

169 FERC ¶ 61,048
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

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

Southwest Power Pool, Inc.

Docket Nos. ER19-460-000
ER19-460-001
ER19-460-002
ER19-460-003
EL19-101-000

ORDER ON COMPLIANCE FILING AND
INSTITUTING SECTION 206 PROCEEDING

(Issued October 17, 2019)

1. On December 3, 2018, Southwest Power Pool, Inc. (SPP) submitted proposed revisions to its Open Access Transmission Tariff (Tariff) in compliance with the requirements of Order No. 841,¹ which removes barriers to the participation of electric storage resources in the capacity, energy, and ancillary service markets operated by Regional Transmission Organizations and Independent System Operators (RTO/ISO).
2. In this order, we accept in part, and reject in part, SPP's compliance filing, subject to a further compliance filing, effective nine months from the date of issuance of this order, as discussed below. We also institute a proceeding pursuant to section 206 of the Federal Power Act (FPA)² to direct SPP to include its resource adequacy minimum run-time requirement in its Tariff.

I. Background

3. In Order No. 841, the Commission adopted reforms to remove barriers to the participation of electric storage resources in RTO/ISO markets.³ The Commission

¹ *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 841, 162 FERC ¶ 61,127 (2018), *order on reh'g*, Order No. 841-A, 167 FERC ¶ 61,154 (2019).

² 16 U.S.C. § 824e (2018).

³ Order No. 841, 162 FERC ¶ 61,127 at P 1.

modified section 35.28 of its regulations⁴ to require each RTO/ISO to revise its tariff to establish market rules that, recognizing the physical and operational characteristics of electric storage resources, facilitate their participation in the RTO/ISO markets. The Commission found that Order No. 841 will enhance competition and, in turn, help to ensure that the RTO/ISO markets produce just and reasonable rates, pursuant to the Commission's legal authority under FPA section 206.⁵

4. Order No. 841 requires each RTO/ISO to revise its tariff to establish a participation model for electric storage resources consisting of market rules that, recognizing the physical and operational characteristics of electric storage resources, will help facilitate their participation in the RTO/ISO markets.⁶ Specifically, for each RTO/ISO, the tariff provisions for the participation model for electric storage resources must: (1) ensure that a resource using the participation model is eligible to provide all capacity, energy, and ancillary services that it is technically capable of providing in the RTO/ISO markets; (2) ensure that a resource using the participation model can be dispatched and can set the wholesale market clearing price as both a wholesale seller and wholesale buyer consistent with existing market rules that govern when a resource can set the wholesale price; (3) account for the physical and operational characteristics of electric storage resources through bidding parameters or other means; and (4) establish a minimum size requirement for participation in the RTO/ISO markets that does not exceed 100 kW. Additionally, each RTO/ISO must specify that the sale of electric energy from the RTO/ISO markets to an electric storage resource that the resource then resells back to those markets must be at the wholesale locational marginal price (LMP).⁷

II. Compliance Filing

5. On December 3, 2018, SPP submitted its Order No. 841 compliance filing. SPP proposed revisions to Part I, Part II, Attachment AE, Attachment AF, and Attachment AG of its Tariff to comply with the provisions of Order No. 841 and to create a participation model for electric storage resources, as discussed below.

6. On February 6, 2019, SPP amended its Order No. 841 compliance filing and proposed additional revisions to Attachment AE of its Tariff. On February 28, 2019, SPP

⁴ 18 C.F.R. § 35.28 (2019).

⁵ 16 U.S.C. § 824e (2018).

⁶ Order No. 841, 162 FERC ¶ 61,127 at P 3. In Order No. 841, the Commission referred to a set of tariff provisions that are created for a particular type of resource as a participation model. *Id.*

⁷ *Id.* P 4.

filed a request for deferral of the effective date of its Order No. 841 compliance filing. SPP requested an effective date of “12/31/9998” and committed to submit an additional filing with the Commission that specifies a precise effective date.

7. On April 1, 2019, Commission staff issued a letter informing SPP that additional information was necessary to process its compliance filing (Data Request). On May 1, 2019, SPP submitted a response to the Data Request (Data Request Response), which further amended its Order No. 841 compliance filing.

III. Notices of Filings and Responsive Pleadings

8. Notice of SPP’s December 3, 2018 filing was published in the *Federal Register*, 83 Fed. Reg. 63,498 (2018), with interventions and protests due on or before December 24, 2018. On December 14, 2018, the Commission extended the comment period until and including February 7, 2019.⁸

9. The Missouri Public Service Commission filed a notice of intervention. Timely motions to intervene were filed by: American Electric Power Service Corporation; Energy Storage Association; Xcel Energy Services Inc.; Advanced Energy Economy; Southwest Power Pool Market Monitoring Unit (SPP MMU); Electric Power Supply Association; Golden Spread Electric Cooperative, Inc.; Sunflower Electric Power Corporation; Westar Energy, Inc., Kansas City Power & Light Company, and KCP&L Greater Missouri Operations Company; Kansas Electric Power Cooperative, Inc.; Mid-Kansas Electric Company, Inc., NextEra Energy Resources, LLC (NextEra); LS Power Associates, L.P.; Penn Oak Services, LLC; Exelon Corporation; Lincoln Clean Energy, LLC; Western Farmers Electric Cooperative; EDF Renewables, Inc.; Kansas Power Pool; Voith Hydro Inc. (Voith Hydro); American Public Power Association; National Rural Electric Cooperative Association (NRECA); GlidePath Development LLC. On February 7, 2019, NextEra, Advanced Energy Economy, Energy Storage Association, and Tesla, Inc. (Tesla) filed comments. On February 15, 2019, the SPP MMU filed a response to Advanced Energy Economy’s comments. On February 22, 2019, NRECA filed a request for leave to answer and answer to Advanced Energy Economy’s and Tesla’s comments.

10. Notice of SPP’s February 6, 2019 filing was published in the *Federal Register*, 84 Fed. Reg. 3435 (2019), with interventions and protests due on or before February 27, 2019. On March 1, 2019, Voith Hydro filed comments.

11. Notice of SPP’s February 28, 2019 filing was published in the *Federal Register*, 84 Fed. Reg. 3435 (2019), with interventions and protests due on or before March 21,

⁸ Notice of Extension of Time, Docket Nos. ER19-460-000, ER19-462-000, ER19-465-000, ER19-467-000, ER19-468-000, ER19-469-000, and ER19-470-000 (Dec. 14, 2018).

2019. On March 11, 2019, Energy Storage Association filed comments. On March 19, 2019, SPP filed a motion for leave to answer and answer to Energy Storage Association's comments.

12. Notice of SPP's May 1, 2019 filing was published in the *Federal Register*, 84 Fed. Reg. 19,912 (2019), with interventions and protests due on or before May 22, 2019. None was filed.

IV. Discussion

A. Procedural Matters

13. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2019), the notice of intervention and timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.⁹

14. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2019), prohibits an answer to a protest and/or an answer unless otherwise ordered by the decisional authority. We accept NRECA's, the SPP MMU's, and SPP's answers because they have provided information that assisted us in our decision-making process.

B. Substantive Matters

15. As discussed below, we accept in part, and reject in part, SPP's compliance filing, subject to a further compliance filing to be submitted within 60 days of the date of issuance of this order. Further, we establish an effective date nine months from the date of issuance of this order for the Tariff changes accepted in this proceeding, as discussed below. We also institute an FPA section 206 proceeding to direct SPP to include its resource adequacy minimum run-time requirement in its Tariff.

16. As a preliminary matter, we find that SPP has complied with the following requirements of Order No. 841: (1) inclusion of a definition of electric storage resource that encompasses electric storage resources capable of receiving electric energy from the grid and storing it for later injection of electric energy back to the grid, regardless of their storage medium, and includes electric storage resources located on the interstate

⁹ Tesla filed comments but did not file a motion to intervene and, therefore, is not a party to this proceeding. 18 C.F.R. §§ 385.102(c)(3), 385.214(a)(3) (2019). Although we do not grant party status to Tesla, we address Tesla's comments in this order.

transmission system, on a distribution system, or behind the meter;¹⁰ and (2) the requirement that each RTO/ISO has tariff provisions providing a participation model for electric storage resources that establishes a minimum size requirement for participation in the RTO/ISO markets that does not exceed 100 kW.¹¹ SPP's compliance with these requirements is not contested in this proceeding. We address all remaining compliance requirements and all comments and protests below.

1. Creation of a Participation Model

a. Participation Model

17. Order No. 841 adds section 35.28(g)(9)(i) to the Commission's regulations to require that each RTO/ISO have tariff provisions providing a participation model for electric storage resources consisting of market rules that, recognizing the physical and operational characteristics of electric storage resources, facilitate their participation in the RTO/ISO markets.¹² Order No. 841 explains that establishing a participation model for electric storage resources does not preclude an RTO/ISO from structuring its markets based on the technical requirements that a resource must meet to provide needed services; it simply requires that each RTO/ISO establish a participation model that ensures eligibility to participate in the RTO/ISO markets in a way that recognizes the physical and operational characteristics of electric storage resources.¹³ Order No. 841 requires that resources using the participation model for electric storage resources be compensated for the wholesale services they provide in the same manner as other resources that provide these services.

18. Separate participation models are not necessary for different types of electric storage resources (e.g., slower, faster, or aggregated) and, to the extent an RTO/ISO seeks to include in its tariff additional market rules that accommodate electric storage resources with specific physical and operational characteristics, the RTO/ISO may

¹⁰ Order No. 841, 162 FERC ¶ 61,127 at PP 29-35; 18 C.F.R. § 35.28(b)(9) (2019). See SPP Compliance Filing, Transmittal at 5-6; SPP, OATT, Sixth Revised Volume No. 1, Part I, section 1 (Definitions E).

¹¹ Order No. 841, 162 FERC ¶ 61,127 at PP 270, 273, 276; Order No. 841-A, 167 FERC ¶ 61,154 at PP 102-06. See SPP Compliance Filing, Transmittal at 38 (citing SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1, Definitions – B (Bid) and Definitions – O (Offer)).

¹² Order No. 841, 162 FERC ¶ 61,127 at P 51.

¹³ *Id.* P 52.

propose such revisions to its tariff through a separate FPA section 205 filing.¹⁴ However, Order No. 841 states that, where an RTO/ISO already has a separate participation model that electric storage resources may use (such as participation models for pumped-hydro resources or demand response), the RTO/ISO is not required to consolidate that participation model with the participation model for electric storage resources required by Order No. 841.¹⁵ To the extent that an RTO/ISO modifies existing participation models to comply with Order No. 841, it must ensure that those resulting participation models are available for all types of electric storage resources and comply with all of the Order No. 841 requirements.

19. Lastly, Order No. 841 explains that, while the participation model for electric storage resources should be designed to facilitate the participation of all types of electric storage technologies, the Commission is not requiring all electric storage resources to use that participation model.¹⁶ Under section 35.28(g)(9) of the Commission's regulations, section 35.28(g)(9)(i) applies to resources using the participation model for electric storage resources and section 35.28(g)(9)(ii) applies to all electric storage resources that fall under the definition of electric storage resources. Therefore, electric storage resources that elect not to use the participation model for electric storage resources are still able to pay the wholesale LMP for the electric energy they purchase from the RTO/ISO markets and then resell back to those markets. This issue is discussed further in the Energy Used to Charge Electric Storage Resources section below.

i. SPP Filing

20. To comply with the Commission's directive to create a participation model for electric storage resources, SPP proposes to add new language and modify existing language in Attachment AE of its Tariff to provide that Electric Storage Resources¹⁷ may

¹⁴ *Id.* P 54 (citing 16 U.S.C. § 824d). In Order No. 841-A, the Commission found that a single participation model can be designed to be flexible enough to accommodate any type of electric storage resource. Order No. 841-A, 167 FERC ¶ 61,154 at P 65.

¹⁵ Order No. 841, 162 FERC ¶ 61,127 at P 55.

¹⁶ *Id.* P 56.

¹⁷ SPP proposes to define an Electric Storage Resource as “[a] resource capable of receiving electric energy and storing it for later injection of electric energy to the grid. A resource that is either (1) physically incapable of injecting electric energy to the Transmission System due to its design or configuration or (2) contractually barred from

either (1) register and participate in the Integrated Marketplace as any existing resource type under the SPP Tariff or (2) register and participate in the Integrated Marketplace under the new proposed Market Storage Resource¹⁸ registration type, which is a participation model exclusive to Electric Storage Resources.¹⁹ Specifically, under SPP's proposed revisions to section 2.17 of Attachment AE, a Market Storage Resource may provide energy, regulation-up, regulation-down, spinning reserve, and supplemental reserve services upon meeting the technical and applicable requirements for these services.²⁰ Market Storage Resources must also provide certain offer parameters, prescribed in section 4.1 of Attachment AE.²¹ SPP's proposed Tariff language specifies that Market Storage Resource offer curves may include negative megawatt (MW) values to account for the entire dispatchable range of the Market Storage Resource.²² The proposed Tariff language also specifies that, as with other resources, the metering requirements for Market Storage Resources include real-time and settlement quality metering and that, for Market Storage Resources that are not directly connected to the transmission system, metering may include facilities used by the local distribution company.²³

21. SPP also proposes modifications to its Tariff which it states will include Electric Storage Resources in existing aggregation rules, delineate the aggregation of load reduction resources from other resources in order to distinguish between demand response and Electric Storage Resources and, as part of the participation model, ensure

injecting electric energy to the Transmission System is excluded from this definition.” SPP, OATT, Sixth Revised Volume No. 1, Part I, section 1 (Definitions E).

¹⁸ SPP proposes to define a Market Storage Resource as “[a]n [Electric Storage Resource] that registers consistent with the requirements under Section 2.17 of this Attachment AE.” SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

¹⁹ SPP Compliance Filing, Transmittal at 7; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.2.

²⁰ SPP, OATT, Sixth Revised Volume No. 1 Attachment AE, section 2.17.

²¹ *Id.*, section 4.1.

²² *Id.*, section 2.17.

²³ *Id.*

that the proposed language is applicable to Electric Storage Resources that elect to aggregate.²⁴

22. SPP proposes modifications to existing Tariff language in order to specify how the Day-Ahead Market Security Constrained Unit Commitment (SCUC) will initially consider the commitment of Market Storage Resources not specified for reliability-only use.²⁵ SPP also states that, in the event of a capacity surplus, the SCUC may commit any Market Storage Resource that is designated for reliability use and capable of charging in order to eliminate the surplus.²⁶ SPP also proposes that, in the event of a capacity shortage to meet fixed demand bids, fixed firm export interchange transactions, and resources' charging MW in any hour, SPP will reduce, on a pro-rata basis, the fixed demand bids, fixed firm export interchange transactions, and the resources' charging MW, and will implement scarcity pricing.²⁷ In the event that generation exceeds cleared demand, SPP proposes to use a Market Storage Resource's emergency ranges consistently with those of other resources.²⁸

23. SPP also proposes several Tariff modifications related to the treatment of Electric Storage Resources in the reliability unit commitment (RUC) process. SPP proposes to add Tariff language to incorporate the physical and operational characteristics of Market Storage Resources in the Day-Ahead RUC execution, and to account for the commitment and de-commitment of charging resources in the SCUC algorithm.²⁹ SPP states that, under its proposed revisions, the SCUC algorithm will respond to emergency conditions by expanding the operating limits of Market Storage Resources participating in the

²⁴ SPP Compliance Filing, Transmittal at 8-9; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 2.8, 2.8.1, 2.8.2, 2.8.3.

²⁵ SPP Amendment at 4; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 5.1.2(1)(a).

²⁶ SPP Amendment at 4; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 5.1.2(1)(a)(ii).

²⁷ SPP Compliance Filing, Transmittal at 9; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 5.1.2.1.

²⁸ SPP Amendment at 5; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 5.1.2.2.

²⁹ SPP Compliance Filing, Transmittal at 10; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 5.2.2, 5.2.2(2)(a), 5.2.2(2)(b).

market into their emergency ranges when necessary.³⁰ SPP states that its revisions also establish the relative priority order of commitment and de-commitment of Market Storage Resources during an emergency condition in the Day-Ahead Market SCUC.³¹ Additionally, SPP proposes to add language to expand the conditions in which the transmission provider will notify affected market participants of a potential need to utilize the emergency capacity of any resource to include conditions applicable to Market Storage Resources.³² SPP proposes similar revisions to the Intra-Day RUC provisions.³³

24. In addition, SPP proposes to add language on pre-operating hour³⁴ and intra-operating hour inputs to reflect the physical and operational characteristics of Electric Storage Resources and to add Real-Time State of Charge telemetry for Market Storage Resources.³⁵

25. SPP proposes to add language providing that during emergency conditions involving excess generation in the Real-Time Balancing Market (RTBM), any Market Storage Resource that is available for charging may be committed and may set LMP.³⁶ SPP also proposes Tariff modifications to incorporate Market Storage Resource

³⁰ SPP Compliance Filing, Transmittal at 10.

³¹ *Id.*; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 5.2.2, 5.2.2(2)(a), 5.2.2(2)(b).

³² SPP Compliance Filing, Transmittal at 10; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 5.2.3.

³³ SPP Compliance Filing, Transmittal at 10; SPP Amendment at 5; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 6.1.2, 6.13.

³⁴ SPP Amendment at 50; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 6.2.1.1.

³⁵ SPP Compliance Filing, Transmittal at 10; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 6.2.1.2.

³⁶ SPP Amendment at 6; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 6.2.2.2.

parameters in the calculation of the Contingency Reserve Scarcity Factor³⁷ and the Regulation Base Demand Price.³⁸

26. Finally, SPP proposes several Tariff modifications related to market power mitigation. SPP proposes Tariff revisions that it states will allow mitigated energy offer curves to account for the physical and operational characteristics of Electric Storage Resources by including additional production efficiency ratios beyond a facility's heat rate.³⁹ SPP also proposes to add new Tariff language to specify that mitigated energy offer curves for Market Storage Resources will have at least two breakpoints (i.e., one for charging and another for discharging).⁴⁰ Under SPP's proposal, mitigated energy offer curves for Electric Storage Resources may include charging cost and opportunity cost, defined as the average profit in the next hour forgone by charging or discharging in the current hour, both adjusted for round-trip efficiency (the amount of energy lost from charge to discharge). SPP proposes to estimate the expected LMP for the next hour using the unweighted average LMP for the most recent 45 days for that hour. SPP also proposes modifications to specify that Electric Storage Resources are allowed to make intra-day changes to their mitigated energy offer curves,⁴¹ mitigated start-up, and mitigated no-load offers.⁴²

ii. Protests/Comments

27. Energy Storage Association affirms that SPP's proposed participation model meets the core requirements of Order No. 841.⁴³ The SPP MMU supports SPP's

³⁷ SPP Amendment at 6; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 8.3.4.3.

³⁸ SPP Amendment at 6; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 8.3.4.4.

³⁹ SPP Compliance Filing, Transmittal at 11; SPP, OATT, Sixth Revised Volume No. 1, Attachment AF, section 3.2(D).

⁴⁰ SPP, OATT, Sixth Revised Volume No. 1, Attachment AF, section 3.2(I).

⁴¹ SPP Compliance Filing, Transmittal at 11; SPP, OATT, Sixth Revised Volume No. 1, Attachment AF, section 3.2(J).

⁴² SPP Compliance Filing, Transmittal at 11; SPP, OATT, Sixth Revised Volume No. 1, Attachment AF, section 3.3(G).

⁴³ Energy Storage Association Comments at 4.

proposal, which it states modifies SPP's market design to comply with Order No. 841.⁴⁴ The SPP MMU believes SPP's proposal removes barriers to participation for Electric Storage Resources within the context of compliance with Order No. 841 and recommends that the Commission approve SPP's proposal.

28. The SPP MMU also supports SPP's proposed Tariff revisions pertaining to the development of mitigated offers for Electric Storage Resources.⁴⁵ The SPP MMU states that, like other resources, an Electric Storage Resource has both a fuel cost and an opportunity cost, and the inclusion of both elements in an Electric Storage Resource's mitigated offer is appropriate to fully represent its short-run marginal cost.⁴⁶ The SPP MMU further states that SPP's proposal to base an Electric Storage Resource's mitigated offer on the expected price of the next interval is reasonable,⁴⁷ and provides several illustrative scenarios in support.⁴⁸ In addition, the SPP MMU supports SPP's proposal to calculate this expected price as the average of the locational energy prices for the next interval over the 45 most recent days.⁴⁹ Finally, the SPP MMU supports the inclusion of round-trip efficiency in an Electric Storage Resource's mitigated offer in order to represent the marginal cost of energy losses associated with charging and discharging.⁵⁰

29. Although the SPP MMU supports SPP's proposal, it cautions that additional Tariff revisions may be necessary in order to prevent a Market Storage Resource with charging capability from exercising market power in the downward direction.⁵¹ The SPP MMU explains that, absent such revisions, a Market Storage Resource may have the unique

⁴⁴ SPP MMU Comments at 2.

⁴⁵ *Id.* at 4.

⁴⁶ *Id.* at 4-5.

⁴⁷ *Id.* at 8.

⁴⁸ *Id.* at 5-8.

⁴⁹ *Id.* at 9.

⁵⁰ *Id.* at 13.

⁵¹ *Id.* at 14.

ability to profit by withholding its charging capability in order to artificially lower price, i.e., by charging at a negative price and subsequently discharging at a positive price.⁵²

30. Advanced Energy Economy asserts that SPP's proposed method for calculating an Electric Storage Resource's mitigated offer based on forgone profit in the next hour may understate the Electric Storage Resource's opportunity cost when prices several intervals ahead are expected to exceed the price in the next interval.⁵³ Advanced Energy Economy additionally contends that an Electric Storage Resource's opportunity cost should also include opportunity costs associated with demand charge management of any co-located load because the co-located load could face higher demand charges if the Electric Storage Resource's State of Charge falls below the level required to manage the co-located load's demand charge.⁵⁴

31. Energy Storage Association states that electric storage resources are increasingly likely to be co-located with generation at a shared point of interconnection, and that SPP's compliance filing does not address the myriad ways in which Order No. 841 compliance affects the market participation of resources that are co-located with electric storage resources.⁵⁵ Energy Storage Association argues that this is a shared issue across RTOs'/ISOs' compliance filings and, therefore, Energy Storage Association recommends that the Commission open a new docket to address this matter, either by issuing a notice of inquiry to RTOs/ISOs on how they intend to treat the market participation of co-located resources or by convening a technical conference on the same topic.⁵⁶

iii. Answers

32. In response to Advanced Energy Economy's comments regarding SPP's proposed mitigation provisions, the SPP MMU contends that Advanced Energy Economy has overlooked the opportunities that an Electric Storage Resource may have to recharge before the expected high price interval.⁵⁷ The SPP MMU provides illustrative examples to demonstrate that an Electric Storage Resource's profit is maximized when it is

⁵² *Id.* at 15.

⁵³ Advanced Energy Economy Comments at 8.

⁵⁴ *Id.* at 9.

⁵⁵ Energy Storage Association Comments at 3.

⁵⁶ *Id.* at 4.

⁵⁷ SPP MMU Reply Comments at 2.

indifferent to charging or discharging at its next opportunity.⁵⁸ In addition, the SPP MMU contends that any verifiable costs that fit within SPP's proposed definition of an Electric Storage Resource's opportunity cost should be submitted as part of an Electric Storage Resource's mitigated offer. According to the SPP MMU, existing SPP Integrated Marketplace Protocols also allow for any relevant cost that does not fit within the proposed structure to be submitted to the SPP MMU for verification and approval.⁵⁹

iv. Data Request Response

33. In response to Commission staff's request for additional information, SPP clarifies that proposed section 2.8.3 of Attachment AE, entitled "Aggregators of Other Resources," is intended to apply to all generation resources that a market participant wants to aggregate into a single resource in the Integrated Marketplace, and not only to Electric Storage Resources.⁶⁰ SPP notes that Order No. 841 allows storage connected to distribution lines to be registered as resources, as long as they meet the minimum size requirement of 0.1 MW, and states that the minimum size may require aggregation to achieve.⁶¹ SPP states that, with the addition of the language in proposed section 2.8.3 of Attachment AE, aggregators may also aggregate and register any behind-the-meter generation as any resource type in the Integrated Marketplace.

v. Commission Determination

34. We find that SPP's proposed Tariff revisions partially comply with the requirement of Order No. 841 to create a participation model for electric storage resources that ensures the eligibility of such resources to participate in SPP's markets in a way that recognizes their physical and operational characteristics, as discussed below. In accordance with Order No. 841, SPP has proposed a participation model that all resources that meet the definition of Electric Storage Resources are eligible to use and that recognizes the physical and operational characteristics of Electric Storage Resources and facilitates their participation in the SPP market.

35. We find that SPP's proposed Tariff revisions pertaining to market power mitigation are consistent with the requirements of Order No. 841. Advanced Energy

⁵⁸ *Id.* at 3-7.

⁵⁹ *Id.* at 7.

⁶⁰ SPP Data Request Response at 3.

⁶¹ *Id.* (citing Order No. 841, 162 FERC ¶ 61,127 at n.16 ("(4) opportunities for distribution-level and aggregated electric storage resources to participate in the RTO/ISO markets")).

Economy has not shown why SPP's proposed mechanism for estimating opportunity costs as the expected forgone profit in the next hour in the calculation of an Electric Storage Resource's mitigated offer is inaccurate or otherwise unreasonable. We agree with the SPP MMU that Advanced Energy Economy's suggestion to base opportunity cost on the expected forgone profit for an unspecified interval several hours into the future, rather than on the next hour as proposed by SPP, does not account for the opportunity to recharge before the next price peak several hours ahead.

36. In response to Advanced Energy Economy, we find that electric storage resources participating in RTO/ISO markets under the participation model should be able to reflect relevant opportunity costs in their energy market offers and bids, similar to other market participants, when appropriate. For example, for electric storage resources to effectively self-manage their State of Charge, RTOs'/ISOs' electric storage resource participation models may need to allow electric storage resources to account for opportunity costs associated with services provided to another entity outside the RTO/ISO markets.⁶² We note that determining whether a resource should be allowed to use opportunity costs and how such opportunity costs may be calculated can be complex and case-specific. While SPP's proposed Tariff provisions outline the calculation of mitigated energy offers for Electric Storage Resources as including an opportunity cost that is based on average profit forgone by charging or discharging in the current hour based on the expected LMP in the next hour, we note that SPP's existing Integrated Marketplace Protocols contain a process by which market participants may submit a request to the SPP MMU for consideration of other costs.⁶³ As Electric Storage Resources can use this process to request consideration of other costs, which could include relevant opportunity costs, we find that SPP's proposal to modify its mitigation rules to facilitate the participation of electric storage resources is appropriate because it allows mitigated energy offer curves to account for the physical and operational characteristics of Electric Storage Resources.

37. The SPP MMU cautions that additional Tariff modifications may be necessary to prevent manipulation or to address market power in the downward direction. We find that the SPP MMU's concern is beyond the scope of this proceeding because Order No. 841 does not require RTOs/ISOs to make changes to market power mitigation rules and no such proposals are before us at this time. Thus, the lack of such Tariff changes

⁶² See Order No. 841, 162 FERC ¶ 61,127 at PP 251, 256-57. Order No. 841 recognizes that some RTOs/ISOs rely on opportunity costs in incremental energy offer reference levels, allowing for a resource to reflect its energy-limited nature through high offers in the energy market that make it unlikely to be dispatched. Order No. 841 requires each RTO/ISO to demonstrate how such rules are applicable to resources using the participation model. *Id.* P 101.

⁶³ SPP Integrated Marketplace Protocols, Appendix G, G.1.5.

does not make SPP's compliance filing deficient. However, to the extent the SPP MMU has concerns, it can work with SPP to consider Tariff changes in the stakeholder process for a future FPA section 205 filing.

38. We find that Energy Storage Association's comments regarding electric storage resources co-located with generation are beyond the scope of this proceeding. We note that, in Order No. 841, the Commission did not address co-location of electric storage resources with other resources.

39. Finally, we find that SPP's proposed revisions to sections 2.8, 2.8.1, 2.8.2, and 2.8.3 of Attachment AE related to the aggregation of all resources are outside the scope of this proceeding because Order No. 841 does not address the aggregation of Electric Storage Resources or other resources.⁶⁴ Accordingly, we reject the proposed Tariff revisions to sections 2.8, 2.8.1, 2.8.2, and 2.8.3 of Attachment AE.

b. Qualification Criteria for the Participation Model

40. To ensure that the electric storage resource participation model will accommodate both existing and future technologies, and to implement the new requirement in section 35.28(g)(9)(i) of the Commission's regulations, Order No. 841 requires each RTO/ISO to define in its Tariff the criteria that a resource must meet to use the participation model (i.e., qualification criteria).⁶⁵ These criteria must: (1) be based on the physical and operational characteristics of electric storage resources, such as their ability to both receive and inject electric energy; (2) not limit participation under the electric storage resource participation model to any particular type of electric storage resource or other technology; and (3) ensure that the RTO/ISO is able to dispatch a resource in a way that recognizes its physical and operational characteristics and optimizes its benefits to the RTO/ISO.

41. Order No. 841 provides each RTO/ISO with flexibility to propose qualification criteria that best suit its participation model for electric storage resources.⁶⁶ However, the qualification criteria should not create barriers to the participation of any electric storage

⁶⁴ See Order No. 841-A, 167 FERC ¶ 61,154 at PP 30, 143, 155.

⁶⁵ Order No. 841, 162 FERC ¶ 61,127 at P 61.

⁶⁶ *Id.* P 63.

resource in the RTO/ISO markets and should be inclusive of, at a minimum, those resources set forth under the definition of electric storage resources in Order No. 841.⁶⁷

i. SPP Filing

42. SPP proposes to require Electric Storage Resources of at least 0.1 MW that are capable of Transmission System Injection or directly connected to the SPP Transmission System to register as described in the proposed section 2.17 of Attachment AE, which provides that Electric Storage Resources may register as any valid resource type under the Tariff and are subject to the same service provision rules as any other resource within that type, or may register as a Market Storage Resource.⁶⁸ SPP explains that it proposes to add the defined term Transmission System Injection to allow its Tariff to differentiate between generating activity that ultimately is injected to the SPP Transmission System, and therefore required to register in the Integrated Marketplace, and generating activity that does not exceed the amount of load it is serving behind the bus and does not inject on the SPP Transmission System, and therefore not required to register in the Integrated Marketplace.⁶⁹

43. Under SPP's proposal, Electric Storage Resources that are exclusively used as transmission facilities with recovery through transmission rates are not required to register.⁷⁰ In addition, SPP proposes that, if an Electric Storage Resource is not registered as a Market Storage Resource, its energy withdrawals from the transmission

⁶⁷ *Id.* P 64.

⁶⁸ SPP Compliance Filing, Transmittal at 12; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 2.2(19), 2.17.

⁶⁹ SPP Compliance Filing, Transmittal at 7; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, Attachment AE, section 1.1 (Definitions T). SPP proposes to define Transmission System Injection as: "Injecting energy to the Transmission System, or providing other services under the Tariff that support the delivery of energy to the Transmission System, at a Discrete Delivery Point including a generator that is collocated with the load and exceeds the load that it is contractually permitted to supply at such Discrete Delivery Point. This does not include generators that are acting as transmission facilities."

⁷⁰ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.2(19)(a).

system must be included in a load settlement location and be subject to the same rules as other load.⁷¹

44. SPP's proposed Tariff revisions further clarify that market participants registering Electric Storage Resources that are not required to register under the SPP Tariff must include in their application and registration a certification that the resource's participation in the Energy and Operating Reserve Markets is not precluded under the laws or regulations of the relevant electric retail regulatory authority.⁷² The Electric Storage Resource must also meet all application, registration, and technical requirements applicable to the Energy and Operating Reserve Markets.⁷³

ii. Commission Determination

45. We find that the qualification criteria provided in the SPP Tariff partially comply with the requirements of Order No. 841. SPP has complied in part with the directives of Order No. 841 regarding qualification criteria because SPP's qualification criteria is based on the physical and operational characteristics of electric storage resources and ensures that SPP is able to dispatch a resource in a way that recognizes its physical and operational characteristics and optimizes its benefits to SPP, does not create barriers to the participation of any electric storage resource in the RTO/ISO markets, and is inclusive of those resources set forth under the definition of Electric Storage Resources.

46. However, we understand SPP's proposed section 2.2(19)(b) of Attachment AE related to Application and Asset Registration⁷⁴ to apply to Electric Storage Resources under 0.1 MW that choose to aggregate pursuant to proposed revisions to section 2.8 of Attachment AE. As we find above that SPP's proposed revisions to sections 2.8, 2.8.1, 2.8.2, and 2.8.3 of Attachment AE are outside the scope of this compliance filing because Order No. 841 does not address the aggregation of Electric Storage Resources or other resources, we similarly reject SPP's proposed section 2.2(19)(b), to the extent that it relates to aggregations, as outside the scope of this proceeding. Accordingly, we direct SPP to file, within 60 days of the date of issuance of this order, a further compliance

⁷¹ *Id.*, section 2.17.

⁷² *Id.*, section 2.2(19)(b).

⁷³ *Id.*

⁷⁴ Section 2.2(19)(b) of Attachment AE states that "a Market Participant registering an [Electric Storage Resource] that is not required to register under this Tariff must include in its application and registration a certification that the Resource's participation in the Energy and Operating Reserve Markets is not precluded under the laws or regulations of the relevant electric retail regulatory authority"

filing with revisions to remove proposed section 2.2(19)(b) or provide support for section 2.2(19)(b) if it does not relate to aggregations.

c. Relationship between Electric Storage Resource Participation Model and Existing Market Rules

47. To provide certainty to resources using the electric storage resource participation model about the market rules that will govern their participation in each RTO/ISO market, and to implement the new requirement in section 35.28(g)(9)(i) of the Commission's regulations, Order No. 841 requires each RTO/ISO to propose any necessary additions or modifications to its existing Tariff provisions to specify: (1) whether resources that qualify to use the participation model will participate in the RTO/ISO markets through existing or new market participation agreements; and (2) whether particular existing market rules apply to resources participating under the electric storage resource participation model.⁷⁵ Order No. 841 allows the use of one or more existing market participation agreements so long as the agreement(s) complies(y) with the terms of Order No. 841.⁷⁶

i. SPP Filing

48. SPP proposes Tariff revisions providing that Electric Storage Resources may either (1) register as any valid resource type, subject to the same service provision rules as any other resource within that type, or (2) register as Market Storage Resources to access the participation model proposed in this filing.⁷⁷

ii. Commission Determination

49. We find that SPP's proposed Tariff revisions comply with the requirements of Order No. 841 because SPP has made the necessary modifications to its Tariff to specify: (1) whether resources that qualify to use the participation model will participate in the RTO/ISO markets through existing or new market participation agreements and (2) whether particular existing market rules apply to resources participating under the electric storage resource participation model. SPP's proposed Tariff language details registration options for Electric Storage Resources which, in turn, require certain market participant agreements under existing Tariff language.

⁷⁵ Order No. 841, 162 FERC ¶ 61,127 at P 68.

⁷⁶ *Id.* P 69.

⁷⁷ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17.

2. **Eligibility of Electric Storage Resources to Participate in the RTO/ISO Markets**

a. **Eligibility to Provide all Capacity, Energy, and Ancillary Services**

50. Order No. 841 adds section 35.28(g)(9)(i)(A) to the Commission's regulations to require that each RTO/ISO have tariff provisions allowing a resource using the participation model for electric storage resources to be eligible to provide all capacity, energy, and ancillary services that it is technically capable of providing, including services that the RTOs/ISOs do not procure through an organized market, such as blackstart, primary frequency response, and reactive power services.⁷⁸ Where an RTO/ISO has developed a standard set of technical requirements that all resources must meet to provide a given service, such requirements would also apply to a resource using the electric storage resource participation model if it wants to provide that service.⁷⁹

51. A resource is "technically capable" of providing a service if the resource can meet all of the technical, operational, and/or performance requirements that are necessary to reliably provide that service, such as minimum run-times to provide energy, or the ability to respond to automatic generation control to provide frequency regulation.⁸⁰ The Commission is not considering in this proceeding the requirements that determine whether resources are technically capable of providing individual wholesale services. To the extent that an RTO/ISO seeks to revise its tariff provisions setting forth the technical requirements for providing any specific wholesale service, the RTO/ISO may propose such revisions to its tariff through a separate FPA section 205 filing.⁸¹ Each individual electric storage resource must still meet the technical requirements of providing any specific service, which would be determined by the RTO/ISO on a case-by-case basis.⁸² In Order No. 841, the Commission encouraged each RTO/ISO to consider whether any modifications or additions to the existing technical requirements, testing protocols, or

⁷⁸ Order No. 841, 162 FERC ¶ 61,127 at PP 76, 80.

⁷⁹ *Id.* P 77.

⁸⁰ *Id.* P 78.

⁸¹ *Id.* n.106.

⁸² *Id.* P 79.

other qualification procedures are necessary to facilitate the participation of electric storage resources in its markets.⁸³

52. Order No. 841-A clarifies that an RTO/ISO that does not have a capacity product in its markets is not required to create such a product to comply with Order No. 841. To the extent that an RTO/ISO has a resource adequacy construct, the RTO/ISO must demonstrate on compliance that the existing market rules governing its resource adequacy construct provide a means for electric storage resources to participate in that construct if electric storage resources are technically capable of doing so.⁸⁴

i. SPP's Filing

53. SPP proposes that Electric Storage Resources registering as Market Storage Resources are eligible to provide any available market service as long as the Electric Storage Resource meets the existing technical requirements for providing the service.⁸⁵ Similarly, it states that Electric Storage Resources registering as a resource type other than Market Storage Resource are also eligible to provide any market service available to that resource type as long as they meet the existing technical requirements for providing the service. SPP states that such resources will be subject to the same rules as other load when withdrawing energy from the transmission system.⁸⁶ SPP also proposes that an Electric Storage Resource that meets the technical requirements may apply to SPP to be certified as a qualified generator in order to provide reactive supply and voltage control under Schedule 2, which is the only Tariff-based service not procured through the market.⁸⁷

54. SPP states that its Tariff does not prohibit load serving entities from designating Electric Storage Resources to satisfy their obligations under SPP's resource adequacy

⁸³ *Id.* P 81.

⁸⁴ Order No. 841-A, 167 FERC ¶ 61,154 at P 68 (citing Order No. 841, 162 FERC ¶ 61,127 at PP 76, 100).

⁸⁵ SPP Compliance Filing, Transmittal at 12; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17.

⁸⁶ SPP Compliance Filing, Transmittal at 12; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 2.2(19), section 2.17.

⁸⁷ SPP Compliance Filing, Transmittal at 12.

construct, as long as the Electric Storage Resources meet the continuous run-time requirement applicable to all resources used to satisfy this obligation.⁸⁸

ii. **Protests/Comments**

55. Energy Storage Association supports SPP's capacity qualification and accreditation of Electric Storage Resources for resource adequacy purposes.⁸⁹ Energy Storage Association explains that SPP's capacity qualification and accreditation of Electric Storage Resources acts like a gating mechanism for eventual market entry and participation in SPP's energy and ancillary services markets.⁹⁰ Energy Storage Association supports SPP's 4-hour capacity duration requirement for Electric Storage Resources qualifying for resource adequacy.⁹¹ However, Energy Storage Association warns that SPP stakeholder discussions may lead to alterations of the technical requirements of Electric Storage Resources, placing the participation model at risk, causing uncertainty, and creating barriers to Electric Storage Resource participation.

56. NextEra states that, although it is encouraged that Electric Storage Resources may be used to meet SPP's resource adequacy requirement, it believes SPP's compliance filing is inconsistent with the directives of Order No. 841 because SPP has not provided Tariff revisions explaining how Electric Storage Resources would be used to meet the resource adequacy requirement.⁹² NextEra asks the Commission to direct SPP to provide further detail regarding: (1) any criteria to de-rate capacity; (2) applicable performance requirements; (3) testing of operating capabilities; and (4) operational eligibility requirements.⁹³

57. Voith Hydro urges the Commission and the RTOs/ISOs to take into account the technical capability of pumped-hydro resources in providing a number of services in the RTO/ISO markets. For example, it states that pumped-hydro resources have the ability to: (1) provide reliable, long duration generation capacity; (2) deliver energy from all sources (e.g., pumped-hydro resources can store excess energy generated by nuclear

⁸⁸ *Id.* at 16; SPP Data Request Response at 4.

⁸⁹ Energy Storage Association Comments at 2.

⁹⁰ *Id.* at 2-3.

⁹¹ *Id.* at 3.

⁹² NextEra Comments at 3-4.

⁹³ *Id.* at 3.

plants during off-peak hours and then release the energy back to the grid during peak hours); (3) provide spinning and non-spinning reserves; (4) provide black start capabilities; and (5) set the wholesale market clearing price.⁹⁴

iii. Data Request Response

58. SPP elaborates that a load serving entity may designate an Electric Storage Resource as a capacity resource to satisfy its resource adequacy requirement as long as the resource meets the 4-hour continuous run-time requirement applicable to all resource types, as stated in the SPP Planning Criteria.⁹⁵ SPP states that section 7.0 of Attachment AA of its Tariff further provides that load serving entities or generator owners must submit operational test results and capability test results in accordance with the SPP Planning Criteria, and that all technical, operational, and performance requirements for the tests are specified in section 7.1 of the Planning Criteria.

iv. Commission Determination

59. We find that SPP's proposed Tariff revisions comply with the requirement of Order No. 841 to ensure that Electric Storage Resources are eligible to provide all capacity, energy, and ancillary services that they are technically capable of providing. SPP has demonstrated that its market rules provide a means for Electric Storage Resources to provide services under the Tariff. Additionally, SPP has demonstrated how its resource adequacy rules are applicable to resources using the participation model to provide capacity.

60. We also find Energy Storage Association's concern that future SPP stakeholder developments may put the proposed participation model at risk to be unsubstantiated and premature. As to Voith Hydro's comments about the capabilities of pumped-hydro resources, we note that SPP has demonstrated that all Electric Storage Resources, including pumped-hydro resources, are eligible to provide all capacity, energy, and ancillary services that they are technically capable of providing.

61. NextEra requests that the Commission direct SPP to provide further details about the criteria for de-rating capacity and the operational and performance requirements for resources to be eligible to meet resource adequacy requirements. In Order No. 841, the Commission stated that it was not considering in this proceeding the requirements that determine whether resources are technically capable of providing individual wholesale

⁹⁴ Voith Hydro Comments at 2-7.

⁹⁵ SPP Data Request Response at 4-5.

services.⁹⁶ The Commission did not require RTOs/ISOs to make specific changes to minimum run-time or must-offer requirements associated with providing capacity.⁹⁷ Thus, we find that details regarding operational and performance requirements generally may be located in the SPP Planning Criteria. Nevertheless, we find that SPP's resource adequacy minimum run-time requirement, which currently is included only in SPP's Planning Criteria, must be included in the SPP Tariff.

62. Decisions as to whether an item should be placed in a tariff or in a business practice manual are guided by the Commission's rule of reason policy,⁹⁸ under which provisions that "significantly affect rates, terms, and conditions" of service, are readily susceptible of specification, and are not generally understood in a contractual agreement must be included in the tariff, while items better classified as implementation details may be included only in the business practice manual.⁹⁹ As SPP's 4-hour continuous run-time requirement determines whether a resource is eligible to be used to satisfy a resource adequacy requirement, this requirement significantly affects rates, terms, and conditions of service. Although SPP's resource adequacy minimum run-time requirement significantly affects rates, terms, and conditions of service, its current Tariff does not include this requirement. Therefore, we institute an FPA section 206 proceeding to direct SPP to include its rules and practices regarding minimum run-time requirements in its Tariff.

63. Accordingly, no later than 45 days after the publication of notice in the *Federal Register* of the Commission's initiation of this section 206 proceeding in Docket No.

⁹⁶ Order No. 841, 162 FERC ¶ 61,127 at P 78.

⁹⁷ *Id.* P 100.

⁹⁸ See, e.g., *Energy Storage Ass'n v. PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,296, at P 103 (2018) (*Energy Storage Ass'n v. PJM*) (citing *Midcontinent Indep. Sys. Operator, Inc.*, 158 FERC ¶ 61,003, at P 69 (2017); *PacifiCorp*, 127 FERC ¶ 61,144, at P 11 (2009); *City of Cleveland v. FERC*, 773 F.2d 1368, 1376 (D.C. Cir. 1985) (finding that utilities must file "only those practices that affect rates and service *significantly*, that are reasonably *susceptible* of specification, and that are not so generally understood in any contractual arrangement as to render recitation superfluous"); *Pub. Serv. Comm'n of N.Y. v. FERC*, 813 F.2d 448, 454 (D.C. Cir. 1987) (holding that the Commission properly excused utilities from filing policies or practices that dealt with only matters of "practical insignificance" to serving customers)).

⁹⁹ See *id.* (citing *Cal. Indep. Sys. Operator Corp.*, 122 FERC ¶ 61,271, at P 16 (2008)).

EL19-101-000, SPP must submit Tariff provisions reflecting its resource adequacy minimum run-time requirement. Because we are instituting a separate FPA section 206 proceeding regarding SPP's minimum run-time requirement, SPP's relevant filing and all responsive pleadings should be filed only in new Docket No. EL19-101-000.

64. In cases where, as here, the Commission institutes a section 206 investigation on its own motion, section 206(b) of the FPA requires that the Commission establish a refund effective date that is no earlier than the date of publication by the Commission of notice of its intention to initiate such proceeding nor later than five months after the publication date. In such cases, in order to give maximum protection to customers, and consistent with our precedent, we have historically tended to establish the section 206 refund effective date at the earliest date allowed by section 206, and we do so here as well.¹⁰⁰ That date is the date of publication of notice of initiation of the section 206 proceeding in Docket No. EL19-101-000 in the *Federal Register*.

65. Section 206(b) of the FPA also requires that, if no final decision is rendered by the conclusion of the 180-day period commencing upon initiation of the section 206 proceeding, the Commission shall state the reason why it has failed to render such a decision and state its best estimate as to when it reasonably expects to make such a decision. We expect to issue a final order in this proceeding within 6 months of receiving reply briefs.

b. Ability to De-Rate Capacity to Meet Minimum Run-Time Requirements

66. To implement section 35.28(g)(9)(i)(A) of the Commission's regulations, Order No. 841 requires that each RTO/ISO have tariff provisions providing that resources using the participation model for electric storage resources can de-rate their capacity to meet minimum run-time requirements.¹⁰¹ Electric storage resources that participate in an RTO/ISO capacity market are not exempt from meeting the performance metrics and criteria that apply to all other resources that participate in that market and are not exempt from any applicable penalties for non-performance.¹⁰²

67. Order No. 841 states that an electric storage resource de-rating its capacity to provide capacity or other services is not engaging in physical withholding if it is de-rating

¹⁰⁰ See, e.g., *Idaho Power Co.*, 145 FERC ¶ 61,122 (2013); *Canal Elec. Co.*, 46 FERC ¶ 61,153, *order on reh'g*, 47 FERC ¶ 61,275 (1989).

¹⁰¹ Order No. 841, 162 FERC ¶ 61,127 at P 94.

¹⁰² *Id.* P 95.

to meet minimum run-time requirements. However, each RTO/ISO may request that its market monitor verify whether an electric storage resource de-rated its capacity to meet a minimum run-time requirement to ensure that such resource is not engaging in physical withholding, as defined by the Commission.¹⁰³ Additionally, to the extent that market power concerns arise as a result of electric storage resources de-rating capacity to provide capacity or other services, each RTO/ISO may consider whether it is appropriate to update and/or apply existing market power mitigation processes to electric storage resources to alleviate market power concerns.¹⁰⁴ Further, electric storage resources may provide services in RTO/ISO markets without de-rating so long as they meet the requirements to provide the particular service that they seek to provide.¹⁰⁵

68. Order No. 841 provides each RTO/ISO with flexibility to either use its existing rules for must-offer quantities or to modify its existing rules as necessary to reflect the physical and operational characteristics of electric storage resources.¹⁰⁶ However, if an electric storage resource elects to de-rate its capacity, it must not de-rate its capacity below any capacity obligations that it has assumed, such as any applicable must-offer requirement. Also, the de-rated quantity should be based on the quantity of energy that an electric storage resource can discharge continuously over the minimum run-time set by the RTO/ISO.

69. Order No. 841 did not require RTOs/ISOs to make specific changes to minimum run-time or must-offer requirements associated with providing capacity.¹⁰⁷ However, each RTO/ISO must demonstrate on compliance that its market rules provide a means for electric storage resources to provide capacity, including how its capacity market rules are applicable to resources using the participation model.¹⁰⁸ Where an RTO/ISO does not have existing tariff provisions that enable electric storage resources to provide capacity, the RTO/ISO must propose such rules.¹⁰⁹

¹⁰³ *Id.* P 96.

¹⁰⁴ *Id.* P 97.

¹⁰⁵ *Id.* P 98.

¹⁰⁶ *Id.* P 99.

¹⁰⁷ *Id.* P 100.

¹⁰⁸ *Id.* PP 100, 101.

¹⁰⁹ *Id.* P 100.

i. SPP's Filing

70. SPP proposes to exempt Market Storage Resources from being deemed to be physically withholding if the market participant is reducing the magnitude of the Market Storage Resource's maximum charging or discharging capability from its true and verifiable physical or environmental limitations in order to provide that capability for the duration of its commitment period.¹¹⁰

71. Under SPP's existing Tariff, a resource is allocated a portion of the RUC make-whole payment costs in any dispatch interval where the resource's uninstructed resource deviation is outside of its operating tolerance, unless that resource has been exempted from this allocation.¹¹¹ SPP states that it will account for Market Storage Resource behavior consistent with other resource registration types while reflecting the physical and operational characteristics of Market Storage Resources.¹¹² SPP's proposed Tariff revisions expand the existing design for uninstructed resource deviations and make-whole payments to include Market Storage Resources.¹¹³ Specifically, SPP proposes to add language to its existing guidelines on calculating operating tolerance to explain the operating tolerances relevant to Market Storage Resources, which SPP proposes to calculate as the greater of the absolute value of its maximum emergency charge limit and the maximum emergency discharge limit multiplied by five percent.¹¹⁴

ii. Protests/Comments

72. The SPP MMU supports SPP's proposal to expand the scope of Tariff language on physical withholding and uneconomic production to include the charging ability of Market Storage Resources.¹¹⁵ The SPP MMU explains that these Tariff sections previously only considered physical withholding and uneconomic production of injections of energy to the grid, but not withdrawals from the grid. The SPP MMU

¹¹⁰ SPP Compliance Filing, Transmittal at 13-14; SPP, OATT, Sixth Revised Volume No. 1, Attachment AG, section 4.6.4(2)(d).

¹¹¹ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 6.4.1(2).

¹¹² SPP Compliance Filing, Transmittal at 13-14.

¹¹³ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 6.4.1(2)(f).

¹¹⁴ SPP Compliance Filing, Transmittal at 13-14; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 6.4.1(2)(f).

¹¹⁵ SPP MMU Comments at 3.

claims that the modified Tariff language on physical withholding and uneconomic production will protect the market from potential abuses in the charging direction.

73. Tesla recommends that RTOs/ISOs with centralized wholesale capacity markets: (1) calculate the effective load carrying capability of electric storage resources with various runtimes at the forecasted level of system load; (2) establish limits on the maximum amount of capacity that electric storage resources can provide, based on resource runtimes and forecasted load; and (3) limit performance penalties to the physical energy capacity in MW hours (MWh) committed to the capacity market by the electric storage resource.¹¹⁶ Tesla argues that granting this treatment would ensure just and reasonable results from capacity markets by preventing undue discrimination against electric storage resources, allowing electric storage resources to provide all of the capacity service of which they are technically capable, and accounting for electric storage resources' physical and operational characteristics, as required by Order No. 841.¹¹⁷

iii. Commission Determination

74. We find that SPP's filing complies with the requirement of Order No. 841 to revise its Tariff to allow electric storage resources to de-rate capacity to meet minimum run-time requirements because the SPP Tariff will allow a Market Storage Resource to reduce the magnitude of its maximum charging or discharging capability from its true and verifiable physical or environmental limitations in order to provide that capability for the duration of its commitment period and will not consider such resources to be physically withholding in that instance.¹¹⁸ Further, we find that SPP's proposal to extend its existing uninstructed resource deviation construct to Electric Storage Resources will ensure that Electric Storage Resources that de-rate their capacity for reasons other than providing the required capability for the duration of the minimum clearable commitment period are treated the same as all other resources under the Tariff.

75. We find that Tesla's recommendations in this proceeding regarding Electric Storage Resource capacity valuation, limits, and performance penalties are inapposite because SPP does not operate a centralized capacity market. Moreover, we find Tesla's recommendations beyond the scope of this compliance proceeding.

¹¹⁶ Tesla Comments at 8-12.

¹¹⁷ *Id.* at 8-9.

¹¹⁸ See SPP, OATT, Sixth Revised Volume No. 1, Attachment AG, section 4.6.4(2)(d).

3. Participation in the RTO/ISO Markets as Supply and Demand

a. Eligibility to Participate as a Wholesale Seller and Wholesale Buyer

76. Order No. 841 adds section 35.28(g)(9)(i)(B) to the Commission's regulations to require that each RTO/ISO have tariff provisions to ensure that a resource using the participation model for electric storage resources can be dispatched and can set the wholesale market clearing price as both a wholesale seller and wholesale buyer, consistent with rules that govern the conditions under which a resource can set the wholesale price.¹¹⁹ For a resource using the participation model for electric storage resources to be able to set prices in the RTO/ISO markets as either a wholesale seller or a wholesale buyer, it must be available to the RTO/ISO as a dispatchable resource.¹²⁰

77. Order No. 841 requires that: (1) resources using the participation model for electric storage resources be able to set the price in the capacity markets, where applicable; (2) RTOs/ISOs accept wholesale bids from resources using the participation model for electric storage resources to buy energy, consistent with the rules related to wholesale purchasers of energy in each RTO/ISO; and (3) resources using the participation model for electric storage resources be allowed to participate in the RTO/ISO markets as price takers, consistent with the existing rules for self-scheduled resources.¹²¹ To ensure that electric storage resources are treated consistently with self-scheduled load resources and traditional generation resources that participate in the RTO/ISO markets, electric storage resources must be allowed to self-schedule when they participate in the RTO/ISO markets as supply or demand, consistent with rules governing how other resources self-schedule.¹²²

¹¹⁹ Order No. 841, 162 FERC ¶ 61,127 at P 142.

¹²⁰ Order No. 841-A modifies section 35.28(g)(9)(i)(B) of the Commission's regulations to clarify that, to the extent electric storage resources are dispatchable, the RTO/ISO is required to allow them to participate as dispatchable resources and to set the clearing price in the RTO/ISO markets as part of the participation model. Order No. 841-A clarifies that not all electric storage resources that seek to use the electric storage resource participation model need to be dispatchable to use that participation model. Order No. 841-A, 167 FERC ¶ 61,154 at PP 74-77.

¹²¹ Order No. 841, 162 FERC ¶ 61,127 at P 142.

¹²² *Id.* PP 144, 148.

78. While Order No. 841 does not require RTOs/ISOs to change any participation models that they may already have that apply to pumped-hydro resources,¹²³ it does require each RTO/ISO to establish means by which all electric storage resources, including pumped-hydro resources, can participate as wholesale sellers and wholesale buyers in the RTO/ISO markets using a participation model.¹²⁴ Lastly, Order No. 841 explains that the Commission does not consider electric storage resources in charging mode to be negative demand response. Order No. 841 requires an electric storage resource to be eligible to participate in the RTO/ISO markets as a wholesale buyer and required each RTO/ISO to be able to dispatch them as such; such a mechanism would entail participation in the energy markets, and not the provision of a new service.¹²⁵

79. Order No. 841-A denies SPP's request for clarification that it need not revise its market rules to allow for dispatchable load.¹²⁶ Order No. 841-A clarifies for SPP that Order No. 841 provides flexibility for each RTO/ISO to develop a participation model for electric storage resources consistent with its existing market design constructs; however, Order No. 841 does not provide each RTO/ISO with flexibility to propose its own timeline for developing and implementing any aspect of the participation model for electric storage resources, including the requirement that RTOs/ISOs must ensure a resource using the participation model for electric storage resources can be dispatched as a wholesale buyer.

i. SPP's Filing

80. SPP's proposed participation model allows Market Storage Resources to participate in the SPP Energy and Operating Reserve Markets as a wholesale seller and wholesale buyer.¹²⁷ As such, SPP proposes to revise its Tariff to state that Electric Storage Resources registered as Market Storage Resources may provide energy, regulation-up, regulation-down, spinning reserve, and supplemental reserve services upon meeting the applicable requirements for those services.¹²⁸ SPP clarifies that Market

¹²³ *See id.* P 55.

¹²⁴ *Id.* P 149.

¹²⁵ *Id.* P 150.

¹²⁶ Order No. 841-A, 167 FERC ¶ 61,154 at P 80.

¹²⁷ SPP Compliance Filing, Transmittal at 15; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17.

¹²⁸ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17(2)(a).

Storage Resources may submit offer curves that include positive and negative MW values to account for their entire dispatchable range.¹²⁹ As such, SPP proposes to calculate LMPs pursuant to its existing section 8.3 of Attachment AE accounting for both the positive and negative MW values of the energy offer curves submitted for Market Storage Resources.¹³⁰

81. SPP proposes that Market Storage Resources may participate in the day-ahead market and must participate in the RUC and the RTBM, consistent with other resources.¹³¹ Further, SPP states that all resources, including Market Storage Resources, are eligible to set price when they are available for dispatch and not constrained by their physical or operational characteristics.¹³² However, SPP notes that unlike other resources, under SPP's proposed participation model, a Market Storage Resource may submit financial and operational offers to both inject and withdraw energy in the day-ahead and RTBM. SPP also modifies sections of its Tariff pertaining to day-ahead, RUC, and RTBM resource offer parameters to clarify which resource offer parameters do and do not apply to Market Storage Resources.¹³³

82. SPP proposes Tariff modifications to its must-offer requirements in the day-ahead market that it states will account for Electric Storage Resources participating in the market as self-scheduled demand.¹³⁴ SPP further explains that, if a market participant with load self-schedules a Market Storage Resource as demand, the market participant must ensure it has enough available generation to cover the additional demand or offer all of its generation.¹³⁵

¹²⁹ SPP Compliance Filing, Transmittal at 15; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17.

¹³⁰ SPP Compliance Filing, Transmittal at 15; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 2.17(2), 8.3.

¹³¹ SPP Compliance Filing, Transmittal at 15.

¹³² *Id.* at 16.

¹³³ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

¹³⁴ SPP Compliance Filing, Transmittal at 16; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.11.1(A).

¹³⁵ SPP Compliance Filing, Transmittal at 16; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.11.1(A).

83. As SPP does not operate a capacity market, SPP proposes no Tariff changes to meet the requirement of Order No. 841 that resources using the participation model for electric storage resources be able to set the price in capacity markets. However, SPP states that its current rules do not preclude a load serving entity from designating an Electric Storage Resource to meet the resource adequacy requirements provided it meets the continuous run-time requirement applicable to all resource types.¹³⁶

ii. Commission Determination

84. We find that SPP's proposed Tariff revisions comply with the requirements of Order No. 841 because they allow a resource using the participation model for Electric Storage Resources to be dispatched and set the wholesale market clearing price as both a wholesale seller and wholesale buyer, consistent with the rules that govern the conditions under which a resource can set the wholesale price. Further, we find that SPP's proposal to allow Market Storage Resource bids to include negative MW values meets the requirement of Order No. 841 that RTOs/ISOs accept wholesale bids from resources using the participation model to buy energy, consistent with the RTO's/ISO's rules related to wholesale purchasers of energy.

85. We note that all market participants currently have the ability to designate their resource's commitment status as self-committed when submitting their resource offer,¹³⁷ and SPP proposes no Tariff revisions that would prevent market participants from self-committing a Market Storage Resource like any other resource. Therefore, we find that SPP's proposal complies with the requirement of Order No. 841 to permit resources using the participation model to participate in the RTO markets as price takers, consistent with the existing rules for self-scheduled resources.

b. Mechanism to Prevent Conflicting Dispatch Signals

86. To implement the new requirement in section 35.28(g)(9)(i)(B) of the Commission's regulations, Order No. 841 requires each RTO/ISO to either (1) demonstrate that its market design will not allow for conflicting supply offers and demand bids from the same resource for the same market interval or (2) modify its market rules to prevent conflicting supply offers and demand bids from the same resource for the same market interval.¹³⁸ Order No. 841 does not require a specific approach to prevent conflicting dispatch, but provides that the RTO/ISO is responsible for preventing

¹³⁶ SPP Compliance Filing, Transmittal at 16.

¹³⁷ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(10)(a).

¹³⁸ Order No. 841, 162 FERC ¶ 61,127 at P 162.

conflicting dispatch and therefore it would not be the responsibility of the market monitor to review bids to address conflicting dispatch.¹³⁹ While each RTO/ISO should allow resources using the participation model for electric storage resources to participate as supply and demand simultaneously (i.e., submit bids to buy and offers to sell during the same market interval), consistent with the opportunities available to other market participants, the RTOs/ISOs should not require them to do so simultaneously.¹⁴⁰

i. SPP's Filing

87. SPP proposes to allow resources using the Market Storage Resource participation model to submit energy offer curves that include both positive and negative MW values, as long as the energy offer curve consists of monotonically non-decreasing price/MW pairs.¹⁴¹ Given that a single energy offer curve will represent both a Market Storage Resource's discharging and charging capability, SPP states that a conflicting dispatch signal would not be possible.¹⁴² However, SPP states that Market Storage Resources that are not continuously dispatchable across zero MW would have to choose between offering supply or bidding in demand for each market hour, which SPP states would also prevent conflicting dispatch signals.

88. SPP notes that the existing Electric Storage Resources registered in its market are pumped storage and not continuously dispatchable across zero MW.¹⁴³ SPP explains that the physical and operational characteristics of these existing resources require they remain in a "charge" mode for hours, extending beyond the dispatch horizon, in order to build up a water reservoir. As a result, SPP states that these Electric Storage Resources do not intend to utilize the Market Storage Resource registration type. SPP further states that, based on the Electric Storage Resources currently in its generation interconnection queue, SPP does not anticipate future Market Storage Resources that will not be dispatchable across zero MW.

89. SPP argues that it would have to make "significant and fundamental changes to its market clearing software" to accommodate simultaneous participation as supply and

¹³⁹ *Id.* P 163.

¹⁴⁰ *Id.* P 165.

¹⁴¹ SPP Compliance Filing, Transmittal at 17; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17(2)(c).

¹⁴² SPP Compliance Filing, Transmittal at 17.

¹⁴³ *Id.*

demand by Market Storage Resources that cannot be dispatched continuously along the energy offer curve, and that “[t]he expected rarity of the situation cannot justify the expense.”¹⁴⁴ Instead, SPP proposes that such Market Storage Resources would have to choose between offering supply and bidding demand for a given market interval.¹⁴⁵ SPP further states that, based on its review of current Electric Storage Resource technology and its interconnection queue, SPP believes that storage resources that will be willing to be in a withdrawal and injection mode during an hour would be continuously dispatchable across its range. Therefore, SPP states that its language on non-continuously dispatchable storage is provided in an abundance of caution with the expectation that it will not be needed.

ii. Protests/Comments

90. The SPP MMU claims that the treatment of electric storage resources that are not dispatchable across zero MW in SPP’s proposal is inefficient.¹⁴⁶ The SPP MMU explains that some electric storage resources cannot charge and discharge within a commitment period if they have a minimum charge or discharge time greater than zero minutes or a minimum charge or discharge limit greater than zero MW. The SPP MMU claims that SPP’s proposal to require operators of such resources to choose between charging and discharging during an interval is inefficient because such operators do not have knowledge of system conditions. Rather, the SPP MMU suggests that it is more efficient for SPP to optimize the decision for the resource to charge or discharge.

iii. Data Request Response

91. SPP states that a Market Storage Resource that is not continuously dispatchable is one that is not linearly dispatchable from the discharge side to the charge side, or vice versa, during a single dispatch interval.¹⁴⁷ SPP explains that this limitation occurs when any of the following parameters are not equal to zero during the dispatch interval: minimum charge time, minimum discharge time, minimum charge limit, and minimum discharge limit.¹⁴⁸ SPP explains that, if any of the aforementioned parameters are non-

¹⁴⁴ *Id.* at 17-18.

¹⁴⁵ *Id.* at 18.

¹⁴⁶ SPP MMU Comments at 17.

¹⁴⁷ SPP Data Request Response, Transmittal at 6.

¹⁴⁸ *Id.* at 7. SPP states that a Market Storage Resource that is not continuously dispatchable across zero MW is described in the SPP Integrated Marketplace Market Protocols 20, section 4.2.2.3(10).

zero, the unit commitment decision becomes more complex because the system must determine when to ignore the parameter in order to modify the resource's charging behavior. SPP states that implementing the required commitment logic would cost a minimum of \$365,000, require major modifications to other related market systems, and significantly extend SPP's implementation timeline. Further, SPP asserts that more substantial and complex changes to its economic dispatch process and market software would be required.

iv. Commission Determination

92. We find that SPP's proposed Tariff revisions comply with the requirement of Order No. 841 because the proposed market design will prevent conflicting supply offers and demand bids from the same Electric Storage Resource for the same market interval. Further, the proposed revisions allow continuously dispatchable resources using the participation model to be able to participate simultaneously as supply and demand in the same market interval.

93. Despite the SPP MMU's concern that SPP's proposal to require resources that are not continuously dispatchable across zero MW to choose between offering as supply or demand for a given market interval is not efficient, as discussed above, we find that SPP's proposal allows a resource using the participation model for Electric Storage Resources to be dispatched and set the wholesale market clearing price as both a wholesale seller and wholesale buyer, consistent with the rules that govern the conditions under which a resource can set the wholesale price and complies with the requirement of Order No. 841 that RTOs/ISOs accept wholesale bids from resources using the participation model to buy energy consistent with the RTO's/ISO's rules related to wholesale purchasers of energy.

94. However, we note that although SPP explains that the proposed market design reflected in the SPP Integrated Marketplace Protocols will require resources that are not continuously dispatchable across zero MW to choose between offering as supply or demand for a given market hour,¹⁴⁹ the proposed Tariff language does not include this requirement or the criteria defining these resources. Decisions regarding whether an item should be placed in a tariff or in a business practice manual are guided by the Commission's rule of reason policy, under which provisions that "significantly affect rates, terms, and conditions" of service, are readily susceptible of specification, and are not generally understood in a contractual agreement must be included in a tariff, while items better classified as implementation details may be included only in the business

¹⁴⁹ *Id.* at 6-7.

practice manual.¹⁵⁰ We find that these practices significantly affect rates, terms, and conditions and should be included in the Tariff.¹⁵¹ Further, we find that the lack of proposed Tariff language regarding this bidding restriction may result in unnecessary uncertainty and lack of clarity for market participants. Therefore, we direct SPP to file, within 60 days of the date of issuance of this order, a further compliance filing with proposed Tariff language that includes the criteria defining resources that are not continuously dispatchable across zero MW as well as the requirement for such resources to choose to participate as supply or demand for a given market interval.

c. Make-Whole Payments

95. Given the unique capability of electric storage resources to serve as both a supply of, and demand for, energy and to implement the new requirement in section 35.28(g)(9)(i)(B) of the Commission's regulations, Order No. 841 requires that each RTO/ISO have tariff provisions to ensure that resources available for manual dispatch as a wholesale buyer and wholesale seller under the participation model for electric storage resources are held harmless for manual dispatch by being eligible for make-whole payments.¹⁵² Specifically, Order No. 841 requires that the participation model for electric storage resources allow make-whole payments when a resource is dispatched as load and the wholesale price is higher than the resource's bid price and when it is dispatched as supply and the wholesale price is lower than the resource's offer price. Any such make-whole payments must be consistent with the rules for make-whole payments for other dispatchable resources, and such payments should only be provided to resources using the participation model for electric storage resources to the extent that such payments are already provided to other market participants.¹⁵³ Order No. 841 did not require a specific method for make-whole payments and provided the RTOs/ISOs with flexibility to

¹⁵⁰ *Energy Storage Ass'n v. PJM*, 162 FERC ¶ 61,296 at P 103; *see also City of Cleveland v. FERC*, 773 F.2d at 1376 (finding that utilities must file "only those practices that affect rates and service significantly, that are reasonably susceptible of specification, and that are not so generally understood in any contractual arrangement as to render recitation superfluous").

¹⁵¹ *Energy Storage Ass'n v. PJM*, 162 FERC ¶ 61,296 at P 103; *see also City of Cleveland v. FERC*, 773 F.2d at 1376.

¹⁵² Order No. 841, 162 FERC ¶ 61,127 at P 174.

¹⁵³ *Id.* PP 174, 177.

establish a methodology under which resources using the participation model can receive make-whole payments.¹⁵⁴

96. Order No. 841 also stated that make-whole payments should only be available to resources using the electric storage resource participation model if the system operator dispatches that resource in a way that is inconsistent with its bids to buy and offers to sell energy.¹⁵⁵ Because one of the requirements of Order No. 841 is that each RTO/ISO have the ability to dispatch electric storage resources as load, it is necessary for each RTO/ISO to establish a methodology under which resources using the participation model for electric storage resources that participate as load are able to receive make-whole payments.¹⁵⁶ Because electric storage resources must be able to be dispatched as load, their eligibility to receive make-whole payments when dispatched as load needs to be consistent with other dispatchable resources but does not need to be consistent with the eligibility of other load resources that are not dispatchable by the RTO/ISO.

i. SPP's Filing

97. SPP proposes to modify the settlement calculations in its Tariff to ensure that Market Storage Resources are eligible for cost recovery for the entire commitment period and that make-whole payments will apply to the entire dispatchable range of Market Storage Resources.¹⁵⁷ SPP proposes to modify several settlement calculations to apply to Market Storage Resources withdrawing charging energy. These proposed Tariff revisions include changes to settlement calculations involving the amount of energy in the day-ahead market and RTBM,¹⁵⁸ make-whole payments related to the day-ahead market and RUC,¹⁵⁹ the carve-out of grandfathered agreements,¹⁶⁰ the Federal service

¹⁵⁴ *Id.* P 174.

¹⁵⁵ *Id.* P 178.

¹⁵⁶ *Id.* P 179.

¹⁵⁷ SPP Compliance Filing, Transmittal at 19-20.

¹⁵⁸ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 8.5.1, 8.6.1.

¹⁵⁹ *Id.*, sections 8.5.9, 8.5.10, 8.6.5, 8.6.7.

¹⁶⁰ *Id.*, sections 8.5.21, 8.5.22, 8.5.23.

exemption for government entities,¹⁶¹ demand reduction in the day-ahead and RTBM,¹⁶² distribution of over-collected losses,¹⁶³ and adjustment to regulation service deployment in RTBM.¹⁶⁴

98. SPP also proposes to modify several settlement calculations to apply to Market Storage Resources injecting energy or providing a market service to ensure comparable treatment to other resource types. These revisions include changes to settlement calculations involving the amount of energy in the day-ahead market and RTBM,¹⁶⁵ make-whole payments in the day-ahead market and RUC,¹⁶⁶ distribution of excess losses,¹⁶⁷ and adjustment to regulation service deployment in RTBM.¹⁶⁸

99. Further, SPP proposes changes to its existing Tariff provisions related to real-time out-of-merit payments in order to account for both the charging and discharging range of Electric Storage Resources that register as Market Storage Resources in determining payments for out-of-merit energy (i.e., manual dispatch) to ensure Electric Storage Resources are treated consistently with other resource types.¹⁶⁹

ii. Commission Determination

100. We find that SPP's proposed Tariff revisions comply with the requirements of Order No. 841 because they make resources using the participation model eligible for make-whole payments when the resource is dispatched as load and the wholesale price is higher than the resource's bid price, as well as when it is dispatched as supply and the

¹⁶¹ *Id.*, sections 8.5.21, 8.5.22, 8.5.23.

¹⁶² *Id.*, sections 8.5.25, 8.6.22.

¹⁶³ *Id.*, section 8.6.16.

¹⁶⁴ *Id.*, section 8.6.15.

¹⁶⁵ *Id.*, sections 8.5.1, 8.6.1.

¹⁶⁶ *Id.*, sections 8.5.9, 8.6.5.

¹⁶⁷ *Id.*, section 8.6.16.

¹⁶⁸ *Id.*, section 8.6.15.

¹⁶⁹ SPP Compliance Filing, Transmittal at 21; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 8.6.6.

wholesale price is lower than the resource's offer price, consistent with existing rules for make-whole payments for other dispatchable resources.

4. **Physical and Operational Characteristics of Electric Storage Resources**

101. Order No. 841 adds section 35.28(g)(9)(i)(C) to the Commission's regulations to require that each RTO/ISO have tariff provisions providing a participation model for electric storage resources that accounts for the following physical and operational characteristics of electric storage resources through bidding parameters or other means: State of Charge, Maximum State of Charge, Minimum State of Charge, Maximum Charge Limit, Minimum Charge Limit, Maximum Discharge Limit, Minimum Discharge Limit, Maximum Charge Time, Minimum Charge Time, Maximum Run Time, Minimum Run Time, Discharge Ramp Rate, and Charge Ramp Rate.¹⁷⁰ Each RTO/ISO must demonstrate how its proposed or existing tariff provisions account for each of these specific physical and operational characteristics of electric storage resources, which are described further below. Order No. 841 provides that, to the extent that an RTO/ISO proposes to comply with the requirement to account for any of the physical and operational characteristics of electric storage resources enumerated herein through its existing bidding parameters or other existing market mechanisms, it must demonstrate in its compliance filing how its existing market rules already account for that particular physical and operational characteristic.¹⁷¹ This requirement will improve the ability of electric storage resources to provide all of the services that they are technically capable of providing and allow RTOs/ISOs to procure these services more efficiently, which will enhance competition and, in turn, help to ensure that RTO/ISO markets produce just and reasonable rates.

102. Order No. 841 does not require RTOs/ISOs to mandate that a resource owner/operator submit any information, but instead, provided flexibility to each RTO/ISO to determine whether resources using the participation model for electric storage resources are required to submit information regarding their physical and operational characteristics, or whether resources using the participation model should be allowed to submit such information at their discretion.¹⁷² This flexibility may help prevent resources using the participation model for electric storage resources from having to submit information that is not applicable given their physical, operational, or

¹⁷⁰ Order No. 841, 162 FERC ¶ 61,127 at P 191.

¹⁷¹ *Id.* PP 211, 220, 229.

¹⁷² *Id.* P 192.

commercial circumstances. If an RTO/ISO adopts bidding parameters to account for the physical and operational characteristics set forth in Order No. 841, as specified below, it must permit a resource using the participation model for electric storage resources to submit those bidding parameters in both the day-ahead and the real-time markets.¹⁷³

103. Further, Order No. 841 allows each RTO/ISO to propose, in its compliance filing, bidding parameters or other means to account for physical and operational characteristics of electric storage resources besides those set forth in Order No. 841.¹⁷⁴ To the extent that an RTO/ISO includes such a proposal in its compliance filing, it must demonstrate that such bidding parameters or other mechanisms do not impose barriers to the participation of electric storage resources in its markets.

104. Order No. 841-A clarifies that the requirement that each RTO/ISO establish tariff provisions providing a participation model for electric storage resources that accounts for the physical and operational characteristics of electric storage resources through bidding parameters or other means allows for regional flexibility.¹⁷⁵

State of Charge

105. Order No. 841 provides that State of Charge represents the amount of energy stored by an electric storage resource in proportion to the limit on the amount of energy that it can store, typically expressed as a percentage.¹⁷⁶ The State of Charge as a bidding parameter is the level of energy that an electric storage resource is anticipated to have available at the start of the market interval rather than the end. Order No. 841 provides each RTO/ISO the flexibility to propose telemetry requirements for such resources in its compliance filing and allows the RTOs/ISOs to implement the requirements of Order No. 841 consistent with the telemetry requirements for different services and other market participants in each RTO/ISO.¹⁷⁷

¹⁷³ *Id.* P 193.

¹⁷⁴ *Id.* P 235.

¹⁷⁵ Order No. 841-A, 167 FERC ¶ 61,154 at P 93.

¹⁷⁶ Order No. 841, 162 FERC ¶ 61,127 at P 213.

¹⁷⁷ *Id.* P 214.

Maximum State of Charge and Minimum State of Charge

106. Maximum State of Charge represents the State of Charge that should not be exceeded (i.e., gone above) when the electric storage resource is receiving electric energy from the grid.¹⁷⁸ This value may either be a static value based on manufacturer specifications or a dynamic value depending on the operational characteristics of the resource (e.g., if it is providing multiple services and needs to reserve part of its State of Charge for another service).

107. Minimum State of Charge represents the State of Charge that should not be exceeded (i.e., gone below) when an electric storage resource is injecting electric energy onto the grid.¹⁷⁹ This value may be either a static value based on manufacturer specifications or a dynamic value depending on the operational characteristics of the resource (e.g., if it is providing multiple services and needs to reserve part of its State of Charge for another service).

Maximum Charge Limit and Minimum Charge Limit

108. The Maximum Charge Limit for a resource using the electric storage resource participation model is the maximum MW quantity of electric energy that it can receive from the grid.¹⁸⁰ The Minimum Charge Limit represents the minimum MW level that the resource can receive from the grid.¹⁸¹

Maximum Discharge Limit and Minimum Discharge Limit

109. The Maximum Discharge Limit is the maximum MW quantity that the resource can inject onto the grid.¹⁸² The Maximum Discharge Limit is analogous to, and could be represented by, the economic maximum that traditional generation resources can

¹⁷⁸ *Id.* P 215.

¹⁷⁹ *Id.*

¹⁸⁰ *Id.* P 216.

¹⁸¹ *Id.* P 231.

¹⁸² *Id.* P 216.

generally submit with their offers. The Minimum Discharge Limit represents the minimum MW output level that the resource can inject onto the grid.¹⁸³

Maximum Charge Time and Minimum Charge Time

110. The Maximum Charge Time represents the maximum duration that a resource using the participation model for electric storage resources is able to be dispatched by the RTO/ISO to receive electric energy from the grid (e.g., for four hours).¹⁸⁴ If the RTO/ISO is not managing the State of Charge of the electric storage resource in real time, then the Maximum Charge Time will prevent it from dispatching the resource to charge for a duration that would exceed the resource's Maximum State of Charge.

111. The Minimum Charge Time represents the shortest duration that a resource using the participation model for electric storage resources is able to be dispatched by the RTO/ISO to receive electric energy from the grid.¹⁸⁵ Minimum Charge Time is similar to the Minimum Run Time for traditional generation resources but represents the minimum time the resource can receive electric energy from the grid, rather than provide electric energy to the grid.

Maximum Run Time and Minimum Run Time

112. The Maximum Run Time reflects the maximum amount of time that a resource using the participation model for electric storage resources is able to inject electric energy to the grid due to physical or operational constraints, such as its State of Charge or potential obligations to provide other services.¹⁸⁶ The Minimum Run Time allows the resource to identify the minimum amount of time the resource is physically able to discharge electric energy onto the grid.

Discharge Ramp Rate and Charge Ramp Rate

113. The Discharge Ramp Rate represents the speed at which electric storage resources can move from zero output to full output, or Maximum Discharge Limit.¹⁸⁷ The Charge

¹⁸³ *Id.* P 231.

¹⁸⁴ *Id.* P 223.

¹⁸⁵ *Id.* P 222.

¹⁸⁶ *Id.* P 224.

¹⁸⁷ *Id.* P 234.

Ramp Rate represents the speed at which electric storage resources can move from zero output to fully charging, or the resource's Maximum Charge Limit.

Additional Physical and Operational Characteristics

114. Order No. 841 allows each RTO/ISO to propose in its compliance filing bidding parameters or other means to account for physical and operational characteristics of electric storage resources in addition to those set forth in Order No. 841.¹⁸⁸ If an RTO/ISO includes such a proposal in its compliance filing, the RTO/ISO must demonstrate that such bidding parameters or other mechanisms do not impose barriers to the participation of electric storage resources in its markets.

a. SPP's Filing

115. Under the proposed Market Storage Resource participation model, SPP proposes that Market Storage Resources account for their physical and operational characteristics by submitting specific resource offer parameters.¹⁸⁹ SPP explains that the proposed offer parameters applicable to Market Storage Resources include a mix of existing and new offer parameters.¹⁹⁰

116. SPP proposes to require market participants with a resource registered as a Market Storage Resource to communicate the State of Charge through a new resource offer parameter called State of Charge Forecast, as well as via real-time telemetry.¹⁹¹ SPP proposes to define the State of Charge offer parameter as the amount of energy stored at a given time in MWh,¹⁹² and to define State of Charge Forecast as "the projected State of Charge for the beginning of each market interval used in the Day-Ahead Market and the RUC."¹⁹³ SPP proposes to require Market Storage Resources to submit a State of Charge

¹⁸⁸ *Id.* P 235.

¹⁸⁹ SPP Compliance Filing, Transmittal at 23-25; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17(2)(b). Under SPP's Tariff, bidding parameters are referred to as Resource Offer Parameters.

¹⁹⁰ SPP Compliance Filing, Transmittal at 23-25; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

¹⁹¹ SPP Compliance Filing, Transmittal at 26.

¹⁹² *Id.* at 26-27.

¹⁹³ *Id.*; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1.

Forecast for use in the Day-Ahead Market and Day-Ahead RUCs to determine the Market Storage Resources' State of Charge at the start of the forward-looking dispatch interval.¹⁹⁴ For RTBM dispatch decisions, SPP proposes that Market Storage Resources must provide their real-time State of Charge via telemetry.¹⁹⁵

117. SPP proposes to revise its Tariff to account for the Maximum State of Charge of Market Storage Resources through a Maximum State of Charge resource offer parameter.¹⁹⁶ SPP proposes Tariff revisions to define Maximum State of Charge as “the maximum State of Charge that should not be exceeded.”¹⁹⁷ SPP also proposes to revise its Tariff to account for the Minimum State of Charge of Market Storage Resources through a Minimum State of Charge resource offer parameter.¹⁹⁸ SPP proposes to define Minimum State of Charge as “the minimum State of Charge that should be maintained.”¹⁹⁹

118. SPP proposes to require Market Storage Resources to submit Maximum Charge Limit and Maximum Emergency Charge Limit resource offer parameters.²⁰⁰ SPP explains that the two separate resource offer parameters allow Market Storage Resources to submit different charge limits for normal (i.e., Maximum Charge Limit) and emergency market operations (i.e., Maximum Emergency Charge Limit), which SPP clarifies is consistent with the abilities for other resource types.²⁰¹ SPP also proposes to

¹⁹⁴ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

¹⁹⁵ SPP Compliance Filing, Transmittal at 26-27.

¹⁹⁶ *Id.*; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

¹⁹⁷ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

¹⁹⁸ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

¹⁹⁹ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²⁰⁰ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

²⁰¹ SPP Compliance Filing, Transmittal at 26.

define Maximum Charge Limit and Maximum Emergency Charge Limit.²⁰² SPP proposes to define Maximum Charge Limit as “the maximum MW level that a Market Storage Resource is able to withdraw from the grid during normal operating conditions.”²⁰³ SPP proposes to define Maximum Emergency Charge Limit as “the maximum MW level that a Market Storage Resource is able to withdraw from the grid during an Emergency Condition.”²⁰⁴

119. SPP proposes to require Market Storage Resources to submit Minimum Charge Limit and Minimum Emergency Charge Limit resource offer parameters. SPP explains that the two separate resource offer parameters allow Market Storage Resources to submit different charge limits for normal (i.e., Minimum Charge Limit) and emergency market operations (i.e., Minimum Emergency Charge Limit), which SPP clarifies is consistent with the abilities for other resource types. SPP proposes revisions to Attachment AE to define Minimum Charge Limit and Minimum Emergency Charge Limit.²⁰⁵ SPP proposes to define Minimum Charge Limit as “[t]he minimum MW level a [Market Storage Resource] is able to withdraw from the grid during normal operating conditions.”²⁰⁶ SPP proposes to define Minimum Emergency Charge Limit as “[t]he minimum MW level that a [Market Storage Resource] is able to withdraw from the grid during an Emergency Condition.”²⁰⁷

²⁰² *Id.* at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1(Definitions M).

²⁰³ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1(Definitions M).

²⁰⁴ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1(Definitions M).

²⁰⁵ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²⁰⁶ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²⁰⁷ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

120. SPP proposes to require Market Storage Resources to submit Maximum Discharge Limit and Maximum Emergency Discharge Limit resource offer parameters.²⁰⁸ SPP explains that the two separate resource offer parameters would allow Market Storage Resources to submit different discharge limits for normal (i.e., Maximum Discharge Limit) and emergency market operations (i.e., Maximum Emergency Discharge Limit), which SPP clarifies is consistent with the abilities for other resource types.²⁰⁹ SPP also proposes revisions to Attachment AE to define Maximum Discharge Limit and Maximum Emergency Discharge Limit.²¹⁰ SPP proposes to define Maximum Discharge Limit, as “[t]he maximum MW level that a [Market Storage Resource] is able to inject into the grid used during normal operating conditions.”²¹¹ SPP proposes to define Maximum Emergency Discharge Limit, as “[t]he maximum MW level that a [Market Storage Resource] is able to inject into the grid during an Emergency Condition.”²¹²

121. SPP proposes to require Market Storage Resources to submit Minimum Discharge Limit and Minimum Emergency Discharge Limit resource offer parameters.²¹³ SPP explains that the two separate resource offer parameters would allow Market Storage Resources to submit different discharge limits for normal (i.e., Minimum Discharge Limit) and emergency market operations (i.e., Minimum Emergency Discharge Limit), which SPP clarifies is consistent with the abilities for other resource types. SPP proposes revisions to Attachment AE to define Minimum Discharge Limit and Minimum Emergency Discharge Limit.²¹⁴ SPP proposes to represent Minimum Discharge Limit as the minimum MW level that a Market Storage Resource is able to inject into the grid

²⁰⁸ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

²⁰⁹ SPP Compliance Filing, Transmittal at 26.

²¹⁰ *Id.* at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²¹¹ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²¹² SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²¹³ SPP Compliance Filing, Transmittal at 26-27; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

²¹⁴ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

during normal operating conditions.²¹⁵ SPP proposes to represent Minimum Emergency Discharge Limit as “the minimum MW level that a Market Storage Resource is able to inject into the grid during an Emergency Condition.”²¹⁶ SPP proposes to require Market Storage Resources to submit a Maximum Charge Time resource offer parameter.²¹⁷ SPP proposes revisions to Attachment AE to define Maximum Charge Time as “the maximum duration of time that a Market Storage Resource is able to withdraw from the grid.”²¹⁸

122. SPP proposes to require Market Storage Resources to submit the Minimum Charge Time resource offer parameter.²¹⁹ SPP proposes revisions to Attachment AE to define Minimum Charge Time as “the minimum duration of time a Market Storage Resource is able to withdraw from the grid.”²²⁰

123. SPP proposes to require Market Storage Resources to submit a Maximum Discharge Time resource offer parameter.²²¹ SPP proposes revisions to Attachment AE to define Maximum Discharge Time as “the maximum duration of time that a Market Storage Resource is able to inject into the grid.”²²²

²¹⁵ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²¹⁶ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²¹⁷ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

²¹⁸ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²¹⁹ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

²²⁰ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²²¹ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

²²² SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

124. SPP proposes to require Market Storage Resources to submit a Minimum Discharge Time resource offer parameter.²²³ SPP proposes revisions to Attachment AE to define Minimum Discharge Time as “the minimum duration of time that a Market Storage Resource is able to inject into the grid.”²²⁴

125. SPP states that the existing Ramp-Rate-Up and Ramp-Rate-Down offer parameters will sufficiently account for Discharge Ramp Rate and Charge Ramp rate, respectively, without additional Tariff modifications.²²⁵ SPP states that market participants are currently able to submit up to 10 segments of MW/minute ramp-rate segments for their ramping offers, which should also be sufficient to allow a resource using the Market Storage Resource participation model to represent its ramp-rate for both supply and demand for Market Storage Resources.²²⁶ Although it lists Ramp-Rate-Up and Ramp-Rate-Down as resource offer parameters, SPP does not define Ramp-Rate-Up or Ramp-Rate-Down in its Tariff.

126. SPP also proposes to require resources using the Market Storage Resource participation model to submit an Electric Storage Resource Loss Factor resource offer parameter. SPP explains that this offer parameter will represent the resource’s round-trip efficiency.²²⁷ SPP states that it would use the Electric Storage Resource Loss Factor offer parameter in forward-looking studies, such as the Day-Ahead Market and RUC Studies, to account for the efficiency losses inherent with Electric Storage Resources that charge and subsequently discharge.²²⁸ SPP states this parameter is necessary for capacity assurance in forward-looking unit commitment processes and for ensuring Market Storage Resources do not receive a Day-Ahead Market position they could not fulfill in real time. Lastly, to account for system needs, SPP proposes to add a definition to its Tariff for its existing parameter Min-To-Off-Time in order to expand the original concept

²²³ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 4.1(9).

²²⁴ SPP Compliance Filing, Transmittal at 27-29; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²²⁵ SPP Compliance Filing, Transmittal at 30; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions R).

²²⁶ SPP Compliance Filing, Transmittal at 30.

²²⁷ *Id.*; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1, Definitions.

²²⁸ SPP Compliance Filing, Transmittal at 30.

to include the time required for a Market Storage Resource to shut down from either an injection or withdrawal state.²²⁹

b. Protests/Comments

127. Tesla asserts that the Commission should require SPP to allow Electric Storage Resources to submit separate round-trip efficiency levels for summer and winter.²³⁰ According to Tesla, the level of round-trip efficiency can be highly dependent on temperature. Tesla contends that seasonal round-trip efficiency levels are sufficient for all uses, including planning processes and determination of cost bases. However, Tesla states requiring more granular updates to round-trip efficiency would become too onerous for Electric Storage Resource operators to calculate and submit and would not improve the processes for which RTOs/ISOs utilize that information.

c. Commission Determination

128. We find that SPP's proposed Tariff revisions partially comply with Order No. 841. SPP has demonstrated that its proposed and existing Tariff provisions account for each of the specific physical and operational characteristics of electric storage resources enumerated in Order No. 841,²³¹ with one exception, as discussed below. SPP also complies with the requirement of Order No. 841 that RTOs/ISOs allow a resource using the participation model to submit its physical and operational characteristics in both day-ahead and real-time markets. Further, as required by Order No. 841, to the extent that SPP proposes to comply with the requirement to account for certain parameters through its existing bidding parameters or other existing market mechanisms, SPP has demonstrated how its existing market rules already account for that particular physical and operational characteristic.²³²

129. We find that SPP's proposed Tariff revisions comply with the requirement of Order No. 841 to account for State of Charge (through the proposed State of Charge and State of Charge Forecast parameters), Maximum State of Charge and Minimum State of Charge, Maximum Charge Limit and Minimum Charge Limit, Maximum Discharge Limit and Minimum Discharge Limit, Maximum Charge Time and Minimum Charge Time, and Maximum Run Time and Minimum Run Time (through the use of Maximum

²²⁹ *Id.*; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1 (Definitions M).

²³⁰ Tesla Comments at 23.

²³¹ Order No. 841, 162 FERC ¶ 61,127 at P 211.

²³² *Id.* PP 211, 220, 229.

Discharge Time and Minimum Discharge Time parameters) of resources using the participation model.

130. We find that SPP's proposed Tariff revisions partially comply with the requirement of Order No. 841 to account for the Discharge Ramp Rate and Charge Ramp Rate of resources using the participation model. SPP explains that its existing Ramp-Rate-Up and Ramp-Rate-Down offer parameters account for these characteristics by allowing Market Storage Resources to account for both the Discharge Ramp Rate and Charge Ramp Rate in both the day-ahead and real-time markets, and for the submission of up to 10 segments of MW/minute ramp-rate segments. However, we find that SPP does not fully comply with Order No. 841 because its Tariff does not define the Ramp-Rate-Up and Ramp-Rate-Down parameters. Accordingly, we direct SPP to file, within 60 days of the date of issuance of this order, a further compliance filing that defines Ramp-Rate-Up in the Tariff and that incorporates, in that definition, the rate at which an Electric Storage Resource can move from zero output to Maximum Discharge Limit.

131. Further, the compliance filing should define Ramp-Rate-Down in the Tariff and incorporate, in that definition, the rate at which an Electric Storage Resource can move from zero output to Maximum Charge Limit. If SPP cannot incorporate these concepts into the definitions for the Ramp-Rate-Up or Ramp-Rate-Down offer parameters, we direct SPP to propose new Discharge Ramp Rate and Charge Ramp Rate offer parameters that align with these definitions, in order to comply with the Order No. 841 requirements to account for Discharge Ramp Rate and Charge Ramp Rate through bidding parameters or other means.

132. We find that SPP's proposed Tariff revisions to include a participation model that uses the Electric Storage Resource Loss Factor bidding parameter to account for physical and operational characteristics of electric storage resources, besides those set forth in Order No. 841, do not impose barriers to the participation of electric storage resources in its markets, and do not conflict with Order No. 841. Additionally, we find Tesla's request that the Commission require SPP to allow Electric Storage Resources to submit separate round-trip efficiency levels for summer and winter to be outside the scope of this compliance proceeding. Although Order No. 841 affords the RTOs/ISOs flexibility to propose additional bidding parameters to account for the physical and operational characteristics of electric storage resources, it does not prescribe any criteria for compliance except that the parameters must not impose barriers to participation. SPP's proposed Electric Storage Resource Loss Factor bidding parameter satisfies this minimum criterion to comply with Order No. 841, and the existence of alternatives as suggested by Tesla does not render the proposal non-compliant.

5. State of Charge Management

133. Order No. 841 requires each RTO/ISO to allow resources using the participation model for electric storage resources to self-manage their State of Charge.²³³ Order No. 841 provides that a resource using the participation model for electric storage resources that self-manages its State of Charge will be subject to any applicable penalties for deviating from a dispatch schedule to the extent that the resource deviates from the dispatch schedule in managing its State of Charge. Order No. 841 further provides that, to the extent that the provision of a particular wholesale service, such as frequency regulation, requires a resource providing that service to follow a dispatch signal that has the effect of maintaining the resource's ability to provide the service, an electric storage resource that is managing its own State of Charge would still be required to follow such a dispatch signal, just as all other resources providing that same service.

134. RTOs/ISOs are not required as part of Order No. 841 to manage the State of Charge for resources using the participation model for electric storage resources.²³⁴ While RTOs/ISOs must permit resources to manage their own State of Charge, RTOs/ISOs may provide an option for the RTO/ISO to manage an electric storage resource's State of Charge for any particular service or circumstance as they deem appropriate in their markets with the consent of the electric storage resource.²³⁵ If an RTO/ISO already has a mechanism to manage a resource's State of Charge, then the RTO/ISO must make it optional for the electric storage resource owner/operator to use such mechanism so that the electric storage resource is able to manage its own State of Charge if it elects to do so.²³⁶ Order No. 841 further provides that, where an electric storage resource has the option to allow the RTO/ISO to manage its State of Charge, the electric storage resource is the default manager of the resource's State of Charge.

135. Order No. 841 states that RTOs/ISOs should be able to dispatch resources using the participation model for electric storage resources in the same manner as any other market participant to address any reliability challenges and should know that the resources have an adequate State of Charge to perform the service to which they have committed.²³⁷ RTOs/ISOs are not precluded from establishing telemetry or other communication requirements necessary to determine the capabilities of an electric storage

²³³ *Id.* P 246.

²³⁴ *Id.* P 254.

²³⁵ *Id.* n.300.

²³⁶ *Id.* P 254.

²³⁷ *Id.* P 255.

resource in real time. Self-managing electric storage resources, just like all market participants, are subject to any non-performance penalties in the RTO/ISO tariff.

136. Order No. 841 recognizes that the energy limitations of electric storage resources will need to be factored into their market offers and that misrepresenting those limitations could constitute manipulation if an electric storage resource has an obligation to participate in an RTO/ISO market. However, as discussed in the Ability to De-Rate Capacity to Meet Minimum Run-Time Requirements section above, Order No. 841 requires each RTO/ISO to demonstrate how its existing market rules provide a means for energy-limited resources, including electric storage resources, to provide capacity, including ways to represent their energy limitations through their offer prices, which, if allowed by the RTO/ISO, would not constitute economic withholding.²³⁸ As with other resources, market monitors have the ability to review the bids from electric storage resources to detect economic or physical withholding.²³⁹ If an RTO/ISO determines that additional rules are needed to ensure electric storage resources are not managing their State of Charge in a way that could manipulate market outcomes through withholding, then the RTO/ISO may propose such rules in its compliance filing or through a separate FPA section 205 filing.²⁴⁰

a. SPP's Filing

137. SPP states that it does not have a mechanism to explicitly manage the State of Charge for Electric Storage Resources and that it does not propose to add any such mechanism.²⁴¹ SPP states that it presumes the market participant is the default manager for the Electric Storage Resource's State of Charge.

138. SPP states that it is proposing to modify Attachment AE of its Tariff to ensure that, where the market participant is acting as the manager of State of Charge, Electric Storage Resources are settled consistent with non-Electric Storage Resources displaying similar behavior when the necessary charging and discharging deviate from SPP direction.²⁴² More specifically, SPP proposes modifications to settlement equations in Attachment AE to expand charge-types applicable to load to include Market Storage

²³⁸ *Id.* P 256.

²³⁹ *Id.* P 257.

²⁴⁰ *Id.* (citing 16 U.S.C. § 824d).

²⁴¹ SPP Compliance Filing, Transmittal at 32.

²⁴² *Id.*

Resources charging outside of SPP direction (i.e., managing the Electric Storage Resource State of Charge). Additionally, SPP proposes modifications to settlement equations so that any uninstructed discharge of Electric Storage Resources, regardless of resource registration type, is settled consistent with other resource registration types, and language establishing a Market Storage Resource's operating tolerance in each dispatch interval so that Electric Storage Resources that self-manage State of Charge will be subject to applicable penalties for deviating from a dispatch schedule.²⁴³

139. SPP states that existing language in Attachment AE of its Tariff provides mechanisms for energy-limited resources, including Electric Storage Resources, to reflect those limitations in forward-looking studies such as Day-Ahead Market and RUC and that the existing resource offer parameters, various operating limits, and run time parameters provide flexibility for a market participant to reflect the unique physical and operating characteristics of the resource resulting in the energy limitation. SPP also states that the market participant has the flexibility to reflect a resource's energy limitation through the various operating limits in the RTBM.²⁴⁴

140. Further, SPP proposes modifications to its Market Monitoring Plan to provide an exemption to market participants from being deemed to be physically withholding for reducing the capability of an Electric Storage Resource in order to meet minimum run-time requirements to provide a service.²⁴⁵ SPP also states that it proposes conforming changes to its Market Power Mitigation Plan to include the Market Storage Resource-specific offer parameters in the existing list of resource offer parameters, expressed in units other than dollars, for use in resource offer parameter mitigation.

b. Protests/Comments

141. Tesla asserts that "energy neutral" frequency regulation signals represent RTO/ISO management of electric storage resources' State of Charge and limit the amount of frequency response an electric storage resource can provide.²⁴⁶ Tesla requests that the Commission require all RTOs/ISOs to allow electric storage resources to self-manage their State of Charge when providing frequency regulation and to submit offer

²⁴³ *Id.* at 34; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 6.1.4.

²⁴⁴ SPP Compliance Filing, Transmittal at 32-33.

²⁴⁵ *Id.* at 33; SPP, OATT, Sixth Revised Volume No. 1, Attachment AG, section 4.6.4.

²⁴⁶ Tesla Comments at 22.

curves that are asymmetric between regulation up and regulation down.²⁴⁷ Tesla further states that electric storage resources typically operate, “in a state somewhere between being fully charged or fully discharged,” and these specific provisions are necessary for electric storage resources to operate at full capacity when providing frequency regulation service, regardless of their level of State of Charge.²⁴⁸

c. Data Request Response

142. In response to Commission staff’s request to clarify the circumstances in which SPP would consider Market Storage Resources to be “self-charging,” SPP states that it will consider Market Storage Resources to be “self-charging” when the Market Storage Resource charges without market direction, which includes any intervals when the Market Storage Resource: (1) self-schedules and charges in real-time or (2) is not able to follow dispatch instructions and is charging.²⁴⁹

143. SPP further states that Market Storage Resources may “self-charge” through their offer parameters, which it notes can be changed hourly, or through their telemetered real-time Supervisory Control and Data Acquisition (SCADA) operating status. SPP also states that Market Storage Resources have the ability to self-commit in the Day-Ahead Market or RUC processes through the commitment status offer parameter as specified in section 4.1(10)(a) of Attachment AE of the Tariff. In addition, SPP states that Market Storage Resources also have the ability to set charge and discharge maximum and minimum parameters in order to communicate their dispatchable range as specified in section 4.1(9) of Attachment AE of its proposed Tariff revisions. Further, SPP clarifies that in real-time, Market Storage Resources also have the ability to utilize the telemetered operating status to communicate that the Market Storage Resource is not currently dispatchable by SPP and that, in this case, the market clearing engine will echo the current output of the Market Storage Resource.²⁵⁰ SPP states that this is part of the SCADA data in section 6.2.1.2(2) of Attachment AE of the Tariff.

144. In response to Commission staff’s question as to whether SPP’s proposed provisions to “de-commit self-committed charging Resources” to address insufficient capacity in the Day-Ahead and Intra-Day RUC processes apply to all Electric Storage Resources or only to Market Storage Resources, SPP explains that the proposed

²⁴⁷ *Id.* at 22-23.

²⁴⁸ *Id.* at 22.

²⁴⁹ SPP Data Request Response, Transmittal at 9.

²⁵⁰ *Id.* at 10.

provisions apply to only Market Storage Resources because “self-charging” Electric Storage Resources registered as another resource type “self-charge” through a corresponding registered Load Settlement Location.²⁵¹ SPP further explains that the Transmission Provider only commits or de-commits Resources while load is never committed or de-committed. SPP further clarifies that the terms “self-committed charging Resources” and “Self-Charging” both apply only to Market Storage Resources. SPP asserts that the difference between the two terms is that Self-Charging can be accomplished without self-committing by using the previously described telemetered operating status, while a self-committed charging Resource is one that has self-committed into the Market through the offer parameter described in section 4.1(10)(a) of Attachment AE of the Tariff.

d. Commission Determination

145. We find that SPP’s proposed Tariff revisions allowing Electric Storage Resources using the participation model to self-manage their State of Charge comply with the requirements of Order No. 841 because: (1) SPP will allow Electric Storage Resources to manage their State of Charge; (2) SPP will subject Electric Storage Resources to applicable penalties for deviating from a dispatch schedule; (3) SPP will be able to sufficiently monitor Electric Storage Resources to determine their capabilities in real time; and (4) SPP proposes additional rules to ensure Electric Storage Resources are not managing their State of Charge in a way that could manipulate market outcomes through withholding.

146. As to Tesla’s concerns with respect to frequency regulation, we note that Order No. 841 addresses this issue by explaining that, to the extent that the provision of a particular wholesale service, such as frequency regulation, requires a resource providing that service to follow a dispatch signal that has the effect of maintaining the resource’s ability to provide the service, an electric storage resource that is managing its own State of Charge would still be required to follow such a dispatch signal, just as all other resources providing that same service.²⁵² Moreover, we find that proposals to establish asymmetrical offer curves for regulation are beyond the scope of this proceeding. As explained above, we find that SPP’s proposal complies with Order No. 841’s requirement to allow resources to self-manage their State of Charge.

²⁵¹ *Id.*

²⁵² Order No. 841, 162 FERC ¶ 61,127 at P 253.

6. Energy Used to Charge Electric Storage Resources

a. Price for Charging Energy

147. Order No. 841 adds section 35.28(g)(9)(ii) to the Commission's regulations to require that the sale of electric energy from the RTO/ISO markets to an electric storage resource that the resource then resells back to those markets be at the wholesale LMP.²⁵³ This provision applies regardless of whether the electric storage resource is using the electric storage resource participation model or participates in RTO/ISO markets through other means, as long as the resource meets the definition of an electric storage resource set forth in Order No. 841. An electric storage resource's wholesale energy purchases should take place at the applicable nodal LMP, and not the zonal price.²⁵⁴

148. The Commission found that, when an electric storage resource is charging to resell energy at a later time, then its behavior is similar to other load-serving entities and applicable transmission charges should apply.²⁵⁵ However, the Commission found that electric storage resources should not be charged transmission charges when they are dispatched by an RTO/ISO to provide a service (such as frequency regulation or a downward ramping service).²⁵⁶ Order No. 841-A clarifies that the Commission's use of the phrase "applicable transmission charges" was intended to convey that an RTO/ISO may propose to apply its existing rate structure for transmission charges to an electric storage resource that is charging at wholesale but is not being dispatched by the RTO/ISO to provide a service in the RTO/ISO markets.²⁵⁷ Order No. 841-A further clarifies that, on compliance, each RTO/ISO may propose that any electric storage resource that is charging for the purpose of participating in an RTO/ISO market but is not being dispatched by the RTO/ISO to provide a service should be assessed charges consistent with how the RTO/ISO assesses transmission charges to wholesale load under its existing rate structure. Order No. 841-A also states that if an RTO/ISO proposes not to apply

²⁵³ *Id.* P 294.

²⁵⁴ *Id.* P 296.

²⁵⁵ *Id.* P 297. To the extent that load resources located at a single node pay different transmission charges than load resources located across multiple nodes, each RTO/ISO must apply those transmission charges for single-node resources to electric storage resources that are located at a single pricing node, as long as they are not being dispatched to provide an ancillary service by an RTO/ISO.

²⁵⁶ *Id.* P 298.

²⁵⁷ Order No. 841-A, 167 FERC ¶ 61,154 at P 121.

transmission charges to an electric storage resource that is charging at wholesale but is not being dispatched by the RTO/ISO to provide a service, then the RTO/ISO must demonstrate that exempting such a resource from these charges is reasonable given its existing rate structure for transmission charges.

149. With respect to the meaning of a “service,” Order No. 841-A acknowledges that the participation of electric storage resources in RTO/ISO markets may convey a range of benefits, particularly under certain system conditions, but declines to grant clarification that charging pursuant to economic dispatch always qualifies as a service.²⁵⁸ However, Order No. 841-A does clarify that services do not need to be limited to ancillary services and that they can include any service defined in an RTO/ISO tariff. Order No. 841-A explains that to the extent that an RTO/ISO seeks to create a new service that would involve charging pursuant to economic dispatch under certain system conditions, the RTO/ISO may propose such revisions to its tariff through a separate FPA section 205 filing.

150. Order No. 841 does not require that electric storage resources purchase all electric energy for future use from RTO/ISO markets, and does not address whether they can pay some other rate, such as a retail rate, for charging of co-located generation.²⁵⁹ Regarding electric storage resources’ use of the distribution system, the Commission found that it may be appropriate, on a case-by-case basis, for distribution utilities to assess a wholesale distribution charge to an electric utility participating in the RTO/ISO markets.²⁶⁰ Order No. 841-A clarifies that the Commission will consider any proposal to establish a rate for providing wholesale distribution service to an electric storage resource for its charging on a case-by-case basis (e.g., a facility-specific rate, a wholesale distribution service rate that applies to all or some subset of electric storage resources, a generally applicable wholesale distribution service tariff, or any other rate mechanism).²⁶¹

151. Additionally, the Commission found that efficiency losses are charging energy and therefore not a component of station power load. Thus, charging energy lost to conversion inefficiencies should be settled at the LMP as long as those efficiency losses are an unavoidable component of the conversion, storage, and discharge process that is used to resell energy back to RTO/ISO markets and are not a component of what an

²⁵⁸ *Id.* P 120.

²⁵⁹ Order No. 841, 162 FERC ¶ 61,127 at P 299.

²⁶⁰ *Id.* P 301.

²⁶¹ Order No. 841-A, 167 FERC ¶ 61,154 at P 123.

RTO/ISO considers onsite load.²⁶² With respect to directly integrated and other ancillary loads, Order No. 841 provides RTOs/ISOs flexibility to determine whether they are a component of charging energy or a component of station power.

152. Order No. 841-A denies Pacific Gas and Electric's request to clarify that states have jurisdiction to determine how power flowing from the distribution grid into the electric storage resource located behind the customer meter is split between retail consumption and wholesale charging for later discharge into the wholesale markets. Order No. 841-A further reiterates that the Commission's finding regarding charging energy did not address payment of the retail rate for energy and therefore Order No. 841 does not authorize electric storage resources to bypass retail rates for its on-site electricity consumption, as Pacific Gas & Electric suggested.²⁶³

153. Order No. 841-A denies CAISO's request for clarification that electric storage resources participating as transmission resources, as described in the Commission's Policy Statement,²⁶⁴ should not incur transmission charges for charging demand and stated that it is appropriate to address CAISO's concerns related to resources that might seek to recover their costs through both regulated transmission rates and the wholesale markets in the context of a specific proposal involving resources that provide multiple services and seek to recover their costs through both cost-based and market-based rates concurrently.

i. SPP's Filing

154. SPP states that all energy purchases for charging of an Electric Storage Resource will take place at the applicable nodal LMP regardless of resource registration type.²⁶⁵ Further, for Electric Storage Resources registered as Market Storage Resources, SPP proposes that a single nodal settlement location will be established for both the injections and withdrawals. SPP also proposes a definition for Discrete Delivery Point to denote the finest granularity of injection and withdrawal from the transmission system modeled within the market.²⁶⁶ SPP further states that, in order to accommodate generation less

²⁶² Order No. 841, 162 FERC ¶ 61,127 at P 302.

²⁶³ Order No. 841-A, 167 FERC ¶ 61,154 at P 119 (citing Order No. 841, 162 FERC ¶ 61,127 at PP 323-24).

²⁶⁴ *Id.* P 122 (citing *Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery*, 158 FERC ¶ 61,051 (2017)).

²⁶⁵ SPP Compliance Filing, Transmittal at 40.

²⁶⁶ *Id.*; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 1.1

than 0.1 MW on the distribution system, aggregation is permitted and that this aggregation is limited to the Discrete Delivery Point in order to ensure that aggregated resources are priced at the applicable nodal LMP.²⁶⁷ SPP further clarifies that the energy withdrawals will settle as negative generation at the resource settlement location, which will be a single pricing node where the Market Storage Resource is located.²⁶⁸

155. SPP explains that efficiency losses will be accounted for in the settlement of energy purchases and sales because they are inherently included in the purchase MW quantity.²⁶⁹ SPP also clarifies that station service is required to be registered separately.²⁷⁰

156. SPP proposes to modify Attachment AE to exclude charges for transmission service when a Market Storage Resource is issued a dispatch instruction from SPP to provide a wholesale service that incidentally results in the Market Storage Resource charging.²⁷¹ SPP explains that a Market Storage Resource will have to request transmission service under the Tariff to cover self-charging activities and charging beyond the amount instructed by SPP, while Electric Storage Resources registered as a resource type other than Market Storage Resource must reserve either Network Integration Transmission Service or Point-To-Point Transmission Service.²⁷²

ii. Data Request Response

157. SPP clarifies that all withdrawals from the transmission system are priced at LMP regardless of how they are modeled. SPP states that it settles energy injections and withdrawals on the transmission system at LMP, and that all withdrawals are calibrated

(Definitions D).

²⁶⁷ SPP Compliance Filing, Transmittal at 41.

²⁶⁸ *Id.* at 40.

²⁶⁹ *Id.*

²⁷⁰ *Id.*; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.2(2).

²⁷¹ SPP Compliance Filing, Transmittal at 40; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, sections 2.17(2)(f)(ii), 13.7(c), 14.5.

²⁷² SPP Compliance Filing, Transmittal at 40-41; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17.

with the injections in order to assure that the reported load is neither deficient nor over reported.²⁷³

158. SPP states that Electric Storage Resources that are not registered as Market Storage Resources and that withdraw energy from the transmission system must be included in a Load Settlement Location and will pay the LMP calculated at that Load Settlement Location for the withdrawal from the transmission system. As for Electric Storage Resources that do register as Market Storage Resources, SPP states that the metering process will be similar to that of Electric Storage Resources that are not registered as Market Storage Resources except that the withdrawal will be at the Resource Settlement Location. SPP therefore asserts that all withdrawals from the transmission system are always priced at LMP regardless of how they are modeled.²⁷⁴

159. SPP further clarifies that, to the extent that an Electric Storage Resource is capable of injecting and withdrawing for both retail and wholesale purposes, it is the responsibility of the meter agent²⁷⁵ to report the meter values reflecting the amount of energy withdrawn from and then injected into the transmission system separate from the reduction or increase of the retail load resulting from the withdrawal and injection for retail purposes. SPP notes that this can only occur when the load is located at the same injection/withdrawal location. Otherwise, SPP states that, as with any other resource, the Electric Storage Resource is withdrawing from and injecting to the transmission system.²⁷⁶

iii. Commission Determination

160. We find that SPP's filing complies with the requirements of Order No. 841 that the sale of electric energy from the RTO/ISO markets to an electric storage resource that the resource then resells back to those markets be at the wholesale LMP because all energy purchases for charging of an Electric Storage Resource will take place at the applicable nodal LMP regardless of resource registration type. We also find that SPP's proposal complies with Order No. 841's requirement that charging energy lost to

²⁷³ SPP Data Request Response, Transmittal at 12.

²⁷⁴ *Id.*

²⁷⁵ SPP explains that it does not directly meter any facility and that meter agents submit settlement meter values directly to SPP. SPP Compliance Filing, Transmittal at 42.

²⁷⁶ SPP Data Request Response, Transmittal at 12.

conversion inefficiencies be settled at the LMP, because purchased MW quantity and station load inherently include such efficiency losses and are settled at the LMP.

161. However, although SPP proposes to exempt Market Storage Resources from transmission service charges when a Market Storage Resource is issued a dispatch instruction to provide a wholesale service that incidentally results in the Market Storage Resource charging, SPP does not specify the wholesale services that will be subject to this exemption. Accordingly, we direct SPP to file, within 60 days of the date of issuance of this order, revisions to its Tariff to specify the wholesale services that will be subject to the exemption, consistent with the Commission's clarification in Order No. 841-A.²⁷⁷ Further, we note that SPP's proposal to permit aggregation of resources is addressed elsewhere in the body of this order.²⁷⁸

b. Metering and Accounting Practices for Charging Energy

162. To help implement the new requirement in section 35.28(g)(9)(ii) of the Commission's regulations, Order No. 841 requires each RTO/ISO to implement metering and accounting practices as needed to address the complexities of implementing the requirement that the sale of electric energy from RTO/ISO markets to an electric storage resource that the resource then resells back to those markets be at the wholesale LMP.²⁷⁹ Order No. 841 requires each RTO/ISO to directly meter electric storage resources,²⁸⁰ but offers flexibility for each RTO/ISO to propose alternative approaches that may not entail direct metering but nonetheless address the complexities of implementing the requirement that the sale of electric energy from RTO/ISO markets to an electric storage resource that the resource then resells back to those markets be at the wholesale LMP.²⁸¹ Order No. 841 acknowledges that metering and accounting rules may need to differ based

²⁷⁷ See Order No. 841-A, 167 FERC ¶ 61,154 at PP 120-21.

²⁷⁸ See *supra* P 39.

²⁷⁹ Order No. 841, 162 FERC ¶ 61,127 at P 322.

²⁸⁰ In Order No. 841-A, the Commission clarified that the RTO/ISO itself does not need to be the entity that directly meters electric storage resources. Order No. 841-A, 167 FERC ¶ 61,154 at P 138.

²⁸¹ Order No. 841, 162 FERC ¶ 61,127 at P 322.

on whether the resource is located on the transmission system, the distribution system, or behind-the-meter.²⁸²

163. The Commission rejected the suggestion that electric storage resources must choose to participate in either wholesale or retail markets due to the complexity of the metering and accounting practices.²⁸³ The Commission found that it is possible for electric storage resources that are selling retail services also to be technically capable of providing wholesale services, and it would adversely affect competition in the RTO/ISO markets if these technically capable resources were excluded from participation. In response to concerns that not requiring electric storage resources to choose to participate exclusively in either wholesale or retail markets will allow resources using the participation model for electric storage resources to evade the distribution utility's retail service or to simultaneously buy electricity at the retail rate and sell it at the wholesale LMP, Order No. 841-A states that each RTO/ISO can address these issues by developing its metering and accounting requirements in cooperation with the distribution utilities and relevant electric retail regulatory authorities in its footprint, as the Commission recognized in Order No. 841.²⁸⁴ Order No. 841-A also notes that, when Order No. 841 found that the sale of electric energy from the RTO/ISO markets to an electric storage resource that the resource then resells back to those markets must be at the wholesale LMP, it was referring to the sale of energy from the grid that is used to charge electric storage resources for later resale into the energy or ancillary service markets.²⁸⁵

164. Order No. 841 also requires RTOs/ISOs to prevent electric storage resources from paying twice for the same charging energy (i.e., they should not have to pay both the wholesale and retail price for the same charging energy).²⁸⁶ To the extent that the host distribution utility is unable—due to a lack of the necessary metering infrastructure and accounting practices—or unwilling to net out any energy purchases associated with an electric storage resource's wholesale charging activities from the host customer's retail bill, the Commission found that RTOs/ISOs would be prevented from charging that

²⁸² *Id.* P 324.

²⁸³ *Id.* P 325.

²⁸⁴ Order No. 841-A, 167 FERC ¶ 61,154 at P 142 (citing Order No. 841, 162 FERC ¶ 61,127 at P 324).

²⁸⁵ *Id.* (citing Order No. 841, 162 FERC ¶ 61,127 at P 294).

²⁸⁶ Order No. 841, 162 FERC ¶ 61,127 at P 326.

resource wholesale rates for the charging energy for which it is already paying retail rates.²⁸⁷

165. Order No. 841-A clarifies that an RTO/ISO could require verification from the host distribution utility that it is unable or unwilling to net wholesale demand from retail settlement before the RTO/ISO ceases to settle an electric storage resource's wholesale demand at the wholesale LMP.²⁸⁸ Order No. 841-A clarifies further that the Commission would consider on compliance each RTO's/ISO's proposal to identify whether a distribution utility is unable or unwilling to net out from a host customer's retail bill the wholesale energy purchases associated with charging an electric storage resource that is participating in the RTO/ISO market.²⁸⁹ However, Order No. 841-A denies CAISO's request for clarification that when an RTO/ISO cannot verify the host distribution utility's inability or unwillingness to net out wholesale charging energy, the RTO/ISO can require the electric storage resource to use a participation model designed for retail customer participation. Order No. 841-A states that, while Order No. 841 provides flexibility with respect to how each RTO/ISO implements the requirement to prevent electric storage resources from paying twice for the same charging energy, it would be inappropriate for an RTO/ISO to meet that requirement by requiring an electric storage resource to use a participation model designed for retail customer participation.²⁹⁰

i. SPP's Filing

166. SPP states that it does not have retail open access and therefore does not directly meter any facility.²⁹¹ SPP explains that meter agents and market participants submit the settlement meter values and real-time meter data directly to SPP, regardless of whether

²⁸⁷ Paragraph 326 of the preamble of Order No. 841 used the term "resources using the participation model for electric storage resources" with respect to the requirements set forth therein (e.g., "we require each RTO/ISO to prevent resources using the participation model for electric storage resources from paying twice for the same charging energy"). However, section 35.28(g)(9)(ii) of the Commission's regulations (as modified by Order No. 841), which these requirements are intended to implement, specifies that it applies to electric storage resources. Thus, the Commission used the incorrect term in paragraph 326 of Order No. 841. In this order, we use the correct term throughout.

²⁸⁸ Order No. 841-A, 167 FERC ¶ 61,154 at P 138.

²⁸⁹ *Id.*

²⁹⁰ *Id.* P 139 (citing Order No. 841, 162 FERC ¶ 61,127 at P 326).

²⁹¹ SPP Compliance Filing, Transmittal at 42.

the resource is on the distribution or transmission system.²⁹² SPP explains that the actual meter values of distribution sited Market Storage Resources may be split among the retail and wholesale use by the meter agent in both real-time and for settlement. SPP proposes to modify Attachment AE to specify that the metering requirements for Market Storage Resources include real-time and settlement quality metering to comply with the metering requirements for the sale and purchase of electric energy by electric storage resources.²⁹³

167. SPP also proposes Tariff provisions stating that, in the event that a Market Storage Resource is not directly connected to the transmission system and the distribution company is unable or unwilling to separate the charging activity from other retail service, the Market Storage Resource will not be subject to settlement by the transmission provider for either the transmission charge or the energy consumption.²⁹⁴

ii. Protests/Comments

168. Advanced Energy Economy asserts that SPP's compliance filing does not contain any actual metering and accounting practices or methodologies. Advanced Energy Economy argues that, although SPP describes the responsibilities of meter agents to submit settlement values directly to SPP, it does not otherwise state how these practices and any other accompanying accounting practices will meet Order No. 841's requirements. Specifically, Advanced Energy Economy argues that SPP fails to show that it will ensure that the sale of electric energy from the SPP markets to an Electric Storage Resource that the resource then resells back to the wholesale market will be at the wholesale LMP or how its proposed practices ensure that an Electric Storage Resource will not be charged twice (at both wholesale and retail) for charging energy. Advanced Energy Economy also notes that SPP's compliance filing does not indicate whether any additional metering or accounting practices will be developed outside of the tariff in business practice manuals or with individual Electric Storage Resources.

169. Advanced Energy Economy suggests that, to comply with all of these requirements, SPP should include in the SPP Tariff a workable methodology or framework to guide the development of individual metering and accounting methodologies.²⁹⁵ Advanced Energy Economy further notes that many Electric Storage

²⁹² *Id.* at 42-43.

²⁹³ *Id.*; SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17(2)(d).

²⁹⁴ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17(2)(g)(i).

²⁹⁵ Advanced Energy Economy Comments at 7.

Resources connected to the distribution grid or behind-the-meter will have unique configurations that require flexibility in the implementation of metering and accounting practices and methodologies. Advanced Energy Economy argues that inclusion of Tariff provisions regarding metering and accounting practices and methodologies should provide guidance and accountability (as well as a means for resolving disputes) as these practices are developed without limiting flexibility.

170. In addition, Advanced Energy Economy argues that SPP has not fully shown how its proposed Tariff revisions and participation model will fully permit Electric Storage Resources on the distribution grid or behind-the-meter to inject and withdraw energy and otherwise fully provide all of the wholesale services that they are technically capable of providing.²⁹⁶ It argues that the Commission should make clear that full compliance with Order No. 841 requires a clear path for Electric Storage Resources located on the distribution grid or behind the meter to be able to inject energy onto the wholesale grid (provided they are technically and contractually able to do so) and provide all wholesale services that they are technically capable of providing. Advanced Energy Economy also argues that the Commission should direct SPP and the other RTOs/ISOs to ensure that their electric storage resource participation models provide this clear path.²⁹⁷ However, it does not believe that the remainder of SPP's compliance proposal should be delayed pending resolution of the "uncertainty" in the filing regarding the participation of resources located on the distribution grid or behind-the-meter and believes that the Commission can provide direction to SPP, and the other RTOs/ISOs, to address these issues while implementing the other parts of their proposals.²⁹⁸

171. Tesla urges the Commission to require SPP to describe how behind-the-meter electric storage resources may provide market services.²⁹⁹ Tesla states that the location of an electric storage resource does not justify different treatment and that any discrimination against behind-the-meter electric storage resources must be removed. Tesla further emphasizes that market rules must allow behind-the-meter electric storage resources to seamlessly switch between serving onsite demand and injecting power onto the grid.

²⁹⁶ *Id.* at 3.

²⁹⁷ *Id.* at 7.

²⁹⁸ *Id.* n.20.

²⁹⁹ Tesla Comments at 18.

iii. Answers

172. In response to Advanced Energy Economy’s comments, NRECA argues that Order No. 841’s findings, and the remedial regulations that it adopts, are exclusively addressed to Commission-regulated RTOs/ISOs and that Order No. 841 and the Commission’s regulations do not require an RTO/ISO to adopt market rules that clear a new path through non-RTO/ISO local distribution facilities, retail meters, or retail electric regulation more generally.³⁰⁰

173. NRECA raises concerns with Tesla’s comments on behind-the-meter electric storage resources and notes that Order No. 841 provides that a storage resource must be both physically and contractually able to inject energy onto the wholesale grid before it may participate in wholesale markets.³⁰¹ NRECA also states that Order No. 841 does not use the phrase “seamlessly transitioning” or authorize behind-the-meter storage to operate in contravention of state or local law.³⁰² NRECA argues that nothing in Order No. 841 disturbs state and local regulation of retail metering, retail net metering, or storage use on local distribution systems, including behind-the-meter storage. Accordingly, NRECA argues that these compliance proceedings should be limited to RTO/ISO market rules and should not become a vehicle for unbundling retail services, asserting jurisdiction over retail net metering, or limiting state and local regulation of distribution and retail storage uses. NRECA asserts that such matters are beyond the scope of this proceeding.³⁰³ NRECA also argues that Tesla’s comments regarding behind-the-meter storage are unsupported and beyond the scope of this proceeding.³⁰⁴

iv. Data Request Response

174. SPP states that its metering process – wherein the meter agent is responsible for reporting the meter values reflecting the amount of energy withdrawn from and then injected into the transmission system separate from the reduction or increase in retail load resulting from withdrawals and injections for retail purposes – will ensure that the Electric Storage Resource only pays either the retail or wholesale price for the metered amount submitted to SPP. If the Electric Storage Resource is registered as a Market

³⁰⁰ NRECA Answer at 4.

³⁰¹ *Id.*

³⁰² *Id.* at 5.

³⁰³ *Id.* at 5-6.

³⁰⁴ *Id.* at 6 (citing Tesla Comments at 19).

Storage Resource and the local distribution company is unable or unwilling to separate the charging activity from other retail service, the Market Storage Resource will not be subject to settlement by SPP. If the Electric Storage Resource is not registered as a Market Storage Resource and the local distribution company is unable or unwilling to separate the charging activity from other retail service, the Electric Storage Resource's withdrawal would be included in the retail load and settled by the retail provider.³⁰⁵

175. SPP also clarifies its reference to the handling of metering and accounting for distribution-sited Market Storage Resources as "consistent with the handling of pseudo-tie resources" by explaining that pseudo-tied resources may be pseudo-tied for less than their full capacity and it is the responsibility of the meter agent to split the output reporting of the resource among the balancing authorities because they know the intent at the time in both real-time and in settlement data. SPP states that the meter agent for the storage device is the only party aware of the intent of the injection and bears the responsibility for appropriately reporting the data.³⁰⁶

v. Commission Determination

176. We find that SPP's proposed Tariff provisions partially comply with the requirements of Order No. 841 pertaining to metering and accounting practices for electric storage resources and require SPP to file, within 60 days of the date of issuance of this order, a further compliance filing as discussed below.

177. We find that the proposed SPP Tariff provisions comply with Order No. 841's requirement that electric storage resources be prevented from paying twice for the same charging energy by requiring that, in the event a Market Storage Resource is not directly connected to the transmission system and the distribution company is unable or unwilling to separate charging activity from other retail service, the resource will not be subject to settlement by the transmission provider for either the transmission charges or the energy consumption.³⁰⁷

178. As discussed above, SPP has demonstrated that its Tariff provides that Electric Storage Resources will be charged wholesale LMP for charging energy purchased from SPP's markets to be resold back to those markets. However, with respect to the necessary metering and accounting practices to implement that Tariff requirement, we are concerned that SPP's compliance filing does not include sufficient information about its

³⁰⁵ SPP Data Request Response, Transmittal at 12.

³⁰⁶ *Id.* at 13.

³⁰⁷ SPP, OATT, Sixth Revised Volume No. 1, Attachment AE, section 2.17(2)(g)(i).

metering and accounting practices in its Tariff. We find that the SPP Tariff should include a basic description of SPP's proposed metering methodology and accounting practices for Electric Storage Resources as well as references to specific documents containing further details. Decisions regarding whether an item should be placed in a tariff or in a business practice manual are guided by the Commission's rule of reason policy, under which provisions that "significantly affect rates, terms, and conditions" of service, are readily susceptible of specification, and are not generally understood in a contractual agreement must be included in a tariff, while items better classified as implementation details may be included only in the business practice manual.³⁰⁸ The unique physical and operational characteristics of electric storage resources require unique metering and accounting practices to ensure that these resources are charged the LMP for charging energy, as required by Order No. 841. We find that these practices significantly affect rates, terms, and conditions and should be included in the Tariff.³⁰⁹ Further, we find that the Tariff should reference the specific documents that contain the implementation details for SPP's metering methodology and accounting practices for Electric Storage Resources so that market participants may plan and manage their participation accordingly. Therefore, we direct SPP to file, within 60 days of the date of issuance of this order, revisions to its Tariff to include a basic description of SPP's metering methodology and accounting practices for Electric Storage Resources, as well as references to the specific documents in SPP's business practice manuals or other documents that contain the implementation details.

179. As to concerns regarding the ability of Electric Storage Resources located on the distribution system or behind the meter to participate in SPP's markets,³¹⁰ we reiterate that SPP's definition of Electric Storage Resource and Market Storage Resource are inclusive of those resources located on a distribution system or behind the meter.³¹¹ As described above, we find that SPP has demonstrated that its proposed market rules

³⁰⁸ *Energy Storage Ass'n v. PJM*, 162 FERC ¶ 61,296 at P 103; *see also City of Cleveland v. FERC*, 773 F.2d at 1376 (finding that utilities must file "only those practices that affect rates and service significantly, that are reasonably susceptible of specification, and that are not so generally understood in any contractual arrangement as to render recitation superfluous").

³⁰⁹ *Energy Storage Ass'n v. PJM*, 162 FERC ¶ 61,296 at P 103; *City of Cleveland v. FERC*, 773 F.2d at 1376.

³¹⁰ *See, e.g.*, Advanced Energy Economy Comments at 3; Tesla Comments at 18.

³¹¹ *See supra* P 16.

provide a means for all Electric Storage Resources, including those located on the distribution system or behind the meter, to provide services under the Tariff.³¹²

180. Additionally, we find that it is unclear how and to what extent SPP's proposed Tariff provisions allow Electric Storage Resources to use the participation model if they also participate in retail markets. In Order No. 841, the Commission stated that it was not persuaded by commenters' suggestion that electric storage resources must choose to participate in either wholesale or retail markets due to the complexity of the metering and accounting practices that would be necessary to distinguish between retail and wholesale activity.³¹³ The Commission found that electric storage resources that provide retail services may also be technically capable of providing wholesale services, and that excluding these resources from wholesale market participation would adversely affect competition in RTO/ISO markets.³¹⁴ On rehearing, the Commission stated that, while it agreed with petitioners that appropriate metering and accounting practices will be necessary to distinguish between wholesale and retail activity, it disagreed that these practices would be prohibitively complex or costly to develop and implement given the flexibility provided to the RTOs/ISOs to propose reasonable approaches.³¹⁵

181. The SPP Tariff does not explicitly state that Electric Storage Resources are allowed to participate in both retail and wholesale markets. Accordingly, we direct SPP to file, within 60 days of the date of issuance of this order, a further compliance filing to explain how its Tariff allows for Electric Storage Resources to participate in both wholesale and retail markets, or alternatively, revise its Tariff to allow Electric Storage Resources that provide retail services to also participate in SPP's markets, as required by Order No. 841.

7. Effective Date

182. Order No. 841 requires each RTO/ISO to file tariff changes needed to implement the requirements of Order No. 841 within 270 days of its publication in the *Federal Register*, and allows a further 365 days from that date to implement the tariff

³¹² See *supra* P 59.

³¹³ Order No. 841, 162 FERC ¶ 61,127 at P 325; *see also* Order No. 841-A, 167 FERC ¶ 61,154 at P 140 (denying rehearing of the decision to decline to require electric storage resources to choose to participate exclusively in either wholesale or retail markets).

³¹⁴ Order No. 841, 162 FERC ¶ 61,127 at P 325.

³¹⁵ Order No. 841-A, 167 FERC ¶ 61,154 at P 140.

provisions.³¹⁶ The Commission declined to allow the RTOs/ISOs to develop their own implementation schedules, finding that the compliance and implementation schedule set forth in the Final Rule is appropriate.³¹⁷ The Commission stated that the regional flexibility allowed in the Final Rule will assist the RTOs/ISOs in meeting the compliance and implementation deadlines.³¹⁸ Order No. 841-A reiterates that Order No. 841's compliance and implementation schedule is reasonable, and declines to permit the individual RTOs/ISOs to propose their own timeframes.³¹⁹

a. SPP's Filing

183. On February 28, 2019, SPP notified the Commission of the need to delay the effective date for the provisions filed in this proceeding, and requested that the Commission issue an order no later than July 1, 2019 accepting SPP's compliance filings in this proceeding. SPP explains that, subsequent to the submission of its compliance filing, SPP learned that its new Settlement Management System, upon which Order No. 841 changes must be built, will not go live on May 1, 2019 as had been expected and is instead expected to go live in the fourth quarter of 2019. SPP states that it cannot begin work on much of the underlying software necessary to effectuate the changes required by Order No. 841 until after the Settlement Management System goes live.³²⁰ SPP estimates that it will need a further six to 12 months after the Settlement Management System goes live for software implementation.³²¹ SPP further notes that a nine-month lead time between issuance of a Commission order and the effective date is necessary to accommodate software design, testing, and implementation, as well as internal and external training.³²² In light of this situation, SPP requests an effective date of "12/31/9998" for the Tariff records submitted in Docket Nos. ER19-460-000 and ER19-460-001, and SPP commits to submit a filing with the Commission specifying a precise effective date at a later time. SPP further states that, upon Commission

³¹⁶ Order No. 841, 162 FERC ¶ 61,127 at P 348.

³¹⁷ *Id.* P 349.

³¹⁸ *Id.* P 350.

³¹⁹ Order No. 841-A, 167 FERC ¶ 61,154 at P 154.

³²⁰ SPP Request for Deferral of Effective Date, Transmittal at 3-4, Docket No. ER19-460-002 (filed Feb. 28, 2019).

³²¹ *Id.* at 4.

³²² *Id.* n.4.

acceptance of SPP's compliance filing and the completion of the Settlement Management System, SPP will work as quickly as practicable to implement the necessary changes to its systems.³²³

b. Protests/Comments

184. Energy Storage Association states that SPP has modified its timing estimate for installation of its settlement system on March 5, 2019, now stating that the installation would be completed in the first quarter of 2020.³²⁴ Energy Storage Association asserts that, assuming that SPP would need six to 12 months from that installation date, SPP's Tariff provisions would not become effective until March 2021.³²⁵ Energy Storage Association also asserts that, even if SPP cannot ascertain definitively when its settlement system will be up and running, a moving and open-ended target date is detrimental to the storage industry. Energy Storage Association states that, based on the Commission's mandated Order No. 841 implementation date of December 3, 2019, many storage resources have already prepared to begin participating in SPP's markets or are in the process of financing anticipated projects. Energy Storage Association argues that any delay in implementing the Tariff provisions could result in significant financial hardship on developers and operators of these projects and that the impact of an undetermined delay on the markets, such as those proposed by SPP in its most recent filings on this issue, could result in the loss of project funding.

185. Energy Storage Association requests that the Commission require SPP to submit quarterly updates on the progress it is making to migrate to its new Settlement Management System in order to mitigate the impact of an unknown Tariff implementation date.³²⁶ Energy Storage Association believes the quarterly reports are necessary to ensure that SPP is working diligently to maintain its installation schedule and testing protocol and to allow transparency into SPP's decision making with respect to implementing Order No. 841 Tariff provisions. Energy Storage Association also requests that the Commission direct SPP to make the Tariff provisions effective no later than December 31, 2020.

³²³ *Id.* at 4.

³²⁴ Energy Storage Association Comments on SPP Request for Deferral at 1.

³²⁵ *Id.* at 2.

³²⁶ *Id.* at 3.

c. Answer

186. SPP argues that quarterly reporting on the status of the migration to its new Settlement Management System is unnecessary and would not be timely because this status is already discussed on a monthly basis at SPP's Change Working Group and the group's monthly meeting materials and minutes are available along with other relevant information on SPP's website.³²⁷ In addition, SPP states that Energy Storage Association's requested effective date of December 31, 2020 is arbitrary and not justified because the Commission has yet to issue an order on SPP's compliance filing and the settlement system has yet to be completed.³²⁸ SPP argues that, until the Commission issues an order from which SPP can fully design the final version of software effectuating the Order No. 841 changes and the new Settlement Management System goes live, neither SPP nor the Commission can know whether Energy Storage Association's requested December 31, 2020 date is feasible.³²⁹

d. Commission Determination

187. In Order Nos. 841 and 841-A, the Commission declined to provide the RTOs/ISOs with additional time for implementation; however, we find here that SPP's request to implement the requirements of Order No. 841 after the deadline established in Order No. 841 is reasonable based on the specific circumstances outlined in its compliance filing. Specifically, based on SPP's filing, we understand that the software changes necessary to effectuate the changes required by Order No. 841 cannot be implemented until after SPP's Settlement Management System goes live, which SPP states will occur in the fourth quarter of 2019. However, SPP's request to submit a filing with the Commission specifying a precise effective date at a later time is unreasonable because it creates uncertainty for prospective and existing market participants expecting to participate in SPP's markets using the Electric Storage Resource participation model. As discussed above, SPP states that its Settlement Management System will go live in the fourth quarter of 2019 and estimates that it will need a further six to 12 months for software implementation. In addition, SPP notes that a nine-month lead time between issuance of a Commission order and the effective date is necessary to accommodate software design, testing, and implementation, as well as internal and external training. Therefore, as discussed above, we accept SPP's tariff revisions in part, effective nine months from the date of issuance of this order. As we are accepting certain of SPP's

³²⁷ SPP Answer at 3-4.

³²⁸ *Id.* at 4.

³²⁹ *Id.* at 5.

tariff revisions effective nine months from the date of issuance of this order, we decline to require SPP to submit quarterly updates, as requested by Energy Storage Association.

The Commission orders:

(A) SPP's compliance filing is hereby accepted in part, as modified, subject to a further compliance filing, effective nine months from the date of issuance of this order, and rejected in part, as discussed in the body of this order.

(B) SPP is hereby directed to submit a further compliance filing in Docket No. ER19-460-000, within 60 days of the date of issuance of this order, as discussed in the body of this order.

(C) Pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Energy Regulatory Commission by section 402(a) of the Department of Energy Organization Act and the FPA, particularly section 206 thereof, and pursuant to the Commission's Rules of Practice and Procedure and the regulations under the FPA (18 C.F.R. Chapter I), the Commission hereby institutes a proceeding in Docket No. EL19-101-000, concerning the justness and reasonableness of SPP's resource adequacy minimum run-time requirement, as discussed in the body of this order.

(D) SPP is hereby directed to submit tariff provisions reflecting its resource adequacy minimum run-time requirement, in a new ER docket, no later than 45 days after the publication of notice in the *Federal Register* of the Commission's initiation of the section 206 proceeding in Docket No. EL19-101-000, as discussed in the body of this order.

(E) Any interested person desiring to be heard in Docket No. EL19-101-000 must file a notice of intervention or motion to intervene, as appropriate, with the Federal Energy Regulatory Commission, 888 First Street NE, Washington, DC 20426, in accordance with Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2019), within 21 days of the date of issuance of this order. The Commission encourages electronic submission of interventions in lieu of paper using the "eFiling" link at <http://www.ferc.gov>. Persons unable to file electronically should submit an original and three copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426.

(F) The Secretary shall promptly publish in the *Federal Register* a notice of the Commission's initiation of the proceeding under section 206 of the FPA in Docket No. EL19-101-000.

(G) The refund effective date in Docket No. EL19-101-000 established pursuant to section 206 of the FPA shall be the date of publication in the *Federal Register* of the notice discussed in Ordering Paragraph (F) above.

By the Commission. Commissioner McNamee is concurring with a separate statement attached.

(S E A L)

Kimberly D. Bose,
Secretary.

Appendix – eTariff Designations

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Definitions E, 1 Definitions E, 3.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Definitions M, 1 Definitions M, 4.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Section 13.7, 13.7 Classification of Firm Transmission Service, 4.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Section 14.5, 14.5 Classification of Non-Firm Point-To-Point Trans..., 3.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Attachment AE \(MPL\), Attachment AE Integrated Marketplace, 10.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 A, Attachment AE \(MPL\) Section 1.1 A, 4.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 C, Attachment AE \(MPL\) Section 1.1 C, 6.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 D, Attachment AE \(MPL\) Section 1.1 D, 5.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 E, Attachment AE \(MPL\) Section 1.1 E, 3.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 M, Attachment AE \(MPL\) Section 1.1 M, 6.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 N, Attachment AE \(MPL\) Section 1.1 N, 3.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 R, Attachment AE \(MPL\) Section 1.1 R, 6.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 S, Attachment AE \(MPL\) Section 1.1 S, 8.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 1.1 T, Attachment AE \(MPL\) Section 1.1 T, 5.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.2, Attachment AE \(MPL\) Section 2.2, 12.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.8, Attachment AE \(MPL\) Section 2.8, 1.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.8.1, Attachment AE \(MPL\) Section 2.8.1, 1.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.8.2, Attachment AE \(MPL\) Section 2.8.2, 1.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.8.3, Attachment AE \(MPL\) Section 2.8.3, 0.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.11.1, Attachment AE \(MPL\) Section 2.11.1, 3.0.0](#).

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.11.2, Attachment AE \(MPL\) Section 2.11.2, 3.1.0](#).

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.12, Attachment AE \(MPL\) Section 2.12, 3.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 2.17, Attachment AE \(MPL\) Section 2.17, 0.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 4.1, Attachment AE \(MPL\) Section 4.1, 10.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 4.5.2, Attachment AE \(MPL\) Section 4.5.2, 3.0.0](#).

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 5.1.2, Attachment AE \(MPL\) Section 5.1.2, 7.1.0](#).

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 5.2.2, Attachment AE \(MPL\) Section 5.2.2, 6.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 5.2.3, Attachment AE \(MPL\) Section 5.2.3, 3.0.0](#)

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Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No., [Att. AE \(MPL\) 6.1.3, Attachment AE \(MPL\) Section 6.1.3, 2.0.0](#).

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 6.2.1, Attachment AE \(MPL\) Section 6.2.1, 2.1.0](#).

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Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 6.4.1, Attachment AE \(MPL\) Section 6.4.1, 5.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.1, Attachment AE \(MPL\) Section 8.1, 1.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.3.4, Attachment AE \(MPL\) Section 8.3.4, 6.0.0](#).

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.5.1, Attachment AE \(MPL\) Section 8.5.1, 1.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.5.9, Attachment AE \(MPL\) Section 8.5.9, 8.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.5.10, Attachment AE \(MPL\) Section 8.5.10, 3.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.5.21, Attachment AE \(MPL\) Section 8.5.21, 2.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.5.22, Attachment AE \(MPL\) Section 8.5.22, 2.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.5.23, Attachment AE \(MPL\) Section 8.5.23, 2.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.5.25, Attachment AE \(MPL\) Section 8.5.25, 1.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.6.1, Attachment AE \(MPL\) Section 8.6.1, 2.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.6.5, Attachment AE \(MPL\) Section 8.6.5, 9.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.6.6, Attachment AE \(MPL\) Section 8.6.6, 6.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.6.7, Attachment AE \(MPL\) Section 8.6.7, 6.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.6.15, Attachment AE \(MPL\) Section 8.6.15, 3.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.6.16, Attachment AE \(MPL\) Section 8.6.16, 5.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Att. AE \(MPL\) 8.6.22, Attachment AE \(MPL\) Section 8.6.22, 1.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Attachment AF Section 3, Attachment AF Section 3, 14.0.0](#)

Southwest Power Pool, Inc., FERC FPA Electric Tariff, Open Access Transmission Tariff, Sixth Revised Volume No. 1, [Attachment AG Section 4, Attachment AG Section 4, 5.0.0](#)

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Southwest Power Pool, Inc.

Docket Nos. ER19-460-000
ER19-460-001
ER19-460-002
ER19-460-003
EL19-101-000

(Issued October 17, 2019)

McNAMEE, Commissioner, *concurring*:

1. I concur with today's order insofar as it finds that Southwest Power Pool, Inc. (SPP) complies in part with Order Nos. 841¹ and 841-A² (together, the Storage Orders) as issued and the Commission's regulations.³ I write separately, however, to express my continuing concern that the Commission exceeded its statutory authority under the Federal Power Act,⁴ and should have, at the very least, provided states the opportunity to opt-out of the participation model created by the Storage Orders.⁵
2. On February 15, 2018,⁶ the Commission issued Order No. 841 to remove barriers to the participation of electric energy storage resources (ESRs) in the capacity, energy, and ancillary service markets operated by Regional Transmission Organizations (RTOs)

¹ *Elec. Storage Participation in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 841, 162 FERC ¶ 61,127 (2018) (Order No. 841).

² *Elec. Storage Participation in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 841-A, 167 FERC ¶ 61,154 (2019) (Order No. 841-A).

³ 18 C.F.R. §§ 35.28(b)(9), 35.28(g)(9) (2019).

⁴ 16 U.S.C. §§ 791a-825r (2018).

⁵ *See generally* Order No. 841-A, 167 FERC ¶ 61,154 (McNamee, Comm'r concurring in part and dissenting in part) (McNamee Separate Statement).

⁶ This order was later amended by an errata issued on February 28, 2018. *Elec. Storage Participation in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Docket Nos. RM16-23-000 and AD16-20-000, Errata Notice (Feb. 28, 2018).

and Independent System Operators (ISOs).⁷ In Order No. 841, the Commission denied requests to allow states to decide whether distribution-level ESRs or those resources located behind a retail meter could participate in RTO or ISO markets.⁸ On rehearing, in Order No. 841-A, a majority of the Commission affirmed these findings and declined to provide the states with an opt-out.⁹

3. I was not a member of the Commission at the time Order No. 841 was issued, but I concurred in part and dissented in part when Order 841-A was issued. Specifically, I stated my support for ESRs and my belief that they have the potential to transform the electricity industry. But to the extent the Commission's Storage Orders exercised authority over the distribution system and behind-the-meter, I concluded:

[T]he majority has exceeded the Commission's jurisdictional authority by depriving the states of the ability to determine whether distribution-level ESRs may use distribution facilities so as to access the wholesale markets. By doing so, in my view, the Commission claimed jurisdiction over functions and assets reserved by statute to the states. Further, even if the majority thought they could rightly exercise jurisdiction in this matter, I think they should have furthered the path of "cooperative federalism" by permitting the states to choose whether or not behind-the-meter and distribution-connected ESRs may participate in the wholesale markets through an opt-out provision.¹⁰

4. Therefore, I concluded that the Commission exceeded its statutory authority in the Storage Orders and stated that I would have granted rehearing to reconsider the Commission's assertion of jurisdiction and its failure to provide states the opportunity to opt-out of the participation model created by the Storage Orders.¹¹

⁷ *See generally* Order No. 841, 162 FERC ¶ 61,127.

⁸ *Id.* P 35.

⁹ Order No. 841-A, 167 FERC ¶ 61,154 at PP 30-56.

¹⁰ McNamee Separate Statement, 167 FERC ¶ 61,154 at P 3 (footnotes & citations omitted).

¹¹ *Id.* PP 2-24.

5. While I approve SPP's compliance filing today to the extent it complies with the Commission's Storage Orders, I note that the Storage Orders are presently pending judicial review,¹² and I reiterate my concern with the Commission's assertion of jurisdiction over ESRs interconnecting either to a distribution system or behind-the-meter. Further, I continue to believe the Commission should have included in the Storage Orders an opt-out provision for states.

For these reasons, I respectfully concur.

Bernard L. McNamee
Commissioner

¹² See *Nat'l Ass'n of Regulatory Comm'rs v. FERC*, Nos. 19-1142 and 19-1147 (D.C. Cir. filed July 11, 2019).