC ¶ 61,224 at P 47).

⁶⁸ *Id.* (citing SPP Board of Directors Minutes No. 151 at 134 (April 30, 2013), available at: <http://www.spp.org/publications/BOD043013pdf>). SPP states that it is in the process of incorporating these revisions into the Integrated Marketplace Protocols posted on SPP's website.

⁶⁹ *Id.* (citing February 2013 Compliance Filing Transmittal Letter at 38-40).

⁷⁰ *Id.* at 22.

⁷¹ SPP states that it plans to incorporate any changes after the October 29, 2013 SPP Board of Directors meeting. *Id.*

combined with existing market power monitoring and mitigation measures and provisions proposed in the instant proceeding, will protect against market power abuse following implementation of the two-part regulation compensation methodology in 2015.⁷²

3. Deficiency Response

45. In the Deficiency Letter, Commission staff requested an update on SPP's review and refinement of mitigated mileage offer procedures. SPP states that it has completed the stakeholder process and that the SPP Board of Directors reviewed and approved the proposal on October 29, 2013. SPP indicates that it plans to file Tariff language in advance of the March 1, 2015 implementation date of Order No. 755 reforms.⁷³

4. Commission Determination

46. We find that SPP's proposed market power mitigation provisions, contained in sections 4.1 and 4.1.1 of Attachment AE, satisfy the requirements of Order No. 755. These provisions, in combination with the Market Monitor's existing authority to review and analyze regulation reserve offers, will protect against market manipulation in the Integrated Marketplace. With regard to the refined mitigated mileage offer procedures approved by SPP's Board of Directors for proposed inclusion in the SPP Tariff, SPP should submit these procedures at least 60 days before the March 1, 2015 implementation date of SPP's Order No. 755 reforms.

E. Energy Storage Resources

1. Comments

47. ESA supports SPP's compliance filing, asserting that it complies with the requirements of Order No. 755. However, ESA contends that SPP's market rules contain barriers to entry that prevent advanced energy storage resources from participating in the Integrated Marketplace.⁷⁴

48. ESA asserts that in other Order No. 755 compliance proceedings, RTOs and ISOs made changes to their market rules to better accommodate storage providers. For example, ESA notes that MISO modified its market rules to create a storage resource category to allow resources to both inject and withdraw energy from the system, enable storage resources to manage their stored energy level (state-of-charge) through the

⁷² *Id.*

⁷³ Deficiency Response at 7.

⁷⁴ ESA Comments at 1.

five-minute energy market, and allow storage resources to net their injections and withdrawals at the wholesale price of energy. ESA asserts that SPP should propose similar changes for its market rules.⁷⁵ ESA requests that the Commission encourage SPP to work with storage providers to remove remaining barriers and to better integrate storage technologies into the Integrated Marketplace.

2. Answer

49. SPP asserts that the issues raised by ESA are beyond the scope of SPP's Order No. 755 compliance proceeding. SPP contends that additional changes to Integrated Marketplace design elements could disrupt final system testing and delay market launch. Further, SPP notes that when the Commission issued Order No. 755, other RTOs and ISOs already were operating Day-2 markets. SPP contends that the Commission should not subject it to obligations that are beyond those required by Order No. 755. SPP also asserts that any modifications to market rules should be vetted through the SPP stakeholder process.⁷⁶

3. Commission Determination

50. We agree with SPP that the issues raised by ESA regarding energy storage resources are beyond the narrow scope of this Order No. 755 compliance proceeding. However, we encourage SPP and its stakeholders to consider ways to integrate non-generator resource participation in the Integrated Marketplace more effectively and to reduce any barriers that otherwise would prevent non-generator resources from participating to the full extent of their capability in SPP's operating reserve market.⁷⁷

F. Regulation Dispatch Process

1. Comments

51. ESA notes that Order No. 755 incents resources to offer as much ramping capability into the market as possible. ESA asserts that although SPP will have the capability to prioritize regulation dispatch by ramp rates, SPP is not planning to do so. ESA points out that other RTOs and ISOs have prioritized their regulation dispatch

⁷⁵ *Id.* at 5-6.

⁷⁶ SPP Answer at 3-4.

⁷⁷ Some initiatives implemented by other RTOs and ISOs include active charge state management of resources, that accounts for their availability, and the use of separate Automatic Generation Control signals, with appropriate coordination. *See, e.g., ISO New England, Inc.*, 147 FERC ¶ 61,135, at P 27 (2014).

processes to utilize faster-ramping resources first. ESA argues that unless SPP prioritizes the ramping capability of its fleet of regulation resources, it will not realize the full benefits of less regulation procurement and faster, more accurate system control, as intended by Order No. 755.⁷⁸

2. Deficiency Response

52. In the Deficiency Letter, Commission staff requested that SPP provide an overview and example of its regulation dispatch process. In its Deficiency Response, SPP asserts that, prior to each operating hour, it selects a pool of resources capable of meeting regulation service requirements for the upcoming operating hour, based upon the most current real-time resource offers for regulation service and forecasted conditions. SPP states that, once these resources have been selected, it randomly assigns these resources into six priority groups (six groups for regulation-up service and six groups for regulation-down service). SPP states that, once the regulating resources are assigned to specific priority groups, it deploys resources within each priority group pro-rata based on cleared regulation service MWs, beginning with priority group 1 and sequentially ending with priority group 6. SPP confirms that it does not consider ramp rates in the deployment decision.⁷⁹

3. Commission Determination

53. While we agree with ESA that prioritizing faster-ramping resources in regulation dispatch processes may result in less regulation procurement and better system control, Order No. 755 does not require RTOs and ISOs to prioritize resources with faster ramp rates in their deployment decisions. Thus, we decline to require SPP to develop such a proposal here. However, we encourage SPP and its stakeholders to continue considering ways to improve the regulation dispatch process in the Integrated Marketplace and to develop modifications, as needed, within the stakeholder process.

The Commission orders:

(A) SPP's proposed Tariff revisions are hereby conditionally accepted, subject to conditions, effective March 1, 2015, as discussed in the body of this order.

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

⁷⁸ ESA Comments at 6-7.

⁷⁹ Deficiency Response at 6. SPP also provides an example of its regulation dispatch process in its Deficiency Response. *See id.*, Attachment I.

(C) SPP is hereby directed to make an informational report within 14 months of the effective date of the proposed Tariff revisions, as discussed in the body of this order.

By the Commission.

(S E A L)

Kimberly D. Bose,
Secretary.

Appendix

Docket Nos. ER13-1748-000 and ER13-1748-001 eTariff Citations

- SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, Table of Contents (1.0.0).
- SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, § 1.1 A (Definitions—A) (1.0.0).
- SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, § 1.1 E (Definitions—E) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 1.1 I (Definitions—I) (2.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 1.1 M (Definitions—M) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 1.1 O (Definitions—O) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 1.1 R (Definitions—R) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 1.1 U (Definitions—U) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 2.11.1 (Day-Ahead Market) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 3.5 (Integrated Marketplace Pricing) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 4.1 (Offer Submittal) (2.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 4.1.1 (Offer Caps and Floors) (2.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 5.1.2 (Day-Ahead Market Execution) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 5.1.3 (Day-Ahead Market Results) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 5.2.2 (Day-Ahead Reliability Unit Commitment Execution) (2.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 6.1.2 (Intra-Day Reliability Unit Commitment Execution) (2.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 6.2.1 (Real-Time Balancing Market Inputs) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 6.2.2 (Real-Time Balancing Market Execution) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 6.2.3 (Real-Time Balancing Market Results) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 6.3 (Energy and Operating Reserve Deployment) (1.0.0).

- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 6.3.1 (Regulation Deployment) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 6.4.2 (Regulation Deployment Failure Charges) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.3.4 (Market Clearing Price Calculations) (2.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.5.2 (Day-Ahead Regulation Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.5.5 (Day-Ahead Regulation-Up Service Distribution Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.5.6 (Day-Ahead Regulation-Down Service Distribution Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.5.9 (Day-Ahead Make Whole Payment Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.6.2 (Real-Time Regulation Service Amount) (1.1.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.6.5 (Reliability Unit Commitment Make Whole Payment Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.6.8 (Real-Time Regulation Service Distribution Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.6.11 (Real-Time Regulation Service Non-Performance Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.6.12 (Real-Time Regulation Service Non-Performance Distribution Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.6.15 (Real-Time Regulation Service Deployment Adjustment Amount) (1.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.6.19 (Real-Time Unused Regulation-Up Mileage Make Whole Payment) (0.0.0).
- SPP OATT, Sixth Revised Volume No. 1, Attachment AE, § 8.6.20 (Real-Time Unused Regulation-Down Mileage Make Whole Payment) (0.0.0).