

169 FERC ¶ 61,137
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

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

Midcontinent Independent System Operator, Inc. Docket Nos. ER19-465-000
ER19-465-001

ORDER ON COMPLIANCE FILING

(Issued November 21, 2019)

1. On December 3, 2018, Midcontinent Independent System Operator, Inc. (MISO) submitted proposed revisions to its Open Access Transmission, Energy and Operating Reserve Markets 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 services markets operated by Regional Transmission Organizations and Independent System Operators (RTO/ISO). In this order, we accept MISO's compliance filing, subject to further compliance, to be effective June 6, 2022, as requested.²

I. Background

2. 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 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

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 *See infra* P 268.

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

⁴ 18 C.F.R. § 35.28 (2019).

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 Federal Power Act (FPA) section 206.⁵

3. 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. Filings

4. MISO's compliance filing proposes Tariff revisions to Module A, Module B, Module C, Module D, Module E-1, Schedule 2, Schedule 26-A, Schedule 27, Schedule 29, Schedule 29-A, Schedule 33, and Attachment MM, and proposes new Attachment HHH to comply with the requirements of Order No. 841 and to create a participation model for electric storage resources, as discussed below. MISO's compliance filing requests an effective date of December 3, 2019.

5. On April 1, 2019, Commission staff issued a letter informing MISO that additional information was necessary to process its compliance filing (Data Request). On May 1, 2019, in Docket No. ER19-465-001, MISO submitted a response to the Data Request, which amended its compliance filing (Data Request Response). MISO's Data Request

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.

Response requests an effective date no earlier than 18 months from the Commission's issuance of an order accepting its proposed Tariff revisions.

6. On November 1, 2019, in Docket No. ER19-465-001, MISO filed a request to defer the effective date of its proposed Tariff revisions to June 6, 2022 (Deferral Request). MISO also requests a Commission order on its compliance filing by June 1, 2020.

III. Notices and Responsive Pleadings

7. Notice of MISO's December 3, 2018 compliance filing was published in the *Federal Register*, 83 Fed. Reg. 63,497 (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

8. Timely motions to intervene were filed by: Alliant Energy Corporate Services, Inc.; Ameren Services Company; American Electric Power Service Corporation; American Municipal Power, Inc.; American Public Power Association; Coalition of Midwest Power Producers, Inc.; Consumers Energy Company; Cooperative Energy; Electric Power Supply Association; Entergy Services, LLC;⁹ Exelon Corporation; GlidePath Development LLC; Great River Energy; Lincoln Clean Energy, LLC; LS Power Associates, L.P; MidAmerican Energy Company; MISO Transmission Owners;¹⁰

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).

⁹ Entergy Services, LLC filed a motion to intervene on behalf of: Entergy Arkansas, Inc.; Entergy Louisiana, LLC; Entergy Mississippi, Inc.; Entergy New Orleans, LLC; and Entergy Texas, Inc. (collectively, the Entergy Parties).

¹⁰ For the purposes of this proceeding, the MISO Transmission Owners are: Ameren Services Company, as agent for Union Electric Company, Ameren Illinois Company and Ameren Transmission Company of Illinois; American Transmission Company LLC; Big Rivers Electric Corporation; Central Minnesota Municipal Power Agency; City Water, Light & Power (Springfield, IL); Cleco Power LLC; Cooperative Energy; Dairyland Power Cooperative; Duke Energy Business Services, LLC for Duke Energy Indiana, LLC; East Texas Electric Cooperative; the Entergy Parties; Great River Energy; Hoosier Energy Rural Electric Cooperative, Inc.; Indiana Municipal Power Agency; Indianapolis Power & Light Company; International Transmission Company; ITC Midwest LLC; Lafayette Utilities System; Michigan Electric Transmission Company, LLC; MidAmerican Energy Company; Minnesota Power (and its subsidiary Superior Water, L&P); Missouri River Energy Services; Montana-Dakota Utilities Co.;

National Rural Electric Cooperative Association (NRECA); NRG Power Marketing LLC; Penn Oak Services, LLC; Voith Hydro, Inc. (Voith Hydro); WEC Energy Group, Inc.; and Xcel Energy Services, Inc. (Xcel). Notices of intervention were filed by: the Council of the City of New Orleans, Louisiana; the Illinois Commerce Commission; the Michigan Agency for Energy; the Michigan Public Service Commission (Michigan Commission); the Missouri Public Service Commission; and the Organization of MISO States, Inc.

9. Timely motions to intervene and comments/protests were filed by: Advanced Energy Economy; DTE Electric Company (DTE Electric); EDF Renewables, Inc. (EDF); Energy Storage Association; Indianapolis Power & Light Company (IPL); Midwest TDUs;¹¹ NextEra Energy Resources, LLC (NextEra); and Union of Concerned Scientists. On February 8, 2019, Tesla, Inc. (Tesla) filed comments. On March 1, 2019, Voith Hydro filed comments.

10. On February 22, 2019, Midwest TDUs filed a request for leave to answer and answer to specific issues raised in comments, and NRECA filed a request for leave to answer and answer to Advanced Energy Economy's and Tesla's comments. On March 12, 2019, MISO filed a request for leave to answer and answer to comments. On March 26, 2019 and April 5, 2019, respectively, Midwest TDUs and IPL filed requests for leave to reply and reply to MISO's answer.

11. Notice of MISO's May 1, 2019 Data Request Response was published in the *Federal Register*, 84 Fed. Reg. 20,351 (2019), with interventions and protests due on or before May 22, 2019. On May 22, 2019, Midwest TDUs filed a protest.

12. Notice of MISO's November 1, 2019 Deferral Request was published in the *Federal Register*, 84 Fed. Reg. 61,052 (2019), with comments and protests due on or before November 8, 2019. None was filed.

Northern Indiana Public Service Company LLC; Northern States Power Company, a Minnesota corporation, and Northern States Power Company, a Wisconsin corporation, subsidiaries of Xcel Energy Inc.; Northwestern Wisconsin Electric Company; Otter Tail Power Company; Prairie Power Inc.; Southern Illinois Power Cooperative; Southern Indiana Gas & Electric Company; Southern Minnesota Municipal Power Agency; Wabash Valley Power Association, Inc.; and Wolverine Power Supply Cooperative, Inc.

¹¹ Midwest TDUs refers to Great Lakes Utilities, Indiana Municipal Power Agency, Madison Gas and Electric Company, Midwest Municipal Transmission Group, Missouri Joint Municipal Electric Utility Commission, Missouri River Energy Services, Southern Minnesota Municipal Power Agency, and WPPI Energy.

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 notices of intervention and timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.¹²

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 answer unless otherwise ordered by the decisional authority. We accept the answers filed in this proceeding because they have provided information that assisted us in our decision-making process.

B. Substantive Matters

15. We find that MISO's compliance filing, with certain modifications directed below, complies with the requirements that the Commission adopted in Order No. 841. Accordingly, we accept MISO's compliance filing, subject to a further compliance filing, to be effective June 6, 2022, as requested. We direct MISO to file the compliance filing within 60 days of the date of issuance of this order.

1. Definition of Electric Storage Resource

16. To identify the set of resources that are eligible to use the required participation model for electric storage resources, Order No. 841 revises section 35.28(b) of the Commission's regulations¹³ to define an electric storage resource as "a resource capable of receiving electric energy from the grid and storing it for later injection of electric energy back to the grid."¹⁴ Order No. 841 explains that this definition is intended to cover 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 (e.g., batteries, flywheels, compressed air, and pumped-hydro). Additionally, Order No. 841 provides that electric storage resources located on the interstate transmission system, on a distribution system, or behind the meter fall under this definition. Further, because electric storage resources that inject electric energy back to the grid for purposes of participating in an RTO/ISO market are engaging in a sale of

¹² Tesla filed comments but did not file a motion to intervene and, therefore, is not a party to this proceeding. *See* 18 C.F.R. §§ 385.102(c)(3), 385.214(a)(3) (2019).

¹³ 18 C.F.R. § 35.28(b).

¹⁴ Order No. 841, 162 FERC ¶ 61,127 at P 29.

electric energy at wholesale in interstate commerce, the Commission found that they must fulfill certain responsibilities set forth in the FPA and the Commission's rules and regulations.¹⁵ However, the Commission declined for purposes of Order No. 841 to broaden the definition of "electric storage resources" to apply to behind-the-meter electric storage resources that do not inject electricity onto the grid.¹⁶ Further, the definition of an electric storage resource excludes a resource that is either (1) physically incapable of injecting electric energy back onto the grid due to its design or configuration, or (2) contractually barred from injecting electric energy back onto the grid.¹⁷

17. The Commission declined to grant the MISO Transmission Owners' and DTE Electric/Consumers Energy's request that the Commission allow states to decide whether electric storage resources in their state that are located behind a retail meter or on the distribution system are permitted to participate in the RTO/ISO markets through the electric storage resource participation model.¹⁸

18. In response to Southwest Power Pool, Inc.'s (SPP) request for clarification regarding whether it is sufficient for an RTO/ISO to require an electric storage resource to attest that it has all the necessary contractual arrangements in place to permit that resources to inject energy onto the grid,¹⁹ Order No. 841-A clarifies that Order No. 841 did not specify how an RTO/ISO must determine whether a particular resource seeking to participate in its markets qualifies as an electric storage resource under the definition set forth therein. Order No. 841-A further clarifies that SPP may propose the attestation

¹⁵ *Id.* P 30. Examples of such responsibilities include: filing rates under FPA section 205 (potentially including obtaining market-based rate authority); submitting filings related to corporate mergers and other activities under FPA sections 203 and 204; and fulfilling FPA section 301 accounting obligations and FPA section 305(b) interlocking directorate obligations. *Id.* n.50 (citing 16 U.S.C. §§ 824b, 824c, 824d, 825, 825d(b)).

¹⁶ *Id.* P 32.

¹⁷ *Id.* P 33.

¹⁸ *Id.* P 35; *see also* Order No. 841-A, 167 FERC ¶ 61,154 at PP 30-56 (denying requests for rehearing of the Commission's decision not to adopt an opt-out with respect to participation in RTO/ISO markets by electric storage resources interconnected on a distribution system or located behind a retail meter).

¹⁹ Order No. 841-A, 167 FERC ¶ 61,154 at P 61 (citing SPP Motion for Clarification at 2, 13; Order No. 841, 162 FERC ¶ 61,127 at P 33).

approach that it has taken for demand response and stated that, based on the full record before it, the Commission will consider on compliance whether allowing a resource to attest that it meets the definition of electric storage resources, including the associated requirement that it be contractually permitted to inject energy onto the grid, is just and reasonable.

19. In response to Organization of MISO States' request for clarification that RTOs/ISOs may propose tariff provisions that require electric storage resources to comply with applicable relevant electric retail regulatory authority (RERRA) and distribution utility rules, Order No. 841-A notes that any resources subject to a RERRA's jurisdiction must comply with that RERRA's rules assuming that such rules do not conflict with the requirements of Order No. 841 (e.g., by placing a broad prohibition on participating in the RTO/ISO markets).²⁰ Order No. 841-A similarly clarifies, in response to SPP's request for clarification regarding whether the requirements of Order No. 841 supersede RTO/ISO tariff provisions that apply to all resources, that the requirements of Order No. 841 do not absolve electric storage resources from complying with RTO/ISO tariff provisions of general applicability as long as those tariff provisions do not conflict with the requirements of Order No. 841.

a. MISO Compliance Filing

20. MISO states that it revised Module A of its Tariff to include the required definition of electric storage resources, consistent with Order No. 841.²¹ MISO explains that the proposed definition contains all required elements specified in Order No. 841, and replaces the generic terms in Order No. 841 with terms defined in MISO's Tariff for clarity.²² MISO proposes to revise its Tariff to define an Electric Storage Resource as:

A Resource capable of receiving Energy from the Transmission System and storing it for later injection of Energy back to the Transmission System. This definition includes all technologies and/or storage mediums, including but not limited to, batteries, flywheels, compressed air, and pumped-hydro. The location of an [Electric Storage Resource] may be at any point of grid interconnection, on

²⁰ *Id.* P 62.

²¹ MISO Compliance Filing, Transmittal Letter at 4 (MISO Transmittal Letter), proposed MISO Tariff, Module A, § 1.E (Definitions) (73.0.0) (MISO Proposed Tariff).

²² MISO Compliance Filing, Attachment C (Testimony of Kevin A. Vannoy) at 8 (MISO Vannoy Test.).

either the Transmission System or a local distribution system. An [Electric Storage Resource] must: (1) be capable of injecting and withdrawing a minimum of 0.1 MW; (2) be capable of complying with the Transmission Provider's Setpoint Instructions; (3) have the appropriate metering equipment installed; and (4) be physically located within the MISO Balancing Authority Area.^[23]

MISO states that this definition is supplemented by key features of MISO's proposed implementation of its Electric Storage Resource market participation model.

21. Additionally, MISO proposes to revise its Tariff to define Electric Storage Resource Transaction as:

Market Activities associated with the charging and discharging process of an Electric Storage Resource that consist of the withdrawal of Energy from the Transmission System, including any associated Energy purchases, and future injection of Energy, including any associated Energy sales, to the Transmission System under this Tariff.^[24]

22. MISO states that this new term delineates the unique characteristics and establishes appropriate treatment of Electric Storage Resources.²⁵ According to MISO, this distinct transaction category ensures that energy storage may be treated separately from end use consumption of energy by load served by load serving entities.

23. MISO states that, as part of implementing its Electric Storage Resource participation model, for Electric Storage Resources connected to the distribution system, MISO will require execution of the new *pro forma* Agreement for Electric Storage Resource Located on a Distribution System, which MISO proposes to include as Attachment HHH to the Tariff.²⁶ According to MISO, this agreement is necessary due to

²³ MISO Transmittal Letter at 4; MISO Proposed Tariff, Module A, § 1.E (Definitions) (73.0.0).

²⁴ MISO Transmittal Letter at 5; MISO Proposed Tariff, Module A, § 1.E (Definitions) (73.0.0).

²⁵ MISO Vannoy Test. at 19.

²⁶ MISO Transmittal Letter at 7. Proposed Attachment HHH includes three appendices entitled "Facility Specifications," "Operational Specifications for Distribution Connected Facility," and "Avoidance of Double Payment for Charging Energy." All

MISO's diverse membership and state regulatory paradigms and addresses the unique needs, requirements, and issues related to modeling, metering, operation, and accounting rules associated with an Electric Storage Resource's location on a distribution system.²⁷ MISO states that the proposed agreement addresses: matters including registration of an Electric Storage Resource located on the distribution system; an Electric Storage Resource's distribution agreement with the relevant distribution utility for delivery of energy from the Electric Storage Resource to the transmission system; modeling and impact studies; settlement data and metering arrangements; non-recallability for Electric Storage Resources with capacity resource obligations; and avoidance of double payment for charging energy.²⁸ Per section 2(c) of the proposed agreement, the owner or operator of the distribution-connected Electric Storage Resource must secure all necessary agreements with the distribution utility to facilitate the operation of the resource and delivery of energy to the transmission system. Under section 2(d)(i) of the proposed agreement, MISO is required to perform modeling and impact studies using the criteria and assumptions provided by the distribution utility, but the distribution-connected Electric Storage Resource will be responsible for all costs of such studies.

b. Protests/Comments

24. Midwest TDUs state that MISO's filing fails to fully comply with the requirement in Order No. 841 that a resource must be contractually permitted to inject energy back onto the grid in order to meet the definition of an electric storage resource.²⁹ Midwest TDUs state that they support the inclusion of provisions that formally recognize the roles and responsibilities of distribution utilities and RERRAs in Attachment HHH, but that the remaining terms of Attachment HHH fall short of ensuring that an Electric Storage Resource will be accountable for meeting all of the distribution utility's requirements.³⁰ Specifically, Midwest TDUs state that, while the introduction to Attachment HHH refers to "all requirements set forth by the [distribution utility]," section 2(c) appears to be

appendices in the filing were left blank. *See* MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource) (31.0.0).

²⁷ MISO Vannoy Test. at 12.

²⁸ *Id.* at 12-13; MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource) (31.0.0).

²⁹ Midwest TDUs Protest at 4.

³⁰ *Id.* at 6 (referring to MISO Vannoy Test. at 11-12; MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System), § 2 (Implementation) (31.0.0)).

narrower in scope by referring only to necessary agreements with the distribution utility for delivery of energy *to* the transmission system (rather than also *from* the transmission system), even though such delivery over the distribution system to the Electric Storage Resource is necessary for the resource to charge from the MISO market. Midwest TDUs request that the Commission direct MISO to revise section 2(c) of Attachment HHH so that Electric Storage Resources are required to secure and maintain any and all agreements with the distribution utility to facilitate delivery of energy from the transmission system.³¹

25. In addition, Midwest TDUs state that Electric Storage Resources are not required to make any attestations that they have secured and are maintaining all necessary distribution utility agreements, and there are no obligations on MISO to take any particular actions if an Electric Storage Resource violates a distribution utility requirement.³² Specifically, Midwest TDUs allege that Attachment HHH does not require distribution-connected Electric Storage Resources to attest to MISO that the resource is meeting all distribution utility requirements.³³ Moreover, Midwest TDUs argue that the requirement in Order No. 841 that electric storage resources be contractually permitted to inject energy back onto the grid is a continuous obligation, but that Attachment HHH only contemplates a one-time attestation.³⁴ Therefore, Midwest TDUs state that MISO should revise Attachment HHH to require an ongoing positive attestation from an Electric Storage Resource that the resource has secured and is complying with all necessary distribution utility coordination, authorizations, accounting, metering, and other arrangements and approvals.³⁵

26. Midwest TDUs ask the Commission to require MISO to clarify that Electric Storage Resources will be responsible for any costs incurred by the distribution utility in developing the criteria and assumptions necessary for the requirement that “MISO will perform studies using the criteria and assumptions provided by the [distribution utility],” per section 2(d)(i) of proposed Attachment HHH.³⁶

³¹ *Id.* at 6-7.

³² *Id.* at 4.

³³ *Id.* at 7 (referring to MISO Vannoy Test. at 12).

³⁴ *Id.* at 7-8.

³⁵ *Id.* at 8.

³⁶ *Id.* at 25.

27. Further, Midwest TDUs state that Attachment HHH is insufficient because it fails to impose any definite consequences for Electric Storage Resources' noncompliance with requirements set by the distribution utility.³⁷ Midwest TDUs note that, while Attachment HHH allows for an agreement between MISO and the distribution utility to specify additional suspension or termination provisions, MISO is not required to enter into such an agreement or take any action in response to an Electric Storage Resource's violation of distribution utility requirements, even if the distribution utility notifies MISO of the violation.³⁸ Midwest TDUs argue that MISO should revise Attachment HHH to require that MISO take appropriate action—including suspending market participation of the Electric Storage Resource—when an Electric Storage Resource is operating in violation of the distribution utility's requirements.³⁹ Similarly, Midwest TDUs state that MISO should revise Attachment HHH to ensure that Electric Storage Resources that evade distribution utility charges should not have the right to reach the MISO transmission system and should not be allowed to transact in MISO's wholesale markets. Midwest TDUs state that MISO should revise Attachment HHH to obligate MISO (or the Electric Storage Resource) to notify the distribution utility when the Attachment HHH agreement becomes effective or terminates.⁴⁰

c. Data Request Response

28. In response to Commission staff's Data Request, MISO states that it does not allow electric storage resources that are not physically located within MISO, including those pseudo-tied into MISO, to participate as Electric Storage Resources, and that Order No. 841 does not require external electric storage resources to be allowed to participate as electric storage resources.⁴¹ MISO explains that external electric storage resources could participate in MISO markets by securing transmission service necessary to import and/or export energy and transact in the Day-Ahead Energy and Operating Reserve Market (Day-Ahead Market) and/or the Real-Time Energy and Operating Reserve Market (Real-Time Market).

³⁷ *Id.* at 8 (referring to MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System), §§ 10(b) (Suspension) and 12(b)(v) (Termination) (31.0.0)).

³⁸ *Id.* at 8-9.

³⁹ *Id.* at 9.

⁴⁰ *Id.* at 10.

⁴¹ MISO Data Request Response at 3.

29. MISO states that it proposes revisions to section 2(c) of Attachment HHH to address “deliveries to *and from* the transmission system,” and to section 27 of Attachment HHH to require the market participant to attest that the appropriate arrangements regarding coordination, authorization, accounting, metering, and other approvals are in place.⁴² MISO claims that the appendices to Attachment HHH were intentionally left blank to account for various formal and informal agreements between an Electric Storage Resource and a distribution utility. MISO states that, to avoid confusion, it now proposes to remove the appendices from Attachment HHH and instead include requirements that necessary information be provided to MISO upon request. MISO explains that, through the Electric Storage Resource registration process, MISO will have a better understanding of the form and substance of agreements between Electric Storage Resources and distribution utilities and will develop Tariff revisions or Business Practice Manual (BPM) updates if necessary.⁴³

30. MISO also revises the definition of Electric Storage Resource to clarify that market participants manage their own State of Charge.⁴⁴

d. Comments on Data Request Response

31. Midwest TDUs state that MISO’s removal of the appendices from Attachment HHH and addition of a requirement that Electric Storage Resources provide the necessary information to MISO upon request does not address the concern that MISO has not proposed any requirements that the information be provided to the distribution utility, nor has it provided an explanation about what information would be covered.⁴⁵ Midwest TDUs also state that it appears that the newly proposed attestation requirement is only enforced at the time Attachment HHH is executed, and they argue that Order No. 841 requires an ongoing requirement that Electric Storage Resources be contractually permitted to inject energy back onto the grid; therefore, Midwest TDUs assert that Attachment HHH should require an Electric Storage Resource’s ongoing positive

⁴² *Id.* at 19.

⁴³ *Id.* at 19-20.

⁴⁴ *Id.* at 15; MISO Proposed Tariff, Module A, § 1.E (Definitions) (75.0.0). 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. *See* Order No. 841, 162 FERC ¶ 61,127 at P 213.

⁴⁵ Midwest TDUs Protest of the Data Request Response at 6.

attestation that all necessary agreements have been secured and that the Electric Storage Resource is in compliance with them.⁴⁶

e. **Commission Determination**

32. We find that MISO's proposed definitions of "Electric Storage Resource"⁴⁷ and "Electric Storage Resource Transaction"⁴⁸ comply with the requirements of Order No. 841 because they encompass electric storage resources capable of receiving electric energy from the grid and storing it for later injection back to the grid, regardless of their storage medium, and include electric storage resources located on the interstate transmission system, on a distribution system, or behind the meter.⁴⁹

33. We find that MISO's proposed Tariff revision to section 2(c) of Attachment HHH included in its Data Request Response complies with Order No. 841. Specifically, it requires Electric Storage Resources to secure and maintain agreements for the delivery of energy to and from the transmission system, which will allow for the participation of distribution-connected Electric Storage Resources, as required by Order No. 841. We also find that MISO's proposed Attachment HHH revisions in section 27, to require

⁴⁶ *Id.* at 7-8.

⁴⁷ MISO defines Electric Storage Resource as a Resource capable of receiving energy from the transmission system and storing it for later injection of energy back to the transmission system. This definition includes all technologies and/or storage mediums, including but not limited to, batteries, flywheels, compressed air, and pumped-hydro resources. The location of an Electric Storage Resource may be at any point of grid interconnection, on either the transmission system or a local distribution system. An Electric Storage Resource must: (1) be capable of injecting and withdrawing a minimum of 0.1 MW; (2) be capable of complying with the transmission provider's setpoint instructions; (3) have the appropriate metering equipment installed; and (4) be physically located within the MISO Balancing Authority Area. The State of Charge shall be managed by the Market Participant operating the Electric Storage Resource. *See* MISO Proposed Tariff, Module A, § 1.E (Definitions) (75.0.0).

⁴⁸ MISO defines Electric Storage Resource Transaction as market activities associated with the charging and discharging process of an Electric Storage Resource that consist of the withdrawal of energy from the transmission system, including any associated energy purchases, and future injection of energy, including any associated energy sales, to the transmission system under this Tariff. *See* MISO Proposed Tariff, Module A, § 1.E (Definitions) (75.0.0).

⁴⁹ Order No. 841, 162 FERC ¶ 61,127 at PP 29-35; 18 C.F.R. § 35.28(b) (2019).

attestation from the market participant that the necessary coordination, authorization, accounting, metering, and other approvals are in place, address Midwest TDUs' request that Electric Storage Resources be required to secure and maintain necessary agreements with a distribution utility for delivery of energy from the transmission system. Order No. 841 does not specify how an RTO/ISO must determine whether a particular resource seeking to participate in its markets qualifies as an electric storage resource, including the associated requirement that it be contractually permitted to inject energy onto the grid.⁵⁰ We disagree with Midwest TDUs' argument that the Attachment HHH attestation provision is only enforceable upon execution. Rather, we find that the attestation provision is an ongoing requirement that is continually enforceable, as MISO reserves the right to terminate the agreement if the Electric Storage Resource no longer meets the requirements outlined in the agreement, including those in the attestation provision.

34. We decline to require MISO to include a provision in Attachment HHH that restricts an Electric Storage Resource's access to MISO markets because of unpaid distribution utility charges. Given that section 27 of Attachment HHH requires the Electric Storage Resource market participant to attest that the necessary accounting, authorization, and approvals are in place, we find that the distribution utility can require Electric Storage Resources to fulfill their payment obligations.

35. We disagree with Midwest TDUs' argument that Attachment HHH fails to impose any definite consequences for Electric Storage Resources' noncompliance with requirements set by the distribution utility. We find that Attachment HHH does require enforcement and coordination of the suspension and termination provisions therein; specifically, the suspension provision requires MISO to follow the suspension process outlined in the agreement between MISO and the distribution utility, and the termination provision gives any party the right to terminate the agreement and requires MISO to coordinate any termination with the distribution utility.⁵¹

36. We decline to require MISO to specify in Attachment HHH that distribution-connected Electric Storage Resources will be responsible for any costs incurred by the distribution utility in providing MISO with criteria and assumptions that MISO will use in performing any necessary studies associated with participation of the Electric Storage Resource in MISO's markets, as requested by Midwest TDUs. Given the arrangements between Electric Storage Resources and distribution utilities referenced in section 27 of Attachment HHH, specifically the requirement to enter and maintain agreements

⁵⁰ Order No. 841-A, 167 FERC ¶ 61,154 at P 61.

⁵¹ See MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System), §§ 9 (Suspension) and 10 (Termination) (32.0.0).

regarding coordination and authorization, we find that distribution utilities have the ability to allocate any costs that they incur in operating and maintaining their respective power systems as part of those arrangements.⁵² In addition, the Commission noted in Order No. 841 that it may be appropriate, on a case-by-case basis, for distribution utilities to assess a wholesale distribution charge to an electric storage resource.⁵³

37. We also decline to require MISO to mandate that distribution-connected Electric Storage Resources must provide any information requested by MISO to distribution utilities. Given the arrangements between the Electric Storage Resource and distribution utilities referenced in section 27 of Attachment HHH, specifically the requirement to enter and maintain agreements regarding coordination and authorization, we find that the distribution utility can require that an Electric Storage Resource provide it with the same information requested by MISO. Further, we partly disagree with Midwest TDUs' argument that MISO fails to provide an explanation as to what information MISO would require from distribution-connected Electric Storage Resources. We find that MISO sufficiently explains in section 2(i) of Attachment HHH that any requested information would be in regard to the Electric Storage Resource's obligations to the distribution utility. We discuss the information that MISO proposes to request from Electric Storage Resources pursuant to section 6 of Attachment HHH in the metering and accounting section of this order.

2. Creation of a Participation Model

a. Participation Model

38. 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.⁵⁴ 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

⁵² See Order No. 841-A, 167 FERC ¶ 61,154 at P 45 (citing Order No. 841, 162 FERC ¶ 61,127 at P 274).

⁵³ Order No. 841, 162 FERC ¶ 61,127 at P 301 (citing *PJM Interconnection L.L.C.*, 149 FERC ¶ 61,185, at P 12 (2014)).

⁵⁴ *Id.* P 51.

and operational characteristics of electric storage resources.⁵⁵ 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.

39. 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 propose such revisions to its tariff through a separate FPA section 205 filing.⁵⁶ 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. 841.⁵⁷ 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.

40. 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.⁵⁸ 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.

⁵⁵ *Id.* P 52.

⁵⁶ *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.

⁵⁷ Order No. 841, 162 FERC ¶ 61,127 at P 55.

⁵⁸ *Id.* P 56.

i. MISO Filing

41. To comply with the Commission's directive to create a participation model for electric storage resources, MISO states that it is establishing a participation model that facilitates Electric Storage Resource participation in MISO's Energy and Operating Reserves Markets and will provide unique modeling, offer parameters, operating limitations, and settlement provisions that recognize the physical and operational characteristics of Electric Storage Resources.⁵⁹ MISO details that its approach combines the electric storage resource-related offer parameters required by Order No. 841,⁶⁰ some additional parameters, and various Commitment Statuses to enable an Electric Storage Resource to manage its own State of Charge and communicate whether and how it is offering to provide market products or services over specific time intervals.⁶¹ MISO further explains that Electric Storage Resources will participate as supply and demand, set market clearing prices, and provide energy and ancillary service products through a customized offer structure that incorporates Order No. 841's required parameters.

42. While the term Commitment Status is mentioned in Module C of the Tariff, MISO proposes to formally define and expand the term Commitment Status in Module A of its Tariff.⁶² MISO states that, as currently used in Module C, Commitment Status refers to a specification made in an offer to signify whether and for what services a resource is

⁵⁹ MISO Transmittal Letter at 6; MISO Vannoy Test. at 9. MISO states that it has an existing participation model called Stored Energy Resource - Type II, which it proposed and the Commission conditionally accepted as an interim market participation model for Electric Storage Resources ahead of MISO's compliance with Order No. 841. *Id.*, Transmittal Letter at 3. MISO states that it will replace Stored Energy Resource - Type II resources with Electric Storage Resources, separately from this filing, effective March 1, 2020, when Electric Storage Resources can begin participating in MISO's markets. MISO Vannoy Test. at 14.

⁶⁰ MISO states that it uses the term "offer" in lieu of "bid" - accordingly, MISO's references to "offer parameter(s)" are functionally equivalent to Order No. 841's references to "bid parameter(s)." MISO Transmittal Letter at 6 n.27.

⁶¹ MISO Vannoy Test. at 9.

⁶² MISO Transmittal Letter at 5; MISO Proposed Tariff, Module A, § 1.C (Definitions) (61.0.0).

available to MISO's markets.⁶³ MISO proposes to revise its Tariff to define Commitment Status as:

A specification submitted by a Market Participant in its Generation Offer, External Asynchronous Resource Offer, Demand Response Resource-Type I Offer, Demand Response Resource - Type II Offer, Stored Energy Resource - Type II Offer, or Electric Storage Resource Offer for each Hour to indicate whether or how the Transmission Provider is authorized to commit the Resource or deploy the Resource for Operating Reserves for the Hour.^[64]

MISO explains that this definition applies to all resource offers and will provide flexibility to Electric Storage Resource owners by communicating how the resource will be available to the markets through the proposed values of Charge, Discharge, Continuous, Available, Not Participating, Emergency Charge, Emergency Discharge, and Outage.⁶⁵

43. MISO states that Attachment HHH addresses the unique needs, requirements, and issues related to modeling, metering, operation, and accounting rules associated with an Electric Storage Resource's location on a distribution system.⁶⁶

ii. Protests/Comments

44. Energy Storage Association notes that MISO's filing does not address the market participation of Electric Storage Resources co-located with generation, or hybrid resources, and recommends that the Commission open a new docket to address how Order No. 841 compliance will be applied to hybrid resources.⁶⁷

45. Union of Concerned Scientists asserts that the Commission should order the RTOs/ISOs to continue to address the participation of electric storage resources

⁶³ MISO Transmittal Letter at 5.

⁶⁴ MISO Proposed Tariff, Module A, § 1.C (Definitions) (61.0.0).

⁶⁵ MISO Vannoy Test. at 23-24.

⁶⁶ MISO Transmittal Letter at 7.

⁶⁷ Energy Storage Association Comments at 7.

combined with other generation by keeping pace with technological changes.⁶⁸ Union of Concerned Scientists claims that MISO's processes for interconnection and market participation have lagged behind hybrid technologies.⁶⁹ It states that hybrid technologies face uncertainty regarding the market system and parameters for the generation, such as how to meter separate components, register units, and what options exist for requesting and studying interconnection.⁷⁰ Union of Concerned Scientists requests that the Commission order MISO to continue to update its Tariff, practices and software to recognize and accommodate Electric Storage Resources in hybrid configurations.⁷¹

46. DTE Electric states that MISO's longer term initiatives are encouraging, particularly its initiatives to enhance its dispatch and commitment capabilities by including pumped-hydro resources in the Energy and Operating Reserve Markets and adding capabilities for State of Charge optimization, multi-period optimization, and ability to handle transition periods from charging to discharging.⁷² DTE Electric contends that, with shifts in market dynamics in the coming years, the efficient participation and optimization of electric storage resources and pumped-hydro resources in market platforms is critical to maintaining reliability and providing customer value.⁷³

47. 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.⁷⁴ It states that, for example, 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 plants during off-peak hours and then release the energy back to the grid during peak

⁶⁸ Union of Concerned Scientists Comments at 4.

⁶⁹ *Id.* at 6.

⁷⁰ *Id.* at 9.

⁷¹ *Id.* at 10-11.

⁷² DTE Electric Comments at 3.

⁷³ *Id.* at 3, 7.

⁷⁴ Voith Hydro Comments at 7.

hours); (3) provide spinning and non-spinning reserves; (4) provide black start capabilities; and (5) set the wholesale market clearing price.⁷⁵

iii. Answers

48. MISO states that Energy Storage Association's request for a new docket on the treatment of co-located Electric Storage Resources and other generation is beyond the scope of this proceeding, as is Union of Concerned Scientists' request to address co-located Electric Storage Resources in this proceeding, because Order No. 841 does not specify any compliance requirements regarding co-located electric storage resources.⁷⁶ MISO also states that there is no clear practice across RTO/ISO markets to address co-located electric storage resources and generation; therefore, the Commission should allow each RTO/ISO and its stakeholders to develop models and rules to address needs in each individual region.

49. In their reply, Midwest TDUs request that the Commission direct MISO to clarify that it will not allow Electric Storage Resources with co-located generation to participate under the provisions proposed in its compliance filing absent a subsequent filing to address the issues raised by Midwest TDUs.⁷⁷

iv. Data Request Response

50. MISO states that it includes references to Electric Storage Resources in the Tariff provisions that also apply to other resource types, where appropriate, and adds sections 39.2.5D and 40.2.7B to the Tariff to establish a unique offer structure for Electric Storage Resources.⁷⁸ MISO asserts that these new Tariff sections contain the Order No. 841 specified bid parameters and existing parameters applicable to other resource types that are tailored to accommodate Electric Storage Resources and enable State of Charge management by the market participant.

v. Commission Determination

51. We find that, in accordance with Order No. 841, MISO has proposed a participation model that: (1) all resources meeting the definition of Electric Storage Resources are eligible to use; (2) recognizes the physical and operational characteristics of Electric Storage Resources; and (3) facilitates their participation in the MISO markets.

⁷⁵ *Id.* at 2-7.

⁷⁶ MISO Answer at 16 (citing Order No. 841, 162 FERC ¶ 61,127 at P 299).

⁷⁷ Midwest TDUs Reply at 8.

⁷⁸ MISO Data Request Response at 4-5.

Specifically, we accept MISO's proposal to: (1) include Electric Storage Resources in its existing Tariff revisions that apply to other resources, as appropriate; (2) establish a unique offer structure for Electric Storage Resources in both the Day-Ahead Market and the Real-Time Market, i.e., sections 39.2.5D and 40.2.7B of MISO's Tariff, respectively; and (3) provide flexibility to Electric Storage Resource owners by establishing a Commitment Status to communicate how the resource will be available to the markets.

52. As to Voith Hydro's comments about the capabilities of pumped-hydro resources, we find that MISO has demonstrated that its proposed model is available to all electric storage technologies, including pumped-hydro resources, and thus MISO's proposed model complies with Order No. 841.

53. Further, we find that MISO's new Attachment HHH appropriately allows for agreement and coordination with distribution utilities which may host Electric Storage Resources connected to the distribution system. Attachment HHH addresses the unique needs, requirements and issues, such as any necessary arrangements surrounding retail rate issues (issues involving special metering and accounting rules are further addressed in the metering and accounting section of this order) arising from an Electric Storage Resource's location on a distribution system, thereby allowing the market participation of distribution-connected Electric Storage Resources as required by Order No. 841.

54. We find that Energy Storage Association's, Midwest TDUs', and Union of Concerned Scientists' comments regarding Electric Storage Resources co-located with generation are beyond the scope of compliance with Order No. 841. In Order No. 841, the Commission did not address co-location of electric storage resources with other resources.

b. Qualification Criteria for the Participation Model

55. 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).⁷⁹ 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

⁷⁹ Order No. 841, 162 FERC ¶ 61,127 at P 61.

recognizes its physical and operational characteristics and optimizes its benefits to the RTO/ISO.

56. Order No. 841 provides each RTO/ISO with flexibility to propose qualification criteria that best suit its participation model for electric storage resources.⁸⁰ However, the qualification criteria should not create barriers to the participation of any electric storage 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. 841.⁸¹

i. MISO Filing

57. MISO proposes new Tariff provisions, and revises several existing Tariff provisions, to establish Electric-Storage-Resource-specific qualification criteria and identify the applicability of existing Tariff provisions to Electric Storage Resources.⁸² MISO explains that an Electric Storage Resource will be required to meet the common qualification criteria and eligibility requirements applicable to all resources, including becoming a market participant by executing the *pro forma* Market Participant Agreement (Attachment W) or by being represented by a market participant.⁸³ MISO further explains that an Electric Storage Resource must meet all applicable qualification criteria, including testing, for each product and service that it will offer to provide.⁸⁴ MISO states that it will require Electric Storage Resources to have both the capability and intention to withdraw energy from, and inject it back into, MISO's transmission system for purposes of participating in MISO's markets. MISO also states that, to the extent that Electric Storage Resources utilize the transmission system via injections or withdrawals, they require the same transmission service and/or transmission studies as other interconnected customers or users of the system.⁸⁵

⁸⁰ *Id.* P 63.

⁸¹ *Id.* P 64.

⁸² MISO Transmittal Letter at 7.

⁸³ MISO Vannoy Test. at 10; MISO Proposed Tariff, Module C, § 38.2.2 (Market Participant Application and Qualifications), § 38.3 (Generation Owners, Load Serving Entities and ARCs) (34.0.0).

⁸⁴ MISO Transmittal Letter at 7.

⁸⁵ MISO Vannoy Test. at 13.

58. For Electric Storage Resources connected to the distribution system, MISO states that it will further require execution of the new *pro forma* Agreement for Electric Storage Resources Located on a Distribution System (Attachment HHH).⁸⁶ As discussed above, MISO states that the proposed agreement addresses: matters including registration of an Electric Storage Resource located on the distribution system; an Electric Storage Resource's distribution agreement with the relevant distribution utility for delivery of energy from the Electric Storage Resource to the transmission system; modeling and impact studies; settlement data and metering arrangements; non-recallability for Electric Storage Resources with capacity resource obligations; and avoidance of double payment for charging energy.⁸⁷

ii. Data Request Response

59. MISO explains that its Tariff provisions for pseudo-ties only accommodate generation resources or load assets, and that MISO does not propose modification of those provisions for Electric Storage Resources, including Electric Storage Resources located on the distribution system.⁸⁸ MISO asserts that Electric Storage Resources, by definition, are participating in MISO markets and are mutually exclusive from resources physically located within the MISO region that pseudo-tie to other regions and choose not to participate in MISO markets.⁸⁹ MISO states that pseudo-tied generating units and loads are governed by section 38.2.5.a.v and Attachment FFF-1 or Attachment FFF-2 of the Tariff. MISO claims that such pseudo-tie provisions were not intended or designed to allow Electric Storage Resources physically located within the MISO region to pseudo-tie to other regions.

iii. Commission Determination

60. We find that MISO complies with the requirement of Order No. 841 to define in its Tariff the criteria that a resource must meet to use the participation model for Electric Storage Resources (i.e., qualification criteria). We find that MISO's

⁸⁶ *Id.* at 11; MISO Transmittal Letter at 7.

⁸⁷ MISO Vannoy Test. at 12-13; MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System) (31.0.0).

⁸⁸ MISO Data Request Response at 4.

⁸⁹ *Id.* at 5.

qualification criteria, including disallowing pseudo-tied Electric Storage Resources,⁹⁰ are based on the physical and operational characteristics of Electric Storage Resources, such as their ability to both receive and inject electric energy. MISO's Tariff does not restrict the participation to any particular type of Electric Storage Resource or technology. We also find that MISO's qualification criteria ensure that MISO can dispatch an Electric Storage Resource in a way that recognizes its physical and operational characteristics and optimizes its benefits to MISO.

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

61. 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.⁹¹ 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. 841.⁹²

i. **MISO Filing**

62. MISO states that, unless otherwise specified, Electric Storage Resources shall be subject to MISO's existing Tariff provisions describing the technical and performance requirements for various market services or products applicable to other types of resources.⁹³ MISO explains that it is requiring an Electric Storage Resource to become a

⁹⁰ See MISO Proposed Tariff, Module A, § 1.E (Definitions) (75.0.0), Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System) (32.0.0).

⁹¹ Order No. 841, 162 FERC ¶ 61,127 at P 68.

⁹² *Id.* P 69.

⁹³ MISO Transmittal Letter at 6; MISO Vannoy Test. at 9-10.

market participant through execution of the *pro forma* Market Participant Agreement in Attachment W of the MISO tariff, or be represented by a market participant.⁹⁴

ii. Protests/Comments

63. Advanced Energy Economy asserts that MISO does not propose to change its reference level calculations used for purposes of market power mitigation to account for opportunity costs, which it argues may result in Electric Storage Resources being treated in an unduly discriminatory fashion when compared with other resources.⁹⁵ Advanced Energy Economy explains that MISO's current reference level calculations permit the inclusion of "legitimate opportunity costs," which must be approved based on a consultation with the MISO Independent Market Monitor (IMM).⁹⁶ Advanced Energy Economy contends that Electric Storage Resources face a different type of opportunity cost (due to demand charge management) than the opportunity costs faced by other resources (typically due to changes in the price of energy across the day or between days). Specifically, Advanced Energy Economy states that certain Electric Storage Resources are used to ensure that a given customer's demand does not exceed a certain threshold level, which enables the customer to avoid certain demand charges. Advanced Energy Economy explains that, if an Electric Storage Resource's State of Charge falls below the level that is required to manage that demand charge, then the customer could face higher demand charges. Thus, Advanced Energy Economy concludes, the opportunity cost, which is defined as the profit associated with the next best foregone alternative, of such an Electric Storage Resource should be based on the expected increase in demand charges. Advanced Energy Economy asks the Commission to direct MISO to clarify that Electric Storage Resource reference levels may include opportunity costs related to demand charge management.⁹⁷

iii. Answers

64. In response to Advanced Energy Economy, MISO claims that Module D of its Tariff, and its BPM for Market Monitoring and Mitigation, include provisions for cost-

⁹⁴ MISO Transmittal Letter at 7.

⁹⁵ Advanced Energy Economy Comments at 2, 8.

⁹⁶ *Id.* at 8 (citing MISO Proposed Tariff, Module D, § 64.1.4.a (Reference Levels) (58.0.0)).

⁹⁷ *Id.* at 8-9.

based or consultative reference levels.⁹⁸ MISO states that section 64.1.4 (Reference Levels) of its Tariff and section 6.9 (Reference Levels) of the BPM for Market Monitoring and Mitigation allow opportunity costs to be considered in consultations with the IMM regarding reference levels.⁹⁹ MISO also states that section 6.9.4(b) of the BPM for Market Monitoring and Mitigation allows consideration of “net opportunity costs of foregone sales outside of MISO, net of costs that would have been incurred as a result of the foregone sales if it had taken place,” and that pursuant to section 10, the IMM may consider data on opportunity costs.¹⁰⁰

iv. Commission Determination

65. We find that MISO has complied with Order No. 841 because it has appropriately explained how its existing market rules, including the technical and performance requirements and the use of its existing market participation agreement construct, apply to Electric Storage Resources using its Electric Storage Resource participation model. We find that MISO’s explanation provides certainty to resources using the Electric Storage Resource participation model about the market rules that will govern their participation in MISO, as required by Order No. 841.¹⁰¹

66. In response to Advanced Energy Economy, we agree 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, like other market participants, when appropriate. We find that MISO’s existing rules allow Electric Storage Resources to do so, noting that determining whether a resource should be allowed to include opportunity costs in its reference levels and how such opportunity costs may be calculated can be complex and case-specific.¹⁰² Specifically, MISO has an

⁹⁸ MISO Answer at 14.

⁹⁹ *Id.* at 14-15.

¹⁰⁰ *Id.* at 15.

¹⁰¹ Order No. 841, 162 FERC ¶ 61,127 at P 68.

¹⁰² 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. *See id.* PP 251, 256-257. Order No. 841 recognizes that some RTOs/ISOs facilitate the participation of electric storage resources in the capacity market by relying on opportunity costs in incremental energy offer reference levels. Order No. 841 requires each RTO/ISO to demonstrate how such

existing process by which market participants may seek revisions to reference levels to account for appropriate opportunity costs in consultation with the IMM.¹⁰³ Thus, we find that MISO's proposal to apply its existing market rules appropriately allows an Electric Storage Resource's reference level to reflect its marginal costs, including opportunity costs, and account for its physical and operational characteristics.

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

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

67. 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.¹⁰⁴ 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.¹⁰⁵

68. 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.¹⁰⁶ 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

rules are applicable to resources using the participation model. *Id.* P 101.

¹⁰³ MISO Business Practice Manual 009, Market Monitoring and Mitigation, § 6.9 (Reference Levels).

¹⁰⁴ Order No. 841, 162 FERC ¶ 61,127 at PP 76, 80.

¹⁰⁵ *Id.* P 77.

¹⁰⁶ *Id.* P 78.

such revisions to its tariff through a separate FPA section 205 filing.¹⁰⁷ 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.¹⁰⁸ 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 other qualification procedures are necessary to facilitate the participation of electric storage resources in its markets.¹⁰⁹

i. MISO Filing

69. MISO states that its proposed Electric Storage Resource market participation model will enable Electric Storage Resources to participate in MISO's markets and provide services they are technically capable of providing.¹¹⁰ MISO states that these market services or products are: capacity under Module E-1; energy and ancillary services under Module A, Module B, Module C; blackstart service under Schedule 33; and reactive supply and voltage control under Schedule 2.¹¹¹

70. MISO states that an Electric Storage Resource can serve as a generator source of reactive power supply and proposes to modify Schedule 2 accordingly.¹¹² In Schedule 2, among other modifications, MISO edits the general qualifications to allow Electric Storage Resources to become qualified generators and also clarifies that an Electric Storage Resource, like any other Reactive Power Resource, may earn revenue provided it is "not include[d] in the computation of rates for transmission service."¹¹³ MISO also expands the notification provision in Schedule 2 regarding qualified generator status to

¹⁰⁷ *Id.* n.106.

¹⁰⁸ *Id.* P 79.

¹⁰⁹ *Id.* P 81.

¹¹⁰ MISO Transmittal Letter at 7.

¹¹¹ MISO Vannoy Test. at 5-6.

¹¹² MISO Transmittal Letter at 9.

¹¹³ MISO Proposed Tariff, Rate Schedules, Schedule 2 (Reactive Supply and Voltage Control From Generation or Other Sources Service), § II.B.4 (37.0.0).

address the possible exit of an Electric Storage Resource by means of its reclassification as a transmission asset.¹¹⁴

71. MISO proposes to permit Electric Storage Resources to recover costs when included in the transmission operator's system restoration plan according to the provisions in Schedule 33 regarding blackstart service.¹¹⁵ MISO states that compensation for blackstart service is only available for "Blackstart Units." Accordingly, MISO proposes to edit the definition of "Blackstart Unit" (as well as the definition of "Blackstart Equipment") in Module A to include Electric Storage Resources.¹¹⁶ MISO states that, as with Schedule 2, compensation is only available to the Blackstart Unit provided that it is "not...included in the computation of rates for transmission service while contemporaneously serving as a Blackstart Unit."¹¹⁷

72. MISO further clarifies that its existing Tariff allows energy-limited resources (Use Limited Resources) to provide capacity.¹¹⁸ MISO states that its proposal modifies provisions regarding Use Limited Resources to allow Electric Storage Resources to qualify, provided they can operate for a minimum of four consecutive operating hours across the daily coincident peak for each day.¹¹⁹

73. MISO also proposes to modify the Tariff to establish testing, transmission requirements, and other criteria in order to determine the unforced capacity for Electric Storage Resources to qualify as capacity resources and participate in the annual Planning

¹¹⁴ MISO Transmittal Letter at 9-10; MISO Proposed Tariff, Rate Schedules, Schedule 2 (Reactive Supply and Voltage Control From Generation or Other Sources Service), § II.C.2 (37.0.0).

¹¹⁵ MISO Transmittal Letter at 10.

¹¹⁶ MISO Proposed Tariff, Module A, § 1.B (Definitions) (49.0.0).

¹¹⁷ MISO Transmittal Letter at 10; MISO Proposed Tariff, Rate Schedules, Schedule 33 (Blackstart Service), § III (32.0.0).

¹¹⁸ MISO Vannoy Test. at 14.

¹¹⁹ *Id.* at 14-15; MISO Proposed Tariff, Module A, § 1.U (Definitions) (36.0.0), Module E-1, § 69A.3.1.d (Use Limited Resources) (32.0.0).

Resource Auction (PRA).¹²⁰ MISO explains that Electric Storage Resources will be eligible to set the price for capacity in the PRA.¹²¹

74. MISO states that it will not require Electric Storage Resources to have an energy schedule to offer or to clear operating reserves, which include regulating reserves, spinning reserves, supplemental reserves, up ramp capability, or down ramp capability.¹²² MISO explains that it previously eliminated the requirement for resources to have an energy schedule to clear regulating reserves and to accommodate dispatch along offer curves that include negative segments or withdrawals.¹²³ MISO adds that it is also implementing a “Not Participating” Energy Dispatch Status that will allow Electric Storage Resources to only offer ancillary service products if they desire to do so.¹²⁴ As a result, MISO’s co-optimized market clearing will consider Energy Dispatch Status along with offered costs in clearing and scheduling energy and operating reserves. MISO includes this proposed provision in new Tariff sections for Electric Storage Resource offer rules in the Day-Ahead Market and the Real-Time Market.¹²⁵

ii. Protests/Comments

75. IPL states that MISO’s proposal to apply the Use Limited Resource definition and category to all Electric Storage Resources works for existing pumped-hydro resources because they charge and discharge over long duration time periods, but does not work for lithium ion grid scale batteries which can charge and discharge over very short duration and can switch between modes throughout the day.¹²⁶ IPL asserts that the Commission can either approve the Use Limited Resource designation resulting in

¹²⁰ MISO Vannoy Test. at 15; MISO Proposed Tariff, Module E-1, § 69A.4.1 (Unforced Capacity of Capacity Resources) (33.0.0).

¹²¹ MISO Vannoy Test. at 15.

¹²² *Id.* at 15; MISO Transmittal Letter at 8-9.

¹²³ MISO Vannoy Test. at 15.

¹²⁴ *Id.* at 16; MISO Transmittal Letter at 9.

¹²⁵ MISO Proposed Tariff, Module C, § 39.2.5D (Electric Storage Resource Offer Rules in the Day-Ahead Market) and § 40.2.7B (Electric Storage Resource Offer Rules in the Real-Time Market) (31.0.0).

¹²⁶ IPL Comments at 9.

limited participation from battery arrays, or direct MISO to create a different designation designed to fit the needs of storage resources that can utilize very short duration intervals.¹²⁷

76. IPL claims that MISO's proposal lacks critical details on how the must-offer obligation applies to Electric Storage Resources.¹²⁸ IPL states that, although MISO created various operating modes to help storage resources more effectively participate in MISO markets, there is uncertainty over whether certain operating modes satisfy the must-offer obligation. IPL also expresses confusion as to how the different operating modes interact with the four-hour peak period qualification requirement, considering that resources qualify as capacity resources by being able to deliver energy over the four-hour peak period.¹²⁹

77. IPL states that the Commission should direct additional procedures aimed at developing a market for primary frequency response, as MISO's proposal does not unbundle Schedule 3 (Regulating Reserve) and does not provide for compensation for automatically provided frequency control, including primary frequency response.¹³⁰ IPL claims that including distinct services under the general category of regulating reserve without compensating providers for each distinct service will not lead to investment in storage at the wholesale level. IPL asserts that direct compensation for primary frequency response would allow devices that provide the service most efficiently to focus on providing primary frequency response and allow conventional resources and other storage technologies to maximize productivity of other products. IPL also claims that, although the Commission denied IPL's request for MISO to change its Tariff to provide for compensation for primary frequency response in IPL's complaint in Docket No. EL17-8-000, *et al.*, the Commission left the door open for such compensation through Order No. 841 compliance or another proceeding. IPL also states that it supports the storage-as-transmission model to incent investment but believes that the Commission needs to make additional efforts to incent investment in electric storage resources in wholesale markets.¹³¹

¹²⁷ *Id.* at 10.

¹²⁸ *Id.*

¹²⁹ *Id.* at 10-11.

¹³⁰ *Id.* at 7.

¹³¹ *Id.* at 9.

iii. Answer

78. In response to IPL's comments, MISO states that Order No. 841 does not require RTOs/ISOs to change requirements, obligations, or qualifications for Electric Storage Resources participating as a capacity resource in MISO, and that if IPL seeks such changes it should do so through MISO's Resource Adequacy Subcommittee.¹³²

79. MISO asserts that its proposal does not force any storage resource to be classified as a Use Limited Resource and that such term does not appear in the definition of an Electric Storage Resource; rather, MISO explains that it adds a reference to Electric Storage Resources in the definition of Use Limited Resources to recognize that some Electric Storage Resources may have energy limitations and may seek classification as a Use Limited Resource.¹³³ MISO claims that its Use Limited Resource model accommodates Electric Storage Resources that may need or desire their commitment to be limited to four hours per day, similar to New York Independent System Operator Inc.'s Energy Limited Resource model that the Commission cited as an example in Order No. 841.¹³⁴

80. MISO states that the Commission identified IPL's arguments related to compensation for primary frequency response as outside the scope of Order No. 841, and that they should be dismissed.¹³⁵

iv. Data Request Response

81. MISO states that its definition of Electric Storage Resource is technology neutral and that the participation model allows Electric Storage Resources to provide the products and services that they are technically capable of providing.¹³⁶ MISO also states that Electric Storage Resources must meet the qualification and eligibility requirements applicable to all resources, and that Electric Storage Resource must also be capable of and have the intent to withdraw energy from and inject into the MISO transmission system. MISO adds or amends several definitions, such as Blackstart, Regulation,

¹³² MISO Answer at 8 (citing Order No. 841, 162 FERC ¶ 61,127 at PP 322-324 & PP 326-327).

¹³³ *Id.* at 9.

¹³⁴ *Id.* at 9-10 (citing Order No. 841, 162 FERC ¶ 61,127 at P 101).

¹³⁵ *Id.* at 20.

¹³⁶ MISO Data Request Response at 6.

Resource, and Capacity Resource, along with other Tariff provisions to integrate Electric Storage Resources.

82. MISO revises its Tariff to add Electric Storage Resources to the definitions of Capacity Resources and Use Limited Resources in Module A, as well as section 69A.3.1.d in Module E-1.¹³⁷ MISO explains that, to the extent that an Electric Storage Resource qualifies as a Capacity Resource that clears Zonal Resource Credits (ZRC) in any annual or Transitional PRA, the Electric Storage Resource will be subject to the same must-offer and performance requirements applicable to all resources, including Use Limited Resources, under section 69A.5 of the Tariff. Additionally, MISO states that any Electric Storage Resource that has ZRCs that cleared in an annual or Transitional PRA or are used in a Fixed Resource Adequacy Plan must submit the installed capacity value of such ZRCs in MISO's Day-Ahead Market and each pre Day-Ahead and the first post Day-Ahead Reliability Assessment Commitment for every hour of every day, except to the extent that the Electric Storage Resource is unavailable due to a full or partial forced schedule outage. MISO asserts that Electric Storage Resources that are registered as Use Limited Resources are required to submit a must-offer into the Day-Ahead Market for at least four continuous hours daily across MISO's forecasted daily peak.

83. MISO contends that Electric Storage Resources that have must-offer obligations are limited in their use of the "Not Participating" Energy Dispatch Status, or other product dispatch statuses of "Not Participating" consistent with their obligations under Module E-1. MISO states that an Electric Storage Resource may use the "Not Participating" Energy Dispatch Status if it is in a Continuous Commitment Status and has all or a portion of its capacity designated as a Capacity Resource.¹³⁸

v. **Commission Determination**

84. We find that MISO's proposed Tariff revisions comply with the requirements of Order No. 841 because they ensure that Electric Storage Resources are eligible to provide all capacity, energy, and ancillary services that they are technically capable of providing. MISO has demonstrated that its market participation model will enable Electric Storage Resources to provide energy and ancillary services, blackstart service, and reactive supply and voltage control. Additionally, MISO has demonstrated how its

¹³⁷ *Id.* at 7.

¹³⁸ *Id.* (citing MISO, FERC Electric Tariff, Module C, §§ 39.2.5.D.b.xxxiii – xxxvii (Electric Storage Resource Offer Rules in the Day-Ahead Market) and §§ 40.2.7B.b.xxxv, 40.2.7B.b.xxxix (Electric Storage Resource Offer Rules in the Real-Time Market) (31.0.0)).

resource adequacy rules are applicable to resources using the participation model to provide capacity.

85. We find that MISO's proposal to allow Electric Storage Resources to qualify as Use Limited Resources, provided that they are able to operate for a minimum of four consecutive operating hours across the daily coincident peak for each day, is compliant with Order No. 841 because, as MISO explains, this will accommodate Electric Storage Resources that may need or desire their commitment to be limited to four hours per day in order to reliably provide a service. We are not persuaded by IPL's argument that the application of Use Limited Resource to all Electric Storage Resources can result in the limited participation of storage resources that can charge and discharge over very short duration and can switch between modes throughout the day. As MISO clarifies, its proposal does not require any Electric Storage Resource to be classified as a Use Limited Resource. We note that MISO also added a reference to Electric Storage Resources to the definition of Use Limited Resources to recognize that some Electric Storage Resources may have energy limitations and may need or desire their commitment to be limited to four hours per day.

86. We find that MISO's proposal to treat Electric Storage Resources that qualify as a capacity resource consistent with other generation resources pursuant to the existing must-offer and performance requirements under section 69A.5 in Module E-1 of the MISO Tariff is just and reasonable, and consistent with Order No. 841. We find that MISO demonstrates how Electric Storage Resources with must-offer obligations under Module E-1 may utilize the "Not Participating" offer status pursuant to sections 39.2.5D and 40.2.7B of MISO's Tariff.

87. In response to IPL, we find that arguments regarding the development of a market for primary frequency response are outside the scope of Order No. 841. Order No. 841 does not require RTOs/ISOs to revise or revisit the technical requirements or compensation provisions of capacity, energy, and ancillary service markets.¹³⁹

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

88. 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.¹⁴⁰ Electric storage resources that participate in an

¹³⁹ Order No. 841, 162 FERC ¶ 61,127 at P 80.

¹⁴⁰ *Id.* P 94.

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.¹⁴¹

89. 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 to meet minimum run-time requirements.¹⁴² 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. 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.¹⁴³ 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.¹⁴⁴

90. 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 operation characteristics of electric storage resources.¹⁴⁵ 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.

91. Order No. 841 does not require RTOs/ISOs to make specific changes to minimum run-time or must-offer requirements associated with providing capacity.¹⁴⁶ 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

¹⁴¹ *Id.* P 95.

¹⁴² *Id.* P 96.

¹⁴³ *Id.* P 97.

¹⁴⁴ *Id.* P 98.

¹⁴⁵ *Id.* P 99.

¹⁴⁶ *Id.* P 100.

applicable to resources using the participation model.¹⁴⁷ 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.¹⁴⁸

i. MISO Filing

92. MISO proposes to modify its Tariff to allow Electric Storage Resources to de-rate their capacity to meet minimum run-time requirements.¹⁴⁹ MISO notes that the Tariff already accommodates this requirement for Stored Energy Resource - Type II Resources and proposes edits to Module E-1 of the Tariff to also allow Electric Storage Resources to de-rate capacity.¹⁵⁰

ii. Protests/Comments

93. Tesla recommends that RTOs/ISOs with centralized wholesale capacity markets: (1) calculate the effective load carrying capability¹⁵¹ of electric storage resources with various run times 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 run times and forecasted load; and (3) limit performance penalties to the physical energy capacity in MWh committed to the capacity market by the electric storage resource.¹⁵² Tesla argues that granting this treatment would ensure just and reasonable results from capacity markets by preventing undue discrimination against

¹⁴⁷ *Id.* PP 100, 101.

¹⁴⁸ *Id.* P 100.

¹⁴⁹ MISO Vannoy Test. at 14.

¹⁵⁰ MISO Transmittal Letter at 8; MISO Proposed Tariff, Module E-1, § 69A.3.1 (Capacity Resources) (36.0.0).

¹⁵¹ Tesla states that effective load carrying capability is a method to determine the capacity value of electric storage resources and other energy limited resources and can be defined as the increase in peak load that will give the same system reliability as the original system without the additional resource. Tesla Comments at 9 (citing GE Energy Consulting, *PJM Renewable Integration Study: Task 3A Part F Capacity Valuation*, Prepared for PJM, p18-19 (March 31, 2014), <https://www.pjm.com/-/media/committees-groups/subcommittees/irs/postings/pjm-pris-task-3a-part-f-capacity-valuation.ashx?la=en>).

¹⁵² *Id.* at 8-12.

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. 841.¹⁵³

iii. Commission Determination

94. We find that MISO's proposal to treat Electric Storage Resources that qualify as capacity resources consistent with other generation resources, pursuant to existing provisions in section 69A.3.1 in Module E-1 of MISO's Tariff, complies with the requirements of Order No. 841 because it allows Electric Storage Resources to de-rate capacity to meet minimum run-time requirements.¹⁵⁴

95. In response to Tesla's request that RTO/ISOs limit performance penalties to the physical capability that an electric storage resource commits for capacity service, we reiterate that electric storage resources must still meet all of the technical, operational, and/or performance requirements that are necessary to reliably provide a service and that Order No. 841 does not exempt an electric storage resource that is participating in RTO/ISO capacity markets from any applicable penalties for non-performance.¹⁵⁵ Further, we find Tesla's recommendations regarding electric storage resource capacity valuation and limits to be outside the scope of this compliance proceeding.

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

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

96. 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.¹⁵⁶ For a resource using the participation model for electric storage

¹⁵³ *Id.* at 8-9.

¹⁵⁴ MISO Transmittal Letter at 8; MISO Vannoy Test. at 14; MISO Proposed Tariff, Module E-1, § 69A.3.1 (Capacity Resources) (36.0.0).

¹⁵⁵ Order No. 841, 162 FERC ¶ 61,127 at PP 78, 95.

¹⁵⁶ *Id.* P 142.

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.¹⁵⁷

97. 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 to be allowed to participate in the RTO/ISO markets as price takers, consistent with the existing rules for self-scheduled resources.¹⁵⁸ 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.¹⁵⁹

98. 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,¹⁶⁰ 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.¹⁶¹ 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 wholesale buyer and

¹⁵⁷ *Id.* 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.

¹⁵⁸ Order No. 841, 162 FERC ¶ 61,127 at P 142.

¹⁵⁹ *Id.* PP 144, 148.

¹⁶⁰ *Id.* P 55.

¹⁶¹ *Id.* P 149.

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.¹⁶²

99. Order No. 841-A denies MISO's request for clarification that it may consider treating an electric storage resource as a self-scheduled price-taker if the electric storage resource uses its State of Charge to lock its energy output to a very narrow range.¹⁶³ The Commission found that, to the extent that a resource using the participation model for electric storage resources has not elected to be a self-scheduled price taker, it would be unreasonable for an RTO/ISO to designate that resource as a self-scheduled price-taker solely based on the State of Charge parameters that the resource has submitted. The RTO/ISO must provide resources using the electric storage resource participation model with the opportunity to determine whether to self-schedule, consistent with the RTO's/ISO's existing rules for self-scheduled resources.¹⁶⁴ In response to MISO's concern that, if a resource using the participation model for electric storage resources restricts its energy output to a very narrow range through its State of Charge, any of its capacity that cleared in the capacity market may not be fully available to the day-ahead market, Order No. 841-A states that a resource using the participation model for electric storage resources may not use a bidding parameter, such as State of Charge, to circumvent its obligations in the RTO/ISO markets, including any day-ahead must-offer obligation for capacity resources.¹⁶⁵

i. MISO Filing

100. MISO asserts that Electric Storage Resources will be capable of participating in MISO as both supply and demand, and that the market participant will utilize the Commitment Status to indicate the Electric Storage Resource's operating mode, indicating the limits for the market dispatch to enforce.¹⁶⁶ MISO proposes to modify its Security Constrained Economic Dispatch (SCED), registration data, and market interfaces to accommodate the new Electric Storage Resource offer parameters, ensuring that an Electric Storage Resource can be dispatched as both supply and demand.¹⁶⁷

¹⁶² *Id.* P 150.

¹⁶³ Order No. 841-A, 167 FERC ¶ 61,154 at PP 83-84.

¹⁶⁴ *Id.* P 84.

¹⁶⁵ *Id.* P 85.

¹⁶⁶ MISO Vannoy Test. at 24.

¹⁶⁷ *Id.* at 16; MISO Transmittal Letter at 11.

MISO asserts that an Electric Storage Resource offering to dispatch as both supply and demand can choose a Commitment Status of Continuous, and explains that the dispatch of energy and clearing of operating reserves will be cleared economically based on a single incremental energy offer curve, across the continuously dispatchable range from the applicable minimum limit to the applicable maximum limit, based on the Commitment Status with increasing incremental energy costs.¹⁶⁸ MISO states that the dispatchable range can include withdrawals, so that the Electric Storage Resource can charge economically based on market conditions.

101. MISO asserts that an Electric Storage Resource may participate in the Day-Ahead Market and Real-Time Market simultaneously, as both supply and demand, by submitting bids to buy and offers to sell within the same dispatch interval.¹⁶⁹ MISO explains that an Electric Storage Resource that wants to participate as both supply and demand may do so by submitting an Electric Storage Resource offer curve with a Commitment Status of Continuous, Energy Dispatch Status of Economic, an Economic Maximum Discharge Limit greater than zero, an Economic Maximum Charge Limit greater than zero, and an energy offer curve with both positive and negative MW volumes. MISO explains that an Electric Storage Resource will only be cleared, or subsequently dispatched, for a single dispatch target for energy per interval, and that an Electric Storage Resource will not be dispatched to inject and withdraw in a single interval.

102. MISO states that Electric Storage Resources are not required to submit information not applicable to their physical, operational, or commercial circumstances.¹⁷⁰ MISO also explains that generating resources that meet Order No. 841's definition of Electric Storage Resource, such as pumped-hydro resources, are not required to adopt the Electric Storage Resource participation model. MISO states that any existing Stored Energy Resource defined as a resource capable of supplying regulating reserve, but not energy, contingency reserve, up ramp capability, and down ramp capability through the short-term shortage and discharge of electrical energy in response to setpoint instructions, is not required to adopt the Electric Storage Resource participation model. MISO also states that any Stored Energy Resource - Type II resources will be required to transition to the Electric Storage Resource participation model effective March 1, 2020, because the Stored Energy Resource - Type II model will be retired with implementation of the Electric Storage Resource participation model.

¹⁶⁸ MISO Transmittal Letter at 11; MISO Vannoy Test. at 16.

¹⁶⁹ MISO Transmittal Letter at 11; MISO Vannoy Test. at 17.

¹⁷⁰ MISO Vannoy Test. at 26.

ii. **Data Request Response**

103. MISO states that, consistent with Mr. Vannoy’s testimony, its proposal “modif[ies] its SCED algorithms, SCED Pricing algorithms, and applicable sections of the Tariff to include Electric Storage Resource Offer in the list of offers eligible to participate in determining Ex Ante and Ex Post Locational Marginal Price.”¹⁷¹ MISO also states that its proposal modifies its SCED algorithms to clear and schedule energy and/or reserves in the Day-Ahead and Real-Time Markets.

104. MISO asserts that extensive changes to Schedule 29 and Schedule 29A are not required because the generic defined terms such as “Resources” include Electric Storage Resources, which will not be included as Fast Start Resources for purposes of setting Local Marginal Prices, consistent with the definition of Fast Start Resource in Module A. MISO states that, consistent with its initially proposed Tariff revisions, Electric Storage Resources will be excluded similar to other fuel-limited resources.¹⁷²

105. MISO contends that Electric Storage Resources will be able to set price in the PRA similar to other eligible planning resources pursuant to section 69A.7.1 of MISO’s Tariff.¹⁷³ MISO states that its proposal allows qualified Electric Storage Resources to set the Auction Clearing Price in the annual PRA or any Transitional PRA under Module E-1 and Module E-2, respectively. MISO asserts that revised section 69A.3.1 of the Tariff includes Electric Storage Resources as eligible to qualify as Capacity Resources, and that Tariff section 69A.7.1 governs participation in the PRA.

106. MISO also states that its proposal is functionally equivalent to buy-bids for wholesale energy. MISO explains that the Tariff accommodates energy offer curve values that accept negative injection values for segments, which will be considered by the Unit Dispatch System in clearing energy schedules in the Day-Ahead Market and

¹⁷¹ MISO Data Request Response at 8 (referencing MISO Proposed Tariff, Module C, §§ 40.2.15.b, 40.2.15.i, 40.2.15.k, and 40.2.15.m (Real-Time Energy and Operating Reserve Market Process) (41.0.0); §§ 40.2.17.a, 40.2.17.d.i, 40.2.17.h, 40.2.17.j, and 40.2.17.l, (Calculation of Real-Time Ex-Post LMPs and Ex Post MCPs (49.0.0); and § 39.2.9 (Day-Ahead Energy and Operating Reserve Market Process) (50.0.0)).

¹⁷² *Id.* at 9 (referencing MISO Proposed Tariff, Module A, § 1.F (Definitions) (47.0.0)).

¹⁷³ *Id.*

developing dispatch targets in the Real-Time Market.¹⁷⁴ MISO also asserts that Electric Storage Resources will be able to participate in MISO markets as price takers, and that revised section 40.2.8 of the Tariff authorizes Electric Storage Resources to self-schedule.¹⁷⁵

iii. Commission Determination

107. We find that MISO's proposed Tariff revisions partially comply with the requirement of Order No. 841 to allow a resource using the Electric Storage Resource participation model to be dispatched and set the wholesale market clearing price as both a wholesale seller and wholesale buyer.¹⁷⁶ As MISO explains, an Electric Storage Resource offering to dispatch as supply or demand may choose a Commitment Status of Continuous. A Commitment Status of Continuous will allow the dispatch of energy and the clearing of operating reserves economically based on a single incremental energy offer curve that ranges across the continuously dispatchable range from the applicable minimum limit to the applicable maximum limit, including withdrawals to allow an Electric Storage Resource to economically charge based on market conditions.¹⁷⁷ Furthermore, MISO clarifies that it has modified its SCED algorithms and applicable sections of its Tariff to include Electric Storage Resource Offers in the list of offers eligible to participate in determining ex ante and ex post LMPs and the setting of market prices.¹⁷⁸

108. Additionally, MISO's proposed revisions allow Electric Storage Resources to participate and set prices in the PRA, similar to other Planning Resources. We find these proposed revisions to be compliant with Order No. 841.

109. We also find that MISO's proposed revisions allowing Electric Storage Resources to submit wholesale bids to buy energy through the Day-Ahead and Real-Time Energy Offer Curves are compliant with Order No. 841. As MISO explains, Tariff sections 39.2.5D.b.i and 40.2.7B.b.i accommodate energy offer curve values that accept negative

¹⁷⁴ *Id.* at 10 (citing to MISO Proposed Tariff, Module C, § 39.2.5D.b.i (Electric Storage Resource Offer Rules in the Day-Ahead Market) (31.0.0) and § 40.2.7B.b.i (Electric Storage Resource Offer Rules in the Real-Time Market) (31.0.0)).

¹⁷⁵ *Id.* at 9-10.

¹⁷⁶ Order No. 841, 162 FERC ¶ 61,127 at P 142.

¹⁷⁷ See MISO Transmittal Letter at 11; MISO Vannoy Test. at 16.

¹⁷⁸ See MISO Data Request Response at 8-9.

injection values for segments, which will be considered in clearing energy schedules in the Day-Ahead Market and developing dispatch targets in the Real-Time Market.¹⁷⁹ We also find that MISO's proposal to allow Electric Storage Resources to participate in MISO's markets as price takers and to self-schedule complies with Order No. 841.¹⁸⁰

110. We find that MISO's proposal to exclude an Electric Storage Resource from qualifying as a Fast Start Resource on the basis that the existing definition of Fast Start Resource excludes fuel-limited resources does not sufficiently address why Electric Storage Resources should be categorically excluded. Therefore, we direct MISO to submit, within 60 days of the date of issuance of this order, a further compliance filing to clarify why Electric Storage Resources should be categorically excluded from the definition of Fast Start Resource and demonstrate how that complies with the Order No. 841 requirement to allow electric storage resources to provide all capacity, energy, and ancillary services they are technically capable of providing.

b. Mechanism to Prevent Conflicting Dispatch Signals

111. 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.¹⁸¹ Order No. 841 does not require a specific approach to prevent conflicting dispatch, but provided that the RTO/ISO is responsible for preventing conflicting dispatch and therefore it would not be the responsibility of the market monitor to review bids to address conflicting dispatch.¹⁸² 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.¹⁸³

¹⁷⁹ *Id.* at 10.

¹⁸⁰ *Id.*

¹⁸¹ Order No. 841, 162 FERC ¶ 61,127 at P 162.

¹⁸² *Id.* P 163.

¹⁸³ *Id.* P 165.

i. MISO Filing

112. MISO claims that its proposed model prevents conflicting dispatch instructions by accommodating a single Electric Storage Resource offer curve made up of both discharge segments (i.e., price/MW pairs for positive values or injections), and charge segments (i.e., price/MW pairs for negative values or withdrawals).¹⁸⁴ MISO states that, for the Continuous Commitment Status, the offer curve must be monotonically increasing across the entire effective dispatchable range of the Electric Storage Resource, including positive and negative energy values.¹⁸⁵

ii. Commission Determination

113. We find that MISO's proposed Tariff revisions comply with the requirements of Order No. 841 with respect to preventing conflicting dispatch signals in the same market interval in order to avoid any operational uncertainties or reliability concerns that could arise.¹⁸⁶ As MISO explains, its proposed model prevents conflicting dispatch instructions through a single Electric Storage Resource offer curve made up of both discharge segments (i.e., price/MW pairs for positive values or injections) and charge segments (i.e., price/MW pairs for negative values or withdrawals). For resources choosing a Continuous Commitment Status, MISO explains that the offer curve must be monotonically increasing across the entire dispatchable range of the Electric Storage Resource, including positive and negative energy values.

c. Make-Whole Payments

114. 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.¹⁸⁷ 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

¹⁸⁴ MISO Transmittal Letter at 11; MISO Vannoy Test. at 17.

¹⁸⁵ MISO Transmittal Letter at 12; MISO Vannoy Test. at 17.

¹⁸⁶ Order No. 841, 162 FERC ¶ 61,127 at P 160.

¹⁸⁷ *Id.* P 174.

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.¹⁸⁸ Order No. 841 does not require a specific method for make-whole payments and provided the RTOs/ISOs with flexibility to establish a methodology under which resources using the participation model can receive make-whole payments.¹⁸⁹

115. Order No. 841 also states 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.¹⁹⁰ 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.¹⁹¹ 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. MISO Filing

116. MISO states that its proposal makes Electric Storage Resources eligible for manual redispatch and compensation with make-whole payments, subject to the same eligibility criteria as other resources.¹⁹² MISO also states that its proposal modifies the calculations to derive the funding of the make-whole payments, which MISO refers to as Revenue Sufficiency Guarantee (RSG) charges, to include Electric Storage Resource offer costs and revenues.

¹⁸⁸ *Id.* PP 174, 177.

¹⁸⁹ *Id.* P 174.

¹⁹⁰ *Id.* P 178.

¹⁹¹ *Id.* P 179.

¹⁹² MISO Vannoy Test. at 18.

ii. Protests/Comments

117. Midwest TDUs allege that MISO's proposed Tariff revisions wrongly exclude all Electric Storage Resource withdrawals from Day-Ahead RSG charges,¹⁹³ and that it is unclear how MISO is treating Electric Storage Resource withdrawals for resale for Real-Time RSG purposes.¹⁹⁴ Midwest TDUs also contend that, to the extent that MISO treats Electric Storage Resource wholesale withdrawals as negative Actual Energy Injections and excludes them from Actual Energy Withdrawals, all Electric Storage Resource withdrawals will also be wrongly excluded from Voltage and Local Reliability RSG charges.¹⁹⁵

iii. Answers

118. MISO claims that it exempts Electric Storage Resource energy withdrawals from Day-Ahead RSG charges on the presumption that the energy scheduled to be withdrawn in the Day-Ahead Market would be injected back into the wholesale market, and that an Electric Storage Resource cannot withdraw energy in the Day-Ahead Market without being part of MISO's Day-Ahead Market solution.¹⁹⁶ MISO proposes to update its provisions regarding Real-Time RSG to include Electric Storage Resource withdrawals, and that: (1) any differences in withdrawal limits from the notification deadline; (2) real-time changes creating must-run or derate withdrawal volumes; and (3) any excessive or deficient withdrawal volumes would all be applicable to an Electric Storage Resource are all subject to Real-Time RSG charges. MISO asserts that an Electric Storage Resource will be assessed Real-Time RSG charges when withdrawing energy regardless of whether the Electric Storage Resource is considered dispatchable by MISO's real-time system and that such treatment is based on the cost causation principles underlying the allocation of Real-Time RSG charges. MISO also states that, like any

¹⁹³ Midwest TDUs Protest at 28. *See* MISO Proposed Tariff, Module C, § 39.3.1A (Day-Ahead Revenue Sufficiency Guarantee Charges) (33.0.0) ("Market Participants scheduled to purchase Energy in the Day-Ahead Market, Virtual Bids, and Export Schedules, shall be charged a Day-Ahead Revenue Sufficiency Guarantee Charge, excluding Energy purchases associated with schedules to charge for Electric Storage Resource Transactions").

¹⁹⁴ Midwest TDUs Protest at 28. *See* MISO Proposed Tariff, Module C, §§ 40.3.3.2.a.i(10-14), 40.3.3.2.a.ii(9-13) (Real-Time Revenue Sufficiency Guarantee Distribution) (37.0.0).

¹⁹⁵ Midwest TDUs Protest at 28-29.

¹⁹⁶ MISO Answer at 5.

other resource, Electric Storage Resources will be included in the real-time commitment process and any resource whose deviation from its Day-Ahead Schedules causes additional resources to be committed, resulting in RSG costs, shall be allocated Real-Time RSG charges.¹⁹⁷

119. Midwest TDUs are unpersuaded by MISO's answer regarding RSG charges.¹⁹⁸ Midwest TDUs argue that MISO has not supported its proposal to subject Electric Storage Resources to Real-Time RSG charges while failing to subject Electric Storage Resources to Day-Ahead RSG charges.¹⁹⁹ Midwest TDUs allege that MISO's "presumption that the energy scheduled to be withdrawn in the Day-Ahead Market would be injected back into the wholesale market" fails to explain why Electric Storage Resource withdrawals in the Day-Ahead Market should not be charged like load (except when dispatched to provide a service). Midwest TDUs argue that, when an Electric Storage Resource makes a Day-Ahead Market withdrawal, it behaves like load and benefits from local reliability support, and thus should similarly bear its share of the uplift costs incurred, consistent with Order No. 841.²⁰⁰

iv. Data Request Response

120. MISO states that it included Electric Storage Resources in provisions regarding make-whole payments in several Tariff sections.²⁰¹ MISO asserts that Tariff section

¹⁹⁷ *Id.* at 5-6.

¹⁹⁸ Midwest TDUs Reply at 4-5.

¹⁹⁹ *Id.* at 4 (referring to MISO Answer at 5).

²⁰⁰ *Id.* at 4-5 (quoting MISO Answer at 5).

²⁰¹ MISO Data Request Response at 12 (referencing MISO Proposed Tariff, Module C, § 40.2.19 (Real-Time Revenue Sufficiency Guarantee) (35.0.0), § 40.3.3.3.c (Credits for Real-Time Energy and Operating Reserve Market) (38.0.0), § 40.3.5.1 (Rationale for Real-Time Offer Revenue Sufficiency Guarantee Payment) (37.0.0), § 40.3.5.2 (Types of Resources Covered by Real-Time Offer Revenue Sufficiency Guarantee Payment) (32.0.0), § 40.3.5.3 (Resources) (31.0.0), § 40.3.5.4 (Real-Time Offer Revenue Sufficiency Guarantee Payment Eligibility for Day-Ahead Committed Hours for Genera) (37.0.0), § 40.3.5.5 (Real-Time Offer Revenue Sufficiency Guarantee Payment Eligibility for Real-Tim Must-Run Resources) (37.0.0), § 40.3.5.6 (Calculation of Real-Time Offer Revenue Sufficiency Guarantee Payment) (34.0.0), and Schedule 27 (Real-Time Offer Revenue Sufficiency Guarantee Payment and Day-Ahead Margin Assurance Payment) (48.0.0)).

40.3.3.3.c and Schedule 27 ensure that Electric Storage Resources receive a make-whole payment when the wholesale price is higher than the Electric Storage Resource's bid price and when the wholesale price is lower than the Electric Storage Resource's offer price.

121. MISO asserts that it revised several sections of the Tariff which refer to generation resource and demand response resource eligibility requirements for make-whole payments, to include Electric Storage Resources.²⁰² MISO states that the inclusion of Electric Storage Resources ensures consistency with the rules governing the eligibility of other supply resources to receive make-whole payments.

v. Commission Determination

122. We find that MISO's proposal to make Electric Storage Resources eligible for make-whole payments, consistent with MISO's existing Tariff provisions governing make-whole payments for generation resources, complies with Order No. 841. In Order No. 841, the Commission recognized that the rules for make-whole payments vary by RTO/ISO and provided RTOs/ISOs with flexibility to establish a methodology under which electric storage resources can receive make-whole payments.²⁰³ Order No. 841 does not address the funding of such make-whole payments. Therefore, we find that MISO's proposal to assess Real-Time RSG charges to Electric Storage Resources, but

²⁰² *Id.* at 13 (referencing MISO Proposed Tariff, Module C, § 39.3.2B (Day-Ahead Revenue Sufficiency Guarantee Payments) (47.0.0), § 40.2.19 (Real-Time Revenue Sufficiency Guarantee) (35.0.0), § 40.3.3.3.c (Credits for Real-Time Energy and Operating Reserve Market) (38.0.0), § 40.3.5.1 (Rationale for Real-Time Offer Revenue Sufficiency Guarantee Payment) (37.0.0), § 40.3.5.2 (Types of Resources Covered by Real-Time Offer Revenue Sufficiency Guarantee Payment) (32.0.0), § 40.3.5.3 (Resources) (31.0.0), § 40.3.5.4 (Real-Time Offer Revenue Sufficiency Guarantee Payment Eligibility for Day-Ahead Committed Hours for Genera) (37.0.0), § 40.3.5.5 (Real-Time Offer Revenue Sufficiency Guarantee Payment Eligibility for Real-Time Must-Run Resources) (37.0.0), § 40.3.5.6 (Calculation of Real-Time Offer Revenue Sufficiency Guarantee Payment) (34.0.0), § 40.3.6.1 (Rationale for Day-Ahead Margin Assurance Payment) (33.0.0), § 40.3.6.2 (Types of Resources Covered by Day-Ahead Margin Assurance Payment) (32.0.0), § 40.3.6.3 (Eligibility Criteria) (31.0.0), § 40.3.6.4 (Day-Ahead Margin Assurance Payment Eligibility) (39.0.0), § 33.8.1 (Circumstances Requiring Manual Redispatch) (31.0.0), § 33.8.2 (Manual Redispatch Compensation and Eligibility) (42.0.0), § 33.8.3 (Manual Redispatch Cost Recovery) (31.0.0), § 33.8.4 (Notice and Posting) (31.0.0), and Schedule 27 (Real-Time Offer Revenue Sufficiency Guarantee Payment and Day-Ahead Margin Assurance Payment) (48.0.0)).

²⁰³ Order No. 841, 162 FERC ¶ 61,127 at P 174.

exempt them from Day-Ahead RSG charges, is consistent with the flexibility provided to RTOs/ISOs in Order No. 841.

5. Physical and Operational Characteristics of Electric Storage Resources

123. 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.²⁰⁴ 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.²⁰⁵ 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.²⁰⁶

124. 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.²⁰⁷ This flexibility may help prevent resources using the participation model for electric storage resources from

²⁰⁴ *Id.* P 191.

²⁰⁵ *Id.* PP 211, 220, 229.

²⁰⁶ *Id.* PP 211, 220, 230.

²⁰⁷ *Id.* P 192.

having to submit information that is not applicable given their physical, operational, or 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.²⁰⁸

125. 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. 841.²⁰⁹ 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.

126. 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.²¹⁰

State of Charge

127. 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.²¹¹ 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.²¹²

²⁰⁸ *Id.* P 193.

²⁰⁹ *Id.* P 235.

²¹⁰ Order No. 841-A, 167 FERC ¶ 61,154 at P 93.

²¹¹ Order No. 841, 162 FERC ¶ 61,127 at P 213.

²¹² *Id.* P 214.

Maximum State of Charge and Minimum State of Charge

128. 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.²¹³ 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).

129. 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.²¹⁴ 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

130. 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.²¹⁵ The Minimum Charge Limit represents the minimum MW level that the resource can receive from the grid.²¹⁶

Maximum Discharge Limit and Minimum Discharge Limit

131. The Maximum Discharge Limit is the maximum MW quantity that the resource can inject onto the grid.²¹⁷ The Maximum Discharge Limit is analogous to, and could be represented by, the economic maximum that traditional generation resources can

²¹³ *Id.* P 215.

²¹⁴ *Id.* P 215.

²¹⁵ *Id.* P 216.

²¹⁶ *Id.* P 231.

²¹⁷ *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.²¹⁸

Maximum Charge Time and Minimum Charge Time

132. 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).²¹⁹ 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.

133. 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.²²⁰ 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

134. 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.²²¹ 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

135. The Discharge Ramp Rate represents the speed at which electric storage resources can move from zero output to full output, or Maximum Discharge Limit.²²² The Charge

²¹⁸ *Id.* P 231.

²¹⁹ *Id.* P 223.

²²⁰ *Id.* P 222.

²²¹ *Id.* P 224.

²²² *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

136. 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. 841.²²³ 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. MISO Filing

137. MISO asserts that its proposed Electric Storage Resource participation model adopts all the terms and definitions required by Order No. 841 as the minimum set of offer parameters to account for Electric Storage Resource physical and operating characteristics, as well as new, Electric Storage Resource-specific, offer parameters.²²⁴ MISO states that market participants will manage the State of Charge, and that the participation model provides eight operating modes, based on the Electric Storage Resource offer Commitment Status specification, to facilitate State of Charge management and commercial operations.²²⁵

138. MISO explains that Commitment Status is a specification submitted by a market participant in its hourly offer to indicate whether or how MISO may commit the resource or deploy the resource for operating reserves for the hour.²²⁶ MISO claims that the Commitment Status provides flexibility through its multiple values and communicates the configuration or mode in which the Electric Storage Resource owner desires to make the resource available to the markets. MISO states that Discharge, Emergency Discharge, Charge, Emergency Charge, Continuous, Available, Not Participating, and Outage are valid Commitment Status specifications for Electric Storage Resource offers. MISO also

²²³ *Id.* P 235.

²²⁴ MISO Transmittal Letter at 13.

²²⁵ MISO Vannoy Test. at 13; MISO Proposed Tariff, Module C, § 39.2.5D (Electric Storage Resource Offer Rules in the Day-Ahead Market) and § 40.2.7B (Electric Storage Resource Offer Rules in the Real-Time Market) (31.0.0).

²²⁶ MISO Vannoy Test. at 23.

states that the three online Commitment Status options of Discharging, Charging, and Continuous will be treated as a Must Run Commitment Status.

139. MISO states that it may commit an Electric Storage Resource offering an Emergency Discharge or Emergency Charge Commitment Status to address a Maximum Generation Emergency or Minimum Generation Emergency condition, respectively.²²⁷ MISO explains that Offline Supplemental qualified Electric Storage Resources offering an Available Commitment Status are available to provide Offline Supplemental and to be called upon for commitment in discharge mode in response to a contingency reserve event. MISO notes that Electric Storage Resources with Not Participating or Outage Commitment statuses are not available to provide any products to the MISO energy and operating reserves market. MISO claims that the participation model for Electric Storage Resources allows the market participant to manage State of Charge, manage minimum and maximum bid parameters such as charge and discharge time and limits, and manage other operational characteristics such as minimum and maximum State of Charge and transition times between charging and discharging. MISO states that the market dispatch will monitor State of Charge and enforce minimum and maximum energy storage levels during normal and emergency system conditions.²²⁸

140. MISO asserts that its proposal includes supplemental parameters, and that MISO has elected to use the term Energy Storage Level in two circumstances instead of State of Charge because: (1) Energy Storage Level currently exists in MISO's Tariff as part of the term Hourly Maximum Energy Storage Level; and (2) it will better describe the relevant state or aspect of an Electric Storage Resource signified by the supplemental parameters.²²⁹ MISO explains that some terms are preceded by Hourly or Hourly Economic to reflect the hourly intervals used in the Day-Ahead Market or further indicate that these offer parameters will be utilized for economic clearing and dispatch, respectively.²³⁰ MISO states that it also proposes the new term Electric Storage Resource Offer, an offer made by or for an Electric Storage Resource.²³¹

141. MISO proposes to add the new term Maximum Energy Storage Level, defined as the State of Charge value that should not be exceeded when an Electric Storage Resource

²²⁷ *Id.* at 24.

²²⁸ *Id.* at 25; MISO Transmittal Letter at 16.

²²⁹ MISO Transmittal Letter at 13; MISO Vannoy Test. at 21.

²³⁰ MISO Vannoy Test. at 21.

²³¹ *Id.* at 23.

is being charged while providing energy or operating reserves under normal operating conditions.²³² MISO also proposes to add Electric Storage Resources to the pre-existing definition for Hourly Maximum Energy Storage Level, which for an Electric Storage Resource is the equivalent to the hourly maximum State of Charge. MISO proposes to add the new term Hourly Minimum Energy Storage Level, defined as the minimum amount of energy that may be stored on a sustained basis, expressed in MWh, which for an Electric Storage Resource is equivalent to the hourly minimum State of Charge.²³³ MISO also proposes to add the new term Emergency Minimum Energy Storage Level, defined as the State of Charge value that should not be exceeded when an Electric Storage Resource is being discharged while providing energy or operating reserves under emergency conditions.²³⁴

142. MISO proposes three new terms to define Maximum Charge Limit under different conditions: (1) Hourly Economic Maximum Charge Limit; (2) Hourly Emergency Maximum Charge Limit; and (3) Hourly Regulation Maximum Charge Limit.²³⁵ MISO proposes three new terms to define the Minimum Charge Limit under different conditions: (1) Hourly Economic Minimum Charge Limit; (2) Hourly Emergency Minimum Charge Limit; and (3) Hourly Regulation Minimum Charge Limit.

143. MISO also proposes three new terms to define Maximum Discharge Limit under different conditions: (1) Hourly Economic Maximum Discharge; (2) Hourly Emergency Maximum Discharge Limit; (3) Hourly Regulation Maximum Discharge Limit.²³⁶ MISO proposes three new terms to define Minimum Discharge Limit under different conditions: (1) Hourly Economic Minimum Discharge Limit; (2) Hourly Emergency Minimum Discharge Limit; and (3) Hourly Regulation Minimum Discharge Limit.²³⁷

²³² MISO Transmittal Letter at 13; MISO Proposed Tariff, Module A, § 1.M (Definitions) (58.0.0) and § 1.E (Definitions) (73.0.0).

²³³ MISO Transmittal Letter at 13.

²³⁴ MISO Proposed Tariff, Module A, § 1.E (Definitions) (73.0.0).

²³⁵ MISO Transmittal Letter at 14-15; MISO Proposed Tariff, Module A, § 1.H (Definitions) (51.0.0).

²³⁶ *Id.*

²³⁷ *Id.*

144. MISO proposes to add the new term Maximum Charge Time, defined as the maximum duration that an Electric Storage Resource is able to Charge.²³⁸ MISO also proposes to add the new term Minimum Charge Time, defined as the minimum duration that an Electric Storage Resource is able to Charge.²³⁹ MISO explains that, because of unit commitment algorithm limitations and the market participant requirement to manage State of Charge, these limitations must be managed by the Electric Storage Resource.²⁴⁰

145. MISO explains that Minimum Run Time and Maximum Run Time associated with resource operations are already defined terms in MISO's Tariff and enforced in the unit commitment process; therefore, MISO proposes alternative defined terms and offer specifications, Minimum Discharge Time and Maximum Discharge Time, in lieu of the Order No. 841 required terms to make them unique to Electric Storage Resources.²⁴¹

146. MISO states that its proposal treats Electric Storage Resources comparably with other resource types for additional offer specifications, such as separate dispatch limit sets for the provision of regulation service, and separate dispatch limits and energy storage levels for use during emergency system conditions.²⁴² MISO explains that submittal of an Electric Storage Resource Efficiency Factor is required to accurately track an Electric Storage Resource's State of Charge in the market dispatch algorithm, as well as to compute the increase in Energy Storage Level for each MWh of charging energy withdrawn by the Electric Storage Resource.

147. MISO proposes to add the new term Hourly Discharge Ramp Rate, defined as “[t]he MW/minute response rate for an Electric Storage Resource moving from zero output to its Hourly Economic Maximum Discharge Limit and/or from the Hourly Economic Maximum Discharge Limit to zero output that is utilized in the clearing of the [Day-Ahead Market] and all Reliability Assessment Commitment processes, and in responding to either increasing or decreasing setpoint instructions between zero and

²³⁸ MISO Transmittal Letter at 14; MISO Proposed Tariff, Module A, § 1.M (Definitions) (58.0.0).

²³⁹ *Id.*

²⁴⁰ MISO Transmittal Letter at 16.

²⁴¹ *Id.* at 14, 16; MISO Proposed Tariff, Module A, § 1.M (Definitions) (58.0.0).

²⁴² MISO Transmittal Letter at 17.

the Hourly Economic Maximum Discharge Limit that may be submitted to override the default value submitted during the asset registration process.”²⁴³

148. MISO proposes to add the new term Hourly Charge Ramp Rate, defined as:

The MW/minute response rate for an Electric Storage Resource moving from zero output to its Hourly Economic Maximum Charge Limit and/or from the Hourly Economic Maximum Charge Limit to zero output that is utilized in the clearing of the [Day-Ahead Market] and all Reliability Assessment Commitment processes, and in responding to either increasing or decreasing Setpoint Instructions between zero and the Hourly Economic Maximum Charge Limit that may be submitted to override the default value submitted during the asset registration process.^[244]

b. Protests/Comments

149. IPL states that the Commission should require MISO to add a throughput parameter, specifically a Maximum Daily Throughput parameter, to its Tariff.²⁴⁵ IPL argues that a throughput parameter (i.e., a MWh measure of the absolute value of energy in and out of the Electric Storage Resource) is important to ensure that asset owners can operate their equipment without violating battery manufacturer warranties. IPL states that such a parameter would provide a better way for batteries to manage their cycle limits, which are harder to define when limited to only partial cycles. IPL requests that the Commission either direct MISO to add a throughput parameter to its Tariff or, in the alternative, conduct a technical conference.

150. Tesla requests that the Commission require RTOs/ISOs to allow electric storage resources to submit separate round-trip efficiency parameters for summer and winter, for purposes of market registration or offers, because round-trip efficiency can be highly dependent on temperature and is sufficient for all uses, including planning processes and cost-based determination.²⁴⁶

²⁴³ *Id.* at 14; MISO Proposed Tariff, Module A, § 1.H (Definitions) (51.0.0).

²⁴⁴ *Id.*

²⁴⁵ IPL Comments at 11.

²⁴⁶ Tesla Comments at 23.

c. Answers

151. MISO points out that IPL did not seek rehearing of the determination in Order No. 841's not to include throughput as a required electric storage resource bidding parameter; therefore, MISO contends that IPL is barred from raising the issue in the compliance proceeding.²⁴⁷ MISO also states that enforcement of a throughput parameter would be too complex for MISO's existing market systems, and Electric Storage Resources can and should manage throughput via the available bid parameters. MISO claims that IPL's suggestion of a technical conference implies that the Commission has insufficient information to evaluate the addition of a throughput parameter, and that it is inappropriate for such an issue to be examined and resolved in this compliance proceeding.

152. In its response to MISO's Answer, IPL argues that it is not precluded from requesting that the Commission direct MISO to include a throughput parameter, such as Maximum Daily Throughput, so that Electric Storage Resource owners may operate their equipment without violating battery manufacturer warranties, because this proceeding is the first instance in which affected parties were notified as to how MISO would implement Order No. 841.²⁴⁸ IPL states that, although it did not seek rehearing of Order No. 841's non-inclusion of throughput as a required electric storage resource bidding parameter, this compliance proceeding is a new FPA section 205 filing; therefore, MISO is incorrect that it is improper for IPL to raise the throughput parameter issue here.²⁴⁹ IPL claims that MISO's procedural preclusion claim fails the Commission's test for preclusion, which only applies "where the issues presented have been fully litigated and decided on the merits, and no new evidence or new circumstances would justify relitigation."²⁵⁰

d. Commission Determination

153. We find that MISO's proposed Electric Storage Resource participation model complies with Order No. 841 because MISO 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. MISO also complies with the Order No. 841 requirement that RTOs/ISOs allow a resource using the

²⁴⁷ MISO Answer at 12.

²⁴⁸ IPL Answer at 4-5, 7.

²⁴⁹ *Id.* at 5.

²⁵⁰ *Id.* at 5-6 (citing *Entergy Servs., Inc.*, 127 FERC ¶ 61,226, at P 10 (2009)).

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 MISO proposes to comply with the requirement to account for certain physical and operational characteristics through its existing bidding parameters or other existing market mechanisms, MISO has demonstrated how its existing market rules already account for those characteristics.²⁵¹

154. We reject IPL's request that MISO be required to add a throughput parameter to its Tariff. A throughput parameter is not one of the operational and physical characteristics that Order No. 841 requires each RTO/ISO to consider. MISO states in its answer that including a throughput parameter is beyond the capabilities of MISO's existing market systems and that the Electric Storage Resource owner can manage its throughput by using the available bidding parameters. We also reject Tesla's request that the Commission require MISO to allow electric storage resources to submit separate round-trip efficiency levels for summer and winter because this was not required by Order No. 841. 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 require the RTOs/ISOs to account for any other physical and operational characteristics beyond those identified above.

6. State of Charge Management

155. 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.²⁵² 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.

156. 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.²⁵³

²⁵¹ Order No. 841, 162 FERC ¶ 61,127 at PP 211, 220, 229.

²⁵² *Id.* P 246.

²⁵³ *Id.* P 254.

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.²⁵⁴ 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.²⁵⁵ 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.

157. 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.²⁵⁶ RTOs/ISOs are not precluded from establishing telemetry or other communication requirements necessary to determine the capabilities of an electric storage 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.

158. The Commission recognized 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.²⁵⁷ 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. As with other resources, market monitors have the ability to review the bids from electric storage resources to detect economic or physical withholding.²⁵⁸ If an RTO/ISO determines that additional rules are needed to ensure electric storage resources are not managing their

²⁵⁴ *Id.* n.300.

²⁵⁵ *Id.* P 254.

²⁵⁶ *Id.* P 255.

²⁵⁷ *Id.* P 256.

²⁵⁸ *Id.* P 257.

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.²⁵⁹

a. MISO Filing

159. MISO states that its proposal requires Electric Storage Resources to manage their own State of Charge.²⁶⁰ MISO asserts that its existing Tariff has State of Charge monitoring and limitation capabilities, including maximum daily energy constraint in the unit commitment software for pumped-hydro storage modeled as generation resources and regulating reserve clearing and deployment limits that apply only to short-term Stored Energy Resources.²⁶¹ MISO states that pumped-hydro resources and Stored Energy Resources may continue to utilize these options.²⁶² MISO claims that Electric Storage Resources have much shorter duration charging and discharging cycles resulting in multiple cycles within an operating day, and a comparable constraint communicating the minimum or maximum daily charging energy does not exist, nor can it be implemented without significant investment in research and analysis on the current market system platform.²⁶³

160. MISO states that its proposed participation model enables an Electric Storage Resource to manage and communicate its State of Charge in particular dispatch intervals by using and adjusting the appropriate Commitment Status, Energy Dispatch Status, energy offer curve, dispatch limits, and self-schedule volumes.²⁶⁴ MISO claims that the addition of Minimum and Maximum Energy Storage Levels, Electric Storage Resource

²⁵⁹ *Id.* (citing 16 U.S.C. § 824d).

²⁶⁰ MISO Vannoy Test. at 27; MISO Proposed Tariff, Module C, § 39.1.2 (Rules for Self-Scheduled Resources) (34.0.0), § 39.2.5D.a (Electric Storage Resource Offer Rules in the Day-Ahead Market) (31.0.0), and § 40.2.7B.a (Electric Storage Resource Offer Rules in the Real-Time Market) (31.0.0).

²⁶¹ MISO Transmittal Letter at 17; MISO Vannoy Test. at 27.

²⁶² MISO Transmittal Letter at 17.

²⁶³ MISO Vannoy Test. at 27.

²⁶⁴ *Id.*; MISO Transmittal Letter at 17; MISO Proposed Tariff, Module C, § 39.1.2 (Rules for Self-Scheduled Resources) (34.0.0), § 39.2.5D.a (Electric Storage Resource Offer Rules in the Day-Ahead Market) (31.0.0), and § 40.2.7B.a (Electric Storage Resource Offer Rules in the Real-Time Market) (31.0.0).

Efficiency Factor, and the communication of State of Charge through the Day-Ahead Market resource offers or Real-Time Market telemetry ensure that the Electric Storage Resource's State of Charge limits are not violated by the market dispatch and schedules.²⁶⁵

161. MISO also states that it will modify its Excessive Deficient Energy provision and associated RSG cost allocation calculation to account for Electric Storage Resources, including Electric Storage Resources participating near the 0.1 MW minimum participation level, that fail to follow dispatch while they are being instructed to charge.²⁶⁶ MISO explains that it proposes to establish a minimum threshold for mitigation measures of two MW to accommodate small capacity Electric Storage Resources meeting the minimum participation threshold without triggering false screening failures due to percentage based tolerances.²⁶⁷

b. Protests/Comments

162. 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.²⁶⁸ 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 curves that are asymmetric between regulation up and regulation down.²⁶⁹ Tesla further states that electric storage resources typically operate “in a state somewhere between being fully charged or fully discharged,” and that 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.²⁷⁰

²⁶⁵ MISO Transmittal Letter at 17; MISO Vannoy Test. at 27; MISO Proposed Tariff, Module A, § 1.M (Definitions) (58.0.0) and § 1.E (Definitions) (73.0.0).

²⁶⁶ MISO Transmittal Letter at 17; MISO Proposed Tariff, Module A, § 1.E (Definitions) (73.0.0), § 1.D (Definitions) (56.0.0), Module C, § 40.3.4 (Charges for Excessive/Deficient Energy and Reserve Deployment) (44.0.0).

²⁶⁷ MISO Vannoy Test. at 36.

²⁶⁸ Tesla Comments at 22.

²⁶⁹ *Id.* at 22-23.

²⁷⁰ *Id.* at 22.

c. Data Request Response

163. MISO states that its market systems and algorithms are not capable of optimizing or managing an Electric Storage Resource's State of Charge, and that MISO's proposed new offer parameters enable Electric Storage Resources to manage their own State of Charge.²⁷¹ MISO asserts that this also includes the additional offer parameters and Commitment Status that will be enforced by modifications to MISO's SCED algorithms.

d. Commission Determination

164. We find that MISO's proposal complies with the Order No. 841 requirement that Electric Storage Resources using the participation model be allowed to self-manage their State of Charge because: (1) MISO will allow Electric Storage Resources to manage their State of Charge; (2) MISO will subject Electric Storage Resources to applicable penalties for deviating from a dispatch schedule; (3) MISO will be able to sufficiently monitor Electric Storage Resources to determine their capabilities in real time; and (4) MISO 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.

165. In response to Tesla's comments regarding resources providing 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.²⁷² In addition, we disagree that the Commission must require MISO to allow Electric Storage Resources to submit asymmetrical offer curves for regulation up and regulation down service. That was not a requirement in Order No. 841, and thus is outside the scope of this compliance proceeding.

7. Minimum Size Requirement

166. Order No. 841 adds section 35.28(g)(9)(i)(D) to the Commission's regulations to require that each RTO/ISO have tariff provisions providing a participation model for electric storage resources that establishes a minimum size requirement for participation in

²⁷¹ MISO Data Request Response at 15.

²⁷² Order No. 841, 162 FERC ¶ 61,127 at P 253.

the RTO/ISO markets that does not exceed 100 kW.²⁷³ This minimum size requirement includes all minimum capacity requirements, minimum offer to sell requirements, and minimum bid to buy requirements for resources participating in these markets under the participation model for electric storage resources. Under this requirement, an RTO/ISO may allow offer and/or bid quantities smaller than or equal to 100 kW, but an RTO/ISO may not require a resource using the electric storage resource participation model to submit offer and/or bid quantities larger than 100 kW.²⁷⁴ The Commission found that minimum size requirements do not need to be resource specific or location-specific.²⁷⁵

167. Order No. 841-A denies requests for rehearing regarding the minimum size requirement,²⁷⁶ including MISO's request for clarification or, in the alternative, rehearing to phase in the implementation of the minimum size requirement.²⁷⁷ In response to MISO's request for clarification that the 100 kW limit does not apply to the Minimum Charge Limit or Minimum Discharge Limit, Order No. 841-A clarifies that the minimum size requirement does not prohibit an RTO/ISO from establishing a minimum size limit that is lower than 100 kW on any minimum capacity requirements, minimum offer to sell requirements, or minimum bid to buy requirements. Order No. 841-A clarifies further that it is possible that the quantities for the Minimum Charge Limit and Minimum Discharge Limit may be smaller than 100 kW for resources using the participation model for electric storage resources. However, Order No.841-A does not specify how the minimum size requirement may affect the quantities submitted for some of the physical and operational characteristics of electric storage resources, and states that the Commission would not prejudge how the RTOs/ISOs may propose any such relationships between the minimum size requirement and the physical and operational characteristics of resources using the participation model for electric storage resources.²⁷⁸

a. MISO Filing

168. MISO states that its proposal establishes a minimum size requirement for Electric Storage Resources of 0.1 MW because MISO's existing market systems do not support

²⁷³ *Id.* P 270.

²⁷⁴ *Id.* P 276.

²⁷⁵ *Id.* P 273.

²⁷⁶ Order No. 841-A, 167 FERC ¶ 61,154 at PP 102-104.

²⁷⁷ *Id.* P 105.

²⁷⁸ *Id.* P 106.

offer or bid quantities less than 0.1 MW.²⁷⁹ MISO also states that it is modifying its excessive energy and deficient energy thresholds to incent smaller Electric Storage Resources to follow MISO's setpoint instructions.²⁸⁰ MISO asserts that station power must be metered and reported separately from an Electric Storage Resource's Actual Energy Injections.²⁸¹ MISO states that Schedule 20 of its Tariff establishes rules for administering station power, and that MISO will modify the definition of station power in Module A of its Tariff to formalize this exclusion for Electric Storage Resources.²⁸²

169. MISO references its request for rehearing and/or clarification of Order No. 841, in which MISO asked for permission to adopt a phased approach in the accommodation of very small Electric Storage Resources.²⁸³ MISO reiterates its belief that it would be reasonable to limit the number of very small Electric Storage Resources to 50 in the first year of implementation of the Electric Storage Resource participation model, and 150 in the second year.²⁸⁴

b. Protests/Comments

170. Union of Concerned Scientists states that MISO's request for incremental deployment of "very small" Electric Storage Resources is inappropriate and should be rejected.²⁸⁵ Union of Concerned Scientists claims that, although MISO initially raised the request to limit the implementation of very small Electric Storage Resources in a request for clarification or rehearing of Order No. 841, neither MISO's request for rehearing nor MISO's compliance filing specifies what size storage system qualifies as a "very small" Electric Storage Resource. Union of Concerned Scientists asserts that MISO's proposal lacks clarity on how MISO would classify the size of Electric Storage Resources and how that would affect participation in the MISO markets.

²⁷⁹ MISO Transmittal Letter 18; MISO Vannoy Test. at 28; MISO Proposed Tariff, Module A, § 1.E (Definitions) (73.0.0).

²⁸⁰ MISO Transmittal Letter 18.

²⁸¹ MISO Vannoy Test. at 29.

²⁸² *Id.*; MISO Proposed Tariff, Module A, § 1.S (Definitions) (61.0.0).

²⁸³ MISO Vannoy Test. at 38.

²⁸⁴ MISO does not propose accompanying Tariff language in its compliance filing.

²⁸⁵ Union of Concerned Scientists Comments at 3.

171. Energy Storage Association argues that MISO's proposal to limit the deployment and size of Electric Storage Resources contradicts the purpose of Order No. 841 and creates new barriers to the participation of Electric Storage Resources.²⁸⁶ Energy Storage Association also states that MISO has not defined "very small" storage and requests that the Commission direct MISO to clarify that it will deploy storage at the 100 kW minimum size requirement and remove the incremental deployment language.²⁸⁷ Energy Storage Association also requests that MISO clarify how it will prioritize resources under the initial 50 and the subsequent 150 project caps for the first two years.

c. Answer

172. MISO states that it considers Electric Storage Resources that are one MW or less to be "very small," as one MW is the current minimum market participation level for resources specified in MISO's Business Practices Manuals, and is consistent with the Energy Information Administration's understanding that a generator can be considered small-scale if its capacity is one MW or less.²⁸⁸ MISO claims that its proposal to limit the number of very small Electric Storage Resources to 50 in the first year and 150 in the second year reflects MISO's ability to evaluate and manage a potential influx of such Electric Storage Resources, and that MISO will use a "first come, first served" process.²⁸⁹ MISO asserts that there are certain limitations to reliably and efficiently handle a large influx of very small Electric Storage Resources, such as technical performance of market software, market software solution quality, and administrative staffing to process individual resource registration and modeling requests.²⁹⁰

d. Data Request Response

173. MISO acknowledges that no Tariff modifications were proposed in its compliance filing to limit or phase in the number of very small Electric Storage Resources in the first two years following initial implementation of the Electric Storage Resource participation model.²⁹¹ As such, MISO proposed new Tariff section 38.2.2.i to limit the number of

²⁸⁶ Energy Storage Association Comments at 6.

²⁸⁷ *Id.* at 7.

²⁸⁸ MISO Answer at 13 (citing Business Practice Manual for Network and Commercial Models, BPM-010, §§ 3.1.1.1, 3.1.1.5, and 4.2.1.1).

²⁸⁹ *Id.* at 13-14.

²⁹⁰ *Id.* at 14.

²⁹¹ MISO Data Request Response at 15.

Electric Storage Resources less than one MW and eligible for market participation to 50 in the first year, and 150 in the second year after implementation of the Electric Storage Resource participation model.

e. **Commission Determination**

174. MISO's definition of Electric Storage Resource requires that the resource be capable of injecting and withdrawing a minimum of 0.1 MW. We find that this complies with the Order No. 841 requirement to provide 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. However, we find that MISO's proposal to limit implementation of very small resources does not comply with this Order No. 841 requirement. In Order No. 841-A, the Commission denied MISO's request for clarification or, in the alternative, rehearing that it may phase in the implementation of the minimum size requirement.²⁹² Therefore, we direct MISO to file, within 60 days of the date of issuance of this order, revisions to its Tariff to remove the proposed Tariff revisions in section 38.2.2.i.

8. **Energy Used to Charge Electric Storage Resources**

a. **Price for Charging Energy**

175. 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.²⁹³ 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.²⁹⁴

176. 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.²⁹⁵ However, the Commission found that

²⁹² Order No. 841-A, 167 FERC ¶ 61,154 at P 105.

²⁹³ Order No. 841, 162 FERC ¶ 61,127 at P 294.

²⁹⁴ *Id.* P 296.

²⁹⁵ *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

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).²⁹⁶ 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.²⁹⁷ 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 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.

177. With respect to the meaning of a "service," the Commission acknowledged that the participation of electric storage resources in RTO/ISO markets may convey a range of benefits, particularly under certain system conditions, but declined to grant clarification that charging pursuant to economic dispatch always qualifies as a service.²⁹⁸ 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.

178. 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

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. *Id.*

²⁹⁶ *Id.* P 298.

²⁹⁷ Order No. 841-A, 167 FERC ¶ 61,154 at P 121.

²⁹⁸ *Id.* P 120.

some other rate, such as a retail rate, for charging of co-located generation.²⁹⁹ 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.³⁰⁰ 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).³⁰¹

179. Additionally, the Commission in Order No. 841 found that efficiency losses are charging energy and therefore not a component of station power load.³⁰² 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 RTO/ISO considers onsite load. 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.

180. 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.³⁰³ 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.³⁰⁴

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

³⁰⁰ *Id.* P 301.

³⁰¹ Order No. 841-A, 167 FERC ¶ 61,154 at P 123.

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

³⁰³ Order No. 841-A, 167 FERC ¶ 61,154 at P 119.

³⁰⁴ *Id.* (citing Order No. 841, 162 FERC ¶ 61,127 at PP 323-324).

i. **MISO Filing**

181. MISO proposes to define Electric Storage Resource Transaction as market activities associated with the charging and discharging process of an Electric Storage Resource that consists of the withdrawal of energy, including any associated energy purchases, and future injection of energy, including any associated energy sales, from the transmission system under MISO's Tariff.³⁰⁵ MISO states that Electric Storage Resource Transactions will be settled at the applicable wholesale LMP. MISO explains that this distinct transaction category ensures that energy storage may be treated separately from load, which is consumption of energy by end users served by load serving entities. For resources that do not elect to use the Electric Storage Resource participation model, MISO states that it currently settles such transactions at LMP, accounting for any financial schedules at the applicable commercial pricing node.³⁰⁶

182. MISO asserts that efficiency losses associated with Electric Storage Resources will not be considered load or station power, but will be included in energy schedules, including meter data submittals and settled as charge energy at the applicable LMP.³⁰⁷

183. MISO states that an Electric Storage Resource can serve as a generator source of reactive power supply for the transmission system, which receives compensation under Schedule 2.³⁰⁸ MISO states that under its proposed Tariff changes to Schedule 2, an eligible Electric Storage Resource may gain status as a Qualified Generator as long as it is not compensated for transmission service and is grouped with other generation resources as Reactive Power Resources.³⁰⁹ Furthermore, MISO states that section II.C.2

³⁰⁵ MISO Vannoy Test. at 19; MISO Proposed Tariff, Module A, § 1.E (Definitions) (73.0.0).

³⁰⁶ MISO Vannoy Test. at 19.

³⁰⁷ *Id.* at 31.

³⁰⁸ *Id.* at 9.

³⁰⁹ *Id.*; MISO Proposed Tariff, Schedule 2 (Reactive Supply and Voltage Control From Generation or Other Sources Service), § II.A and B (Qualified Generator) (37.0.0).

of Schedule 2 is expanded to address the possible exit of an Electric Storage Resource by its reclassification as a transmission asset.³¹⁰

184. MISO states that Electric Storage Resources interconnected to the transmission system and participating in its energy markets will be paid or will pay the LMP for injections to discharge and withdrawals to charge.³¹¹

185. MISO states that, under its proposed Tariff changes, Electric Storage Resources that MISO dispatches to provide a service shall not be treated as load and will not be assessed transmission charges applicable to load.³¹² MISO asserts that point-to-point transmission service is based on reserved capacity and is independent of actual system usage, whether injections or withdrawals. MISO states that its network integrated transmission service billing procedures, including coordination with transmission owners on peak load reporting, will account for any Electric Storage Resources being dispatched to provide a service, and that such will be excluded from the assessment of transmission service charges. MISO contends that this appropriately excludes regulating reserve deployments to consume or withdraw energy under MISO's Tariff.

ii. Protests/Comments

186. IPL states that only Electric Storage Resources providing regulation service appear to be exempt from transmission charges, and that the Commission should direct MISO to exempt Electric Storage Resources providing services other than regulation from transmission charges as well, similar to the other RTOs.³¹³ IPL claims that such exemption from transmission charges would incent investment in storage at the wholesale level, and that the services provided by storage resources are not strictly categorized as supply, transmission, or distribution. IPL asserts that imposing transmission charges where a storage resource is providing a grid support service makes little sense, and that even when Electric Storage Resources are providing some other type of service, the

³¹⁰ MISO Vannoy Test. at 9-10; MISO Proposed Tariff, Schedule 2 (Reactive Supply and Voltage Control From Generation or Other Sources Service), § II.C.2 (Notifications Relating to Qualified Generator Status) (37.0.0).

³¹¹ MISO Vannoy Test. at 32; MISO Proposed Tariff, Module C, § 39.3.1 (Charges for Day-Ahead Energy and Operating Reserve Market Purchases) (35.0.0), § 40.2.15 (Real-Time Energy and Operating Reserve Market Process) (41.0.0), and § 40.2.17 Calculation of Real-Time Ex-Post LMPs and Ex Post MCPs) (49.0.0).

³¹² MISO Transmittal Letter at 10; MISO Vannoy Test. at 13.

³¹³ IPL Comments at 12.

transmission charges imposed would make the economic case for a wholesale-only storage resource much harder.

187. Energy Storage Association argues that MISO's proposal to exclude only regulating reserves and formal ancillary services from the assessment of transmission service charges is inconsistent with Order No. 841 and fails to consider other services storage can provide while charging, such as ramp down, reactive power, and frequency response.³¹⁴ Energy Storage Association claims that charging an Electric Storage Resource under ISO/RTO dispatch is a strategic decision that reflects current and future economic decisions based on the value an Electric Storage Resource can provide during the operating day and is a direct and measurable service.³¹⁵ For example, MISO may dispatch an Electric Storage Resource to charge to avoid curtailment or uplift payments to inflexible generation.³¹⁶

188. Energy Storage Association agrees that an Electric Storage Resource that elects to charge for resale, and not under ISO/RTO dispatch, is similar to load.³¹⁷ However, Energy Storage Association states that, when dispatched by the ISO/RTO to charge for the need or benefit of the system, the Electric Storage Resource is providing a service because, unlike a load serving entity, an Electric Storage Resource can increase its load when instructed.

189. Energy Storage Association argues that the other RTOs/ISOs have excluded charging of Electric Storage Resources made under the instruction of the ISO/RTO from transmission charges, and requests that the Commission deny MISO's proposal to apply transmission service charges to Electric Storage Resources charging under MISO instruction.³¹⁸ Furthermore, Energy Storage Association states that the approach taken by ISO New England Inc. (ISO-NE) supports Energy Storage Association's position that charging does not need to be a formal ancillary service for it to be a service to the market.³¹⁹

³¹⁴ Energy Storage Association Comments at 3 (citing MISO Vannoy Test. at 13).

³¹⁵ *Id.* at 3-4.

³¹⁶ *Id.* at 4.

³¹⁷ *Id.* (citing Order No. 841, 162 FERC ¶ 61,127 at P 292).

³¹⁸ *Id.*

³¹⁹ *Id.* at 5.

190. Midwest TDUs contend that MISO does not always apply the proper distinction directed by Order No. 841 between Electric Storage Resources charging to resell at wholesale and Electric Storage Resources dispatched by MISO to provide a service when applying transmission charges applicable to load.³²⁰ Midwest TDUs state that, according to MISO's filing, Electric Storage Resource withdrawals will avoid all transmission and ancillary service charges, even when they are not dispatched by MISO to provide a service.³²¹ As an example, Midwest TDUs assert that not all Electric Storage Resource charging energy should be excluded from Multi-Value Project charges, as Electric Storage Resources charging for later resale benefit from Multi-Value Projects in the same way as load.³²² Midwest TDUs acknowledge that MISO's transmittal letter states that MISO's network integration transmission service billing procedures will exempt Electric Storage Resources from transmission charges when they are dispatched to provide a service, but they argue that there are no Tariff revisions implementing this policy.

191. Midwest TDUs ask the Commission to require MISO to demonstrate that only Electric Storage Resource wholesale withdrawals resulting from MISO-directed dispatch to provide a service are exempt from transmission and other charges applicable to load, and to demonstrate that, except where an exclusion applies as authorized by Order No. 841, Electric Storage Resources will pay transmission charges applicable to load, including all ancillary services, RSG charges, Multi-Value Project Charges, and other charges borne by load.³²³

192. Advanced Energy Economy states that MISO's proposal to only exclude regulating reserves from the assessment of transmission service charges does not comply with Order No. 841's determination that all RTO/ISO-directed dispatches of electric storage resources to consume energy must be exempt from such charges.³²⁴ Advanced Energy Economy asks the Commission to direct MISO to exclude RTO/ISO-dispatched Electric Storage Resource consumptions of charging energy from transmission charges. Advanced Energy Economy argues that failure to comply with the Commission's directive provides a disincentive for electric storage resources to provide critical

³²⁰ Midwest TDUs Protest at 26 (referring to Order No. 841, 162 FERC ¶ 61,127 at PP at 297-298).

³²¹ *Id.* (referring to MISO Vannoy Test. at 32-33).

³²² *Id.* at 27.

³²³ *Id.* at 29-30.

³²⁴ Advanced Energy Economy Comments at 2, 9 (citing Order No. 841, 162 FERC ¶ 61,127 at P 298).

operational and reliability services that require them to respond to RTO/ISO decisions to dispatch them for system balancing or high generation/low load conditions.³²⁵

193. EDF argues that MISO's filing does not comply with Order No. 841 because it does not exempt Electric Storage Resources from transmission charges for charging when dispatched by the RTO/ISO as a service.³²⁶ EDF further argues that MISO fails to exempt other services that Electric Storage Resource can provide, or scenarios in which MISO may instruct an Electric Storage Resource to charge, from transmission charges. EDF Renewables requests that the Commission conditionally accept MISO's compliance filing but require MISO to exempt from transmission charges the full range of scenarios in which an Electric Storage Resource can provide a service when dispatched by MISO.

194. NextEra claims that MISO's filing is unclear as to when an Electric Storage Resource must obtain transmission service, and that MISO does not define to what extent an Electric Storage Resource will be subject to transmission service charges when dispatched by MISO to withdraw energy to provide a service.³²⁷ NextEra states that MISO specifies only that when an Electric Storage Resource withdraws energy to provide regulating reserves it will be excluded from transmission service charges, and argues that it is unclear whether MISO intended to restrict such exclusion to regulating reserves.³²⁸ NextEra argues that, if regulating reserve is the only service MISO intends to exempt from transmission service charges, then MISO is too narrowly interpreting Order No. 841 because Electric Storage Resources can provide various other services that should be exempt from transmission service charges, such as a downward ramping service. NextEra also states that the Commission should direct MISO to clarify, or amend its filing if necessary, that Electric Storage Resources will not be assessed transmission service charges when dispatched by an RTO/ISO to provide any service under the MISO Tariff.

195. NextEra asserts that, in instances where an Electric Storage Resource bids in the RTO/ISO market to provide a service that requires injection to the grid, and the Electric Storage Resource is subsequently dispatched to provide such service, that an Electric Storage Resource must withdraw energy in preparation for later injection pursuant to the

³²⁵ *Id.* at 9.

³²⁶ EDF Comments at 2.

³²⁷ NextEra Comments at 1-2.

³²⁸ *Id.* at 4.

RTO/ISO dispatch instruction.³²⁹ NextEra claims that it is not clear whether Electric Storage Resources would be assessed transmission charges for such energy withdrawals, and argues that MISO should clarify that in such circumstances the Electric Storage Resource will not be assessed transmission service charges.

iii. Answers

196. MISO argues that Order No. 841 limits an electric storage resource's exemption from transmission service charges to those instances when an electric storage resource is dispatched to consume electricity to provide a service.³³⁰ MISO argues that, in its proposal, this only applies to Electric Storage Resources dispatched to deploy regulating reserves. MISO contends that exempting Electric Storage Resources from transmission service charges any time they are dispatched by MISO, including when Electric Storage Resources are not directed to withdraw or consume energy, is well beyond Order No. 841's requirements.³³¹ MISO claims that an Electric Storage Resource simply offering its energy purchases as dispatchable does not mean the Electric Storage Resource is providing a service, and therefore does not form the basis for exemption from transmission service charges, because a high offer price could effectively make an Electric Storage Resource self-scheduled and exempt from transmission service charges paid by other MISO load.³³² MISO asserts that, if Electric Storage Resources are exempt from transmission service charges for providing services such as down ramp capability, then it would suggest that load participating as price responsive demand in the Day-Ahead Market should also be exempt because, in a broad sense, MISO dispatched it to provide a service. MISO notes, however, that price responsive demand from such non-Electric Storage Resources is currently not exempt from transmission service charges and argues that Electric Storage Resources should not be treated preferentially. MISO clarifies that its proposal exempts Electric Storage Resource Transactions from Multi-Value Project charges under Schedule 26-A, but does not provide a general exemption from network or point-to-point transmission service charges for withdrawals of energy for later injection.³³³

³²⁹ *Id.* at 5.

³³⁰ MISO Answer at 3.

³³¹ *Id.* at 4.

³³² *Id.* at 3.

³³³ *Id.* at 4.

197. In their reply to MISO's answer, Midwest TDUs argue that neither MISO's filing nor MISO's answer explains how its proposal complies with Order No. 841's directives regarding application of transmission and other load-related charges.³³⁴ Midwest TDUs allege that MISO's proposal to exempt Electric Storage Resource Transactions from Multi-Value Project charges under Schedule 26-A cannot be reconciled with Order No. 841's directive to apply transmission charges applicable to load to Electric Storage Resources that are charging to resell energy at a later time.³³⁵ According to Midwest TDUs, MISO defends this exemption based on the assumption that any Monthly Net Actual Withdrawals are associated with Electric Storage Resource State of Charge differences or efficiency losses related to electric storage resource withdrawals for future injection, but Midwest TDUs argue that this assumption does not justify MISO's proposed exemption.

198. Midwest TDUs reiterate their request that the Commission require MISO to disclose all load-related charges from which MISO is proposing to shield Electric Storage Resource withdrawals, in whole or in part, and to justify each such exemption.³³⁶

199. IPL, in its response to MISO's answer, agrees with Energy Storage Association's comments that there is a distinction between an Electric Storage Resource withdrawing energy to charge and withdrawing energy in response to an RTO/ISO instruction; therefore, IPL requests that the Commission direct MISO to provide for broader exemption from transmission charges.³³⁷

iv. Data Request Response

200. MISO states that, when an Electric Storage Resource is charging, its consumption of energy constitutes load, including load under the definition of network load; therefore, Electric Storage Resources are required to procure transmission service.³³⁸ MISO explains that the Electric Storage Resource can serve the load with either point-to-point transmission service or network integration transmission service, which treats Electric Storage Resources comparably with other types of resources that are required to obtain

³³⁴ Midwest TDUs Reply at 2 (referring to Order No. 841, 162 FERC ¶ 61,127 at PP 297-298).

³³⁵ *Id.* at 3.

³³⁶ *Id.* at 6.

³³⁷ IPL Answer at 7-8.

³³⁸ MISO Data Request Response at 16.

and pay for transmission service. MISO also states that regulation service is the only ancillary service exempted from procuring transmission service when withdrawing energy to provide a service. MISO explains that it will not assess transmission charges to Electric Storage Resources that are dispatched to provide regulation service. MISO adds that the coordination between an Electric Storage Resource and its transmission owner to provide MISO with accurate billing determinants will ensure that, when an Electric Storage Resource is providing reactive supply and voltage control, regulating reserve, or blackstart service, the values are not included in the network load calculation.³³⁹

v. **Comments on Data Request Response**

201. Midwest TDUs claim that, while excluding values associated with dispatch by MISO to supply regulating reserve from network load is consistent with Order No. 841, it is unclear how an Electric Storage Resource's provision of blackstart or reactive supply and voltage control services would entail withdrawals that require exclusion from transmission charges.³⁴⁰ Midwest TDUs state that MISO should provide citations to support its data request response and clarify its references to reactive supply and voltage control and blackstart service, and what it means by network load.³⁴¹ Midwest TDUs assert that MISO has inconsistently represented the applicability of transmission charges for Multi-Value Projects to Electric Storage Resources by stating that Electric Storage Resources were exempt in its answer, and then stating in its data request response that Electric Storage Resources are treated comparably to other resources that are required to obtain and pay for transmission service to the transmission system.³⁴² Midwest TDUs also claim that MISO should identify all load-related charges from which Electric Storage Resource withdrawals are exempt, in whole or in part, and demonstrate compliance with Order No. 841.³⁴³

³³⁹ *Id.* at 17.

³⁴⁰ Midwest TDUs Protest of the Data Request Response at 2-3.

³⁴¹ *Id.* at 3.

³⁴² *Id.* at 4.

³⁴³ *Id.* at 4-5.

vi. **Commission Determination**

202. We find that MISO's proposed Tariff revisions partially comply with the requirements of Order No. 841 pertaining to charging energy.

203. MISO's proposed Tariff provides that Electric Storage Resources interconnected to the transmission system and participating in MISO's energy markets will be paid or pay the LMP at the pricing node for injections to discharge and withdrawals to charge.³⁴⁴ Even for Electric Storage Resources not utilizing the Electric Storage Resource model, MISO's proposed Tariff obligates market participants to provide metered values for settlement purposes for injections and withdrawals of energy at commercial pricing nodes where they have injections and withdrawals, including withdrawals for later injections.³⁴⁵ MISO states that it currently settles such transactions at LMP, accounting for any financial schedules at the applicable commercial pricing node.³⁴⁶ Therefore, we find that the proposed Tariff provides that sales of electric energy from MISO's markets to an Electric Storage Resource that the resource then resells back to those markets will be at the applicable nodal LMP, as required by Order No. 841. We also find that MISO complies with the requirement to settle charging energy lost to conversion inefficiencies at the wholesale LMP. Specifically, MISO asserts that efficiency losses associated with Electric Storage Resources will not be considered load or station power, but will be included in energy schedules, including meter data submittals and settled as charge energy at the applicable LMP.³⁴⁷

204. We also find that MISO's proposal to exempt Electric Storage Resources from Multi-Value Project transmission charges applicable to load, regardless of whether the Electric Storage Resource is dispatched to provide a service, is consistent with Order No. 841. Order No. 841 specifies that, when an electric storage resource is charging to resell energy at a later time, its behavior is similar to load and applicable transmission

³⁴⁴ MISO Vannoy Test. at 32; MISO Proposed Tariff, Module C, § 39.3.1 (Charges for Day-Ahead Energy and Operating Reserve Market Purchases) (35.0.0), § 40.2.15 (Real-Time Energy and Operating Reserve Market Process) (41.0.0), § 40.2.17 (Calculation of Real-Time Ex-Post LMPs and Ex Post MCPs) (49.0.0).

³⁴⁵ MISO Vannoy Test. at 18-19; MISO Proposed Tariff, Module C, § 38.2.5.e.v.a (Market Participant Obligations) (43.0.0).

³⁴⁶ MISO Vannoy Test. at 19.

³⁴⁷ *Id.* at 31.

charges should apply.³⁴⁸ The Multi-Value Project transmission charge is calculated with respect to Monthly Net Actual Energy Withdrawals, which for an Electric Storage Resource are only attributable to either State of Charge differences from month-to-month or efficiency losses related to the withdrawal of energy for later injection back onto the grid. Electric Storage Resources are distinguishable from load in this respect because the Net Actual Energy Withdrawals associated with load are attributable to energy withdrawals that are not available for later injection back onto the grid. Therefore, we find that MISO has reasonably demonstrated that Electric Storage Resources should be exempt from Multi-Value Project transmission charges assessed to load.

205. However, we reject MISO's proposal to assess transmission charges to Electric Storage Resources dispatched to withdraw energy pursuant to their down ramp capability. We are not persuaded by MISO's arguments that this dispatch is not providing a service. Order No. 841 specifies that electric storage resources should not be assessed transmission charges when they are dispatched by an RTO/ISO to provide a service such as frequency regulation or a downward ramping service.³⁴⁹ We disagree with MISO's assertion that exempting Electric Storage Resources from transmission charges when dispatched to withdraw energy pursuant to their down ramp capability would suggest that load participating as price responsive demand should also be exempt from transmission charges. Price responsive demand, unlike Electric Storage Resources, cannot be dispatched to consume energy.³⁵⁰ Therefore, exempting Electric Storage Resources from transmission charges when dispatched to withdraw energy in order to provide a downward ramping service does not implicate the treatment of price responsive demand with respect to transmission charges.

206. In response to Energy Storage Association's argument that MISO's proposal to exempt Electric Storage Resources from certain transmission charges does not consider reactive power and frequency response, we find that Electric Storage Resources are not assessed transmission charges for the provision of reactive power and frequency response. Order No. 841 specifies that electric storage resources should not be charged transmission charges when they are dispatched by an RTO/ISO to provide a service. With respect to reactive power, MISO's proposal revises the Qualified Generator technical qualification criteria to include a requirement that Reactive Power Resource

³⁴⁸ Order No. 841, 162 FERC ¶ 61,127 at P 297.

³⁴⁹ *Id.* P 298.

³⁵⁰ 18 C.F.R. § 35.28(b)(4) (Demand response means a reduction in the consumption of electric energy by consumers from their expected consumption in response to an increase in the price of electric energy or to incentive payments designed to induce lower consumption of electric energy).

owners do not include the Reactive Power Resource in the computation of rates for transmission service.³⁵¹ Therefore, Electric Storage Resources will not be assessed transmission charges otherwise assessed to load in the provision of reactive power. Regarding frequency response, in *Indiana Power & Light Company v. Midcontinent Independent System Operator, Inc.*, the Commission rejected IPL's claim that the Commission should require frequency response and frequency regulation to be unbundled.³⁵² Therefore, MISO's proposal to exempt Electric Storage Resources from transmission charges when dispatched to provide frequency regulation is inclusive of an Electric Storage Resource's provision of frequency response because the two services are bundled under Schedule 3 of MISO's Tariff.³⁵³

207. We also reject MISO's distinction between a service that is dispatched and a service that is provided simply by its availability, as this characterization is not consistent with Order No. 841. If an RTO/ISO directs an electric storage resource to withdraw energy for the benefit of the grid, it should not be subject to transmission charges, regardless of whether the RTO/ISO considers the service to have been provided before the resource's actual dispatch. We also note that Electric Storage Resources in MISO are compensated for the provision of down ramp capability, similar to other reserve products, in that there is a capacity payment for the availability to ramp down and an energy payment settled at LMP when dispatched. Accordingly, we direct MISO to submit, within 60 days of the date of issuance of this order, a further compliance filing exempting Electric Storage Resources from transmission charges when dispatched to withdraw energy pursuant to their down ramp capability.

b. Metering and Accounting Practices for Charging Energy

208. To help implement the new requirement in section 35.28(g)(9)(ii) of the Commission's regulations,³⁵⁴ 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

³⁵¹ MISO Proposed Tariff, Schedule 2 (Reactive Supply and Voltage Control From Generation or Other Sources Service), § II.B.4 (Qualified Generator) (37.0.0).

³⁵² 158 FERC ¶ 61,107, at P 35 (2017).

³⁵³ MISO Proposed Tariff, Schedule 3 (Regulating Reserve) (39.0.0).

³⁵⁴ See *supra* P 174.

LMP.³⁵⁵ Order No. 841 requires each RTO/ISO to directly meter electric storage resources,³⁵⁶ but offered 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.³⁵⁷ Metering and accounting rules may need to differ based on whether the resource is located on the transmission system, the distribution system, or behind the meter.³⁵⁸

209. 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.³⁵⁹ 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 RERRAs in its footprint, as the Commission recognized in Order No. 841.³⁶⁰ 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

³⁵⁵ Order No. 841, 162 FERC ¶ 61,127 at P 322.

³⁵⁶ Order No. 841-A clarifies 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.

³⁵⁷ Order No. 841, 162 FERC ¶ 61,127 at P 322.

³⁵⁸ *Id.* P 324.

³⁵⁹ *Id.* P 325.

³⁶⁰ Order No. 841-A, 167 FERC ¶ 61,154 at P 142 (citing Order No. 841, 162 FERC ¶ 61,127 at P 324).

the grid that is used to charge electric storage resources for later resale into the energy or ancillary service markets.³⁶¹

210. 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).³⁶² 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 resource wholesale rates for the charging energy for which it is already paying retail rates.³⁶³

211. 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.³⁶⁴ Order No. 841-A clarifies further that the Commission will 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.

³⁶¹ *Id.* (citing Order No. 841, 162 FERC ¶ 61,127 at P 294).

³⁶² Order No. 841, 162 FERC ¶ 61,127 at P 326.

³⁶³ *Id.* 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.

³⁶⁴ Order No. 841-A, 167 FERC ¶ 61,154 at P 138.

i. **MISO Filing**

212. MISO states that market participants will be required to directly meter injections and withdrawals for Electric Storage Resources and Electric Storage Resource Transactions as required by Order No. 841.³⁶⁵

213. MISO states that all Electric Storage Resource Transaction energy will be required to be metered separately from other injections and withdrawals either at wholesale or retail.³⁶⁶ MISO explains that Electric Storage Resources are not required to purchase all energy from MISO markets, but that Electric Storage Resource Transactions made up of withdrawals or injections from the transmission system or distribution system that were not authorized or permitted under existing agreements may not be authorized, and that MISO may seek any appropriate remedy under its Tariff or with the appropriate jurisdiction.³⁶⁷ MISO asserts that metering submittals must exclude non-wholesale injections and withdrawals, subject to attestation and auditing.³⁶⁸

214. MISO also states that, for any Electric Storage Resources connected to the distribution system that are subject to retail rates for purchases of charging energy or paid retail rates for the sale of discharge energy, those arrangements must be included in Attachment HHH.³⁶⁹ MISO claims that it will provide the Electric Storage Resource's market participant appropriate energy credits or debits to account for other payments, and

³⁶⁵ MISO Vannoy Test. at 18; MISO Proposed Tariff, Module C, § 38.2.5.e (Market Participant Obligations) (43.0.0). MISO asserts that, for resources that do not elect to use the Electric Storage Resource participation model, market participants must provide metered values for settlement purposes for injections and withdrawals of energy at commercial pricing nodes where they have injections and withdrawals, including withdrawals for later injections. MISO Vannoy Test. at 18-19; MISO Proposed Tariff, Module C, § 38.2.5.e.v.a (Market Participant Obligations) (43.0.0).

³⁶⁶ MISO Vannoy Test. at 19.

³⁶⁷ *Id.* at 20.

³⁶⁸ *Id.* at 19.

³⁶⁹ *Id.* at 32; MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System) (31.0.0).

that such credits or debits will be allocated to other market participants under the residual load provisions of MISO's Tariff.³⁷⁰

215. MISO explains that its proposal requires Electric Storage Resources connected to the distribution system to have sufficient metering or accounting for non-wholesale transactions such that only wholesale storage energy injections and withdrawals are reported.³⁷¹ MISO asserts that, to the extent any Electric Storage Resources connected to the distribution system are subject to metering requirements other than direct metering, such arrangements must be documented in Attachment HHH, which also provides for the Electric Storage Resource owner to specify whether it is paying for charging energy under another rate or authority.³⁷² MISO proposes to state in section 6 of Attachment HHH that “[t]o the extent the [Electric Storage Resource] is paying retail rates for energy associated with wholesale charging activities, the [Electric Storage Resource] shall provide all information requested by MISO in order for MISO to exclude settlement at wholesale prices for the same charging energy.”³⁷³

ii. Protests/Comments

216. EDF requests that the Commission direct MISO to explain how its participation model will allow Electric Storage Resources interconnected behind the meter or to the distribution system to participate on equal footing with Electric Storage Resources interconnected to the transmission system, and how Electric Storage Resources will simultaneously participate in the wholesale and retail-level programs.³⁷⁴

217. DTE Electric states that MISO's filing meets the requirements of Order No. 841 while emphasizing the roles of state commissions and distribution utilities in the development of detailed requirements for the participation of Electric Storage Resources

³⁷⁰ MISO Vannoy Test. at 32.

³⁷¹ *Id.* at 31.

³⁷² MISO Transmittal Letter at 18; MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System) (31.0.0).

³⁷³ MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System), § 6 (Avoidance of Double Payment for Charging Energy) (31.0.0).

³⁷⁴ EDF Comments at 3.

connected to local distribution systems in MISO's markets.³⁷⁵ DTE Electric contends that the rules necessary to dispatch distributed Electric Storage Resources are more appropriately dealt with by distribution utilities and state jurisdictions, as MISO lacks the visibility or modeling capability at the distribution level for the safe, reliable, and cost-effective dispatch of Electric Storage Resources.³⁷⁶ DTE Electric notes that MISO's inclusion of a distribution agreement with distribution utilities addresses the unique issues that arise from an Electric Storage Resource's interconnection to a distribution system.³⁷⁷

218. DTE Electric notes that, while the Michigan Commission has initiated collaborative efforts to standardize the process for resources interconnecting to the distribution system, it is not clear if formal rulemaking and technical standards applicable to distributed Electric Storage Resources will happen before the implementation of rules at the RTO/ISO level.³⁷⁸ DTE Electric states that, in the meantime, it is making upgrades to the distribution system to accommodate technologies such as distribution-connected Electric Storage Resources in a safe, reliable, and affordable manner.

219. DTE Electric explains that, while MISO's filing complies with the minimum requirements in Order No. 841, various interconnection and operational requirements for distributed Electric Storage Resource participation in the MISO markets remain undefined, which should rightfully be left for the RERRAs and distribution utilities.³⁷⁹

220. DTE Electric states that it is concerned about the challenges MISO will face in providing dispatch instructions to distributed Electric Storage Resources because MISO does not have visibility into forecasted conditions and expected performance of the resources located on its system.³⁸⁰ DTE Electric contends that it is necessary to establish proper safety, communication, and data requirements within the distribution agreements under Attachment HHH in order to ensure that the distribution utility has adequate visibility into the resources located on its system, without which necessary and basic system maintenance will become an increasingly high-risk endeavor. DTE Electric notes

³⁷⁵ DTE Electric Comments at 3.

³⁷⁶ *Id.* at 2-3.

³⁷⁷ *Id.* at 4.

³⁷⁸ *Id.*

³⁷⁹ *Id.* at 5.

³⁸⁰ *Id.*

that distribution utilities must be required to have the proper sensors, communication, and an advanced distribution management system to ensure reliable operation of the distribution utility's system while there is operation of distributed Electric Storage Resources.³⁸¹

221. DTE Electric states that MISO's filing lacks detailed rules related to revenue accounting and cost allocation, which may create opportunities for developers and resource owners to arbitrage retail and wholesale rates.³⁸² DTE further states that the filing does not address circumstances that require the distribution utility to curtail an Electric Storage Resource to maintain safety or reliability on the distribution system. DTE Electric contends that distribution agreements under Attachment HHH should address these issues.

222. Midwest TDUs note that MISO's filing does not address the fact that an on-site generator could be used to charge a co-located Electric Storage Resource, and that direct revenue-quality metering would be insufficient to accurately track and separate the retail and wholesale uses of such charging energy.³⁸³

223. Midwest TDUs argue that MISO's filing fails to provide specific mechanisms to ensure the separation and proper accounting of Electric Storage Resource wholesale and retail uses, which they state is necessary to ensure that dual participation respects jurisdictional boundaries and to enable distribution utilities to facilitate wholesale market participation of Electric Storage Resources on their distribution systems.³⁸⁴

224. Midwest TDUs allege that the direct metering required by MISO's compliance filing does not ensure that energy purchased at wholesale is resold at wholesale.³⁸⁵ According to Midwest TDUs, direct metering fails to exclude withdrawals and injections under retail programs, and does not account for retail consumption or for Electric Storage Resource charging energy supplied by a connected resource (e.g., a behind-the-meter solar unit) for either wholesale or retail resale.³⁸⁶ Midwest TDUs also allege that MISO

³⁸¹ *Id.* at 6.

³⁸² *Id.*

³⁸³ Midwest TDUs Protest at 21-22.

³⁸⁴ *Id.* at 5, 14-15.

³⁸⁵ *Id.* at 15-16.

³⁸⁶ *Id.* at 16 ("Attachment HHH... requires the [Electric Storage Resource] to 'coordinate all aspects of the Facility with the [distribution utility] in accordance with this

does not show how the required revenue quality metering will ensure that all energy purchased at wholesale is resold at wholesale.³⁸⁷ Midwest TDUs further contend that, while MISO explains that Electric Storage Resources connected to the distribution system must have metering or accounting that only reports wholesale storage injections and withdrawals, MISO does not include this requirement in Attachment HHH nor does MISO explain how an Electric Storage Resource could satisfy the requirement.

225. Midwest TDUs express concern that MISO's yet-to-be-developed procedures for avoiding double payments for charging energy will not prevent the improper discharge of wholesale purchases for retail consumption or participation in retail programs.³⁸⁸ Midwest TDUs allege that MISO's proposed reliance on the residual load provisions will improperly create a new form of uplift rather than accurately accounting for wholesale and retail activities. Midwest TDUs request that the Commission direct MISO to establish a reliable means for distinguishing between an Electric Storage Resource's retail and wholesale activities before allowing Electric Storage Resources to participate in the wholesale markets, particularly for Electric Storage Resources that seek to participate in both programs.³⁸⁹

226. Midwest TDUs contend that MISO's compliance filing does not address state and local restrictions on the resale of retail energy at wholesale.³⁹⁰ Midwest TDUs argue that the distribution utility must be willing and able to net out Electric Storage Resources' wholesale purchases, but neither MISO's direct metering requirement nor its revenue metering requirement is sufficient to separate retail and wholesale uses.³⁹¹ According to Midwest TDUs, MISO's proposed Attachment HHH does not require MISO to share

Agreement and the Tariff' but the term 'Facility' is defined in the first Whereas clause as limited to the [Electric Storage Resource]—which likely excludes on-site generation as well as retail consumption uses”).

³⁸⁷ *Id.* at 17.

³⁸⁸ *Id.* at 18. Midwest TDUs note that, in MISO's filing, Appendix 3 to Attachment HHH, where these procedures will be listed, is blank.

³⁸⁹ *Id.* at 19.

³⁹⁰ *Id.* at 20.

³⁹¹ *Id.* at 21. Midwest TDUs argue that, for example, an on-site generator being used to charge a co-located Electric Storage Resource for retail consumption, participation in retail programs, and wholesale sales, would not be able to separate wholesale and retail uses with direct, revenue-quality metering that measures net flows.

with distribution utilities the Electric Storage Resource data it receives, which distribution utilities could use to net out Electric Storage Resource wholesale purchases.³⁹²

227. Midwest TDUs argue that, while Attachment HHH does acknowledge Order No. 841's requirement that RTOs/ISOs do not charge wholesale rates for charging energy if the host distribution utility is unwilling or unable to net out energy purchases associated with wholesale charging, this does not address the issue of prohibited wholesale resales of retail energy.³⁹³ Midwest TDUs request that the Commission require MISO to revise Attachment HHH to clarify that MISO will not accept offers from Electric Storage Resources when doing so would constitute a resale of retail charging energy in violation of state or local law, regulation, or retail tariff.³⁹⁴

228. According to Midwest TDUs, if direct metering is insufficient to timely exclude Electric Storage Resource wholesale uses from the distribution utility's load, the distribution utility may be subjected to excessive charges.³⁹⁵ Midwest TDUs ask the Commission to direct MISO to ensure the distribution utility is protected from bearing costs associated with Electric Storage Resources' wholesale charging and discharging activities.³⁹⁶

229. Midwest TDUs argue that MISO's filing fails to sufficiently address the distribution utility's ability to carry out its responsibilities related to distribution system safety and reliability.³⁹⁷ For instance, Midwest TDUs state that a distribution utility may need to install protective devices to ensure that an Electric Storage Resource's operations do not damage the system or other customers, but that such devices will not provide protection if distribution utilities reconfigure the distribution system either temporarily or

³⁹² *Id.* at 22.

³⁹³ *Id.* at 22-23 (referring to MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System), § 6 (Avoidance of Double Payment for Charging Energy) (31.0.0); Order No. 841, 162 FERC ¶ 61,127 at P 326).

³⁹⁴ *Id.* at 23.

³⁹⁵ *Id.* at 24.

³⁹⁶ *Id.* at 25.

³⁹⁷ *Id.* at 4-5.

permanently, which Midwest TDUs asserts happens regularly.³⁹⁸ Midwest TDUs state that, in these circumstances, the distribution utility must have the ability to curtail an Electric Storage Resource to maintain system reliability until the prior configuration is re-established, new protective measures are put in place for the new configuration, or the configuration is further modified, and to maintain worker safety.³⁹⁹

230. Midwest TDUs state that MISO does not recognize or provide for the distribution utility's need to take actions necessary for carrying out these fundamental responsibilities, such as curtailing or interrupting Electric Storage Resources in certain situations.⁴⁰⁰ Specifically, Midwest TDUs state that Attachment HHH does not: (1) specify whether referenced NERC standards encompass those that may be applicable to NERC-registered distribution utilities; (2) impose any obligation on MISO not to dispatch a distribution-connected Electric Storage Resource if distribution system safety or reliability is threatened; (3) recognize the distribution utility's right to interrupt in such circumstances; or (4) require MISO or the Electric Storage Resource to notify the distribution utility if the resource is noncompliant with the terms of MISO's Tariff.⁴⁰¹

231. Midwest TDUs state that these safety and reliability concerns are exacerbated by a provision in Attachment HHH concerning non-recallability of an Electric Storage Resource that has obligations under MISO's Tariff, such as serving as a capacity resource.⁴⁰² Specifically, Midwest TDUs state that Attachment HHH does not: (1) provide any assurances that protect the right of a distribution utility to interrupt or suspend service to an Electric Storage Resource that is subject to this non-recallability provision; (2) specify the scope of the MISO Tariff obligations that would trigger this non-recallability provision; or (3) specify the distribution utility actions that MISO's Tariff provisions preclude. Midwest TDUs state that, to the extent the non-recallability

³⁹⁸ *Id.* at 10-11.

³⁹⁹ *Id.* at 11.

⁴⁰⁰ *Id.* at 5.

⁴⁰¹ *Id.* at 11.

⁴⁰² *Id.* at 12 (referring to MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System), § 2(i) (Non-recallability) (31.0.0)). Section 2(i) of Attachment HHH states: "To the extent the Facility has obligations under MISO's Tariff, for example as a Capacity Resource, the Facility may not be recalled by the [distribution utility], except as specified in the agreement between MISO and the [distribution utility], or if none, in Appendix 2 to this Agreement."

provision is not meant to interfere with the distribution utility's right to interrupt or suspend service, MISO should revise Attachment HHH to make this clear. Further, Midwest TDUs argue that MISO should be required to revise Attachment HHH to make clear that Electric Storage Resources should follow distribution utility instructions relating to safety and reliability.⁴⁰³

232. Midwest TDUs state that these safety and reliability concerns are further exacerbated by an Electric Storage Resource's ability to participate in both wholesale and retail programs, because MISO's compliance filing does not obligate MISO to identify which retail program obligations an Electric Storage Resource may be subject to before determining the resource's eligibility to participate in providing products and services that would trigger the non-recallability requirement.⁴⁰⁴ Midwest TDUs ask that MISO be directed to clearly identify the MISO products and services to which this non-recallability provision applies, to allow the distribution utility to take them into account when determining the Electric Storage Resource's eligibility to participate in retail programs.

233. DTE Electric states that MISO's filing does not show how it plans to fairly settle associated uninstructed deviation and uplift charges between MISO's dispatch, the Electric Storage Resource operator, and the distribution utility during times of distribution utility curtailments.⁴⁰⁵ DTE Electric contends that it would be unjust to apply uplift charges to the distribution utility for uneconomic dispatch due to lack of visibility of distribution system conditions. DTE Electric also contends that it would be unjust to charge a distribution-connected Electric Storage Resource for deviations due to reliability curtailments by the distribution utility. DTE Electric contends that MISO's filing has no minimum uninstructed deviation threshold for these resources that are smaller in size, keeping them accountable for following dispatch, similar to other generation resources in the MISO markets.

234. Advanced Energy Economy argues that MISO has not fully explained how Electric Storage Resources that are connected to the distribution system or behind the meter will be able to fully participate in the wholesale markets.⁴⁰⁶ Advanced Energy Economy asserts that providing a clear path for participation requires metering and accounting practices that accurately measure and account for the energy entering and

⁴⁰³ *Id.* at 13.

⁴⁰⁴ *Id.*

⁴⁰⁵ DTE Electric Comments at 6.

⁴⁰⁶ Advanced Energy Economy Comments at 1, 3.

exiting an Electric Storage Resource.⁴⁰⁷ Additionally, Advanced Energy Economy states that accurate metering and accounting practices are necessary to implement Order No. 841's requirements that (1) the sale of electric energy from the RTO/ISO markets to an Electric Storage Resource that the resource then resells back to the wholesale market is at the wholesale LMP, and (2) Electric Storage Resources are not charged twice (at both wholesale and retail) for charging energy.⁴⁰⁸

235. Advanced Energy Economy notes that, while MISO's compliance filing contains provisions to prevent Electric Storage Resources located on the distribution system from being charged twice for the same charging energy, it is not clear whether those provisions apply to Electric Storage Resources located behind the meter.⁴⁰⁹ Advanced Energy Economy asks the Commission to require MISO to clarify whether and how its proposed Tariff provisions will ensure that Electric Storage Resources that are located behind the meter are not charged twice for the same charging energy.⁴¹⁰ Advanced Energy Economy also points out that MISO states in its filing that all Electric Storage Resources must be directly metered, and that Electric Storage Resources connected to the distribution system must have sufficient metering or accounting such that only wholesale storage energy injections and withdrawals are reported; however, there are no metering and accounting practices in MISO's proposed Tariff revisions.⁴¹¹ Advanced Energy Economy suggests that some basic framework to guide the development of individual metering and accounting methods may need to be included in the MISO Tariff.⁴¹²

236. Tesla urges the Commission to require MISO to describe how behind-the-meter Electric Storage Resources may provide market services.⁴¹³ Tesla states that the location of an electric storage resource does not justify different treatment and any discrimination against behind-the-meter electric storage resources must be removed. Tesla further

⁴⁰⁷ *Id.* at 3-4, 6.

⁴⁰⁸ *Id.* at 6 (citing Order No. 841, 162 FERC ¶ 61,127 at PP 322, 326).

⁴⁰⁹ *Id.*

⁴¹⁰ *Id.* at 7.

⁴¹¹ *Id.* at 6-7 (citing MISO Vannoy Test. at 31).

⁴¹² *Id.* at 7.

⁴¹³ Tesla Comments at 18.

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.

iii. Answers

237. In response to Tesla's assertion that behind-the-meter electric storage resources should be able to seamlessly transition between serving onsite load and injecting energy onto the grid, NRECA states that Order No. 841 never uses the term "seamlessly transitioning" or authorize behind-the-meter storage to operate in contravention of state or local law.⁴¹⁴ NRECA asserts that nothing in the rule disturbs state and local regulation of retail metering, retail net metering, or storage use on local distribution systems, including behind-the-meter storage.⁴¹⁵ NRECA further argues that Tesla's reference to a program in ISO-NE as a "best practice" for all behind-the-meter resources is beyond the scope of the issues in these compliance proceedings and that mechanisms to prevent double-compensation of distributed energy resource aggregations must be addressed in Docket No. RM18-9-000.⁴¹⁶

238. MISO states that behind-the-meter Electric Storage Resources are a subset of distribution-located Electric Storage Resources, to include those interconnected with the transmission system.⁴¹⁷ MISO claims that entities representing distribution-level Electric Storage Resources, such as those located behind the meter, that execute Attachment HHH can attest that they are being charged retail rates for charging energy, enabling "MISO to exclude settlement at wholesale prices for the same charging energy."⁴¹⁸ MISO also states that, due to its limited visibility into behind-the-meter or distribution-level arrangements, it is appropriate for MISO's Tariff to rely on Attachment HHH to address the details of such arrangements, which may vary, and those arrangements ensure that the utilization of Electric Storage Resources for other purposes will be separate, contractually and physically, from wholesale energy market participation.⁴¹⁹ MISO asserts that an

⁴¹⁴ NRECA Answer at 5-6 (citing Tesla Comments at 18).

⁴¹⁵ *Id.* at 6.

⁴¹⁶ *Id.* at 6-7 (citing Tesla Comments at 19).

⁴¹⁷ MISO Answer at 6.

⁴¹⁸ *Id.* at 6-7 (citing MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System), § 6 (Avoidance of Double Payment for Charging Energy) (31.0.0)).

⁴¹⁹ *Id.* at 7.

Electric Storage Resource may be behind the retail meter for its retail transactions, but must be in front of the wholesale meter, or its functional equivalent, to participate in wholesale transactions so that MISO may distinguish wholesale from retail activities. MISO also claims that its proposal is consistent with Order No. 841, which gives RTOs flexibility to address the unique and complex circumstances of behind-the-meter Electric Storage Resources.⁴²⁰

239. In response to Advanced Energy Economy, MISO states that Order No. 841 does not require MISO to ensure a clear path to wholesale participation in the sense of also setting forth all implementation details, including the distribution agreements necessary for participation in the RTO's/ISO's markets; rather, Order No. 841 recognizes that a distribution utility has a role in the distribution aspects.⁴²¹

240. In response to Midwest TDUs, MISO states that: (1) section 1(f) of Attachment HHH requires Electric Storage Resources to design, construct, operate, and maintain systems, at the Electric Storage Resource's expense, and to provide the distribution utility and MISO with all facility measurement values required by MISO; and (2) section 1(g) of Attachment HHH requires Electric Storage Resources to meet all settlement data specifications.⁴²² MISO asserts that an Electric Storage Resource would need to report injections and withdrawals of energy to the distribution utility to allow the meter-data management agent for the load serving entity to ensure these injections and withdrawals are excluded from the distribution utility's load used for settlement purposes. MISO claims that it is reasonable to describe the minimum requirements in Attachment HHH due to its limited visibility into the necessary arrangements on the distribution level and leave specific details up to the distribution-level Electric Storage Resources to establish in coordination with distribution utilities and RERRAs.⁴²³

241. In response to Midwest TDUs, MISO states that Order No. 841 does not require RTO/ISO tariffs to state, or enforce, the absence of any compromising effect on the reliability and safety responsibilities of distribution facilities, nor does Order No. 841 mention or require anything of RTOs/ISOs regarding distribution utilities' curtailment or interruption actions to fulfill their responsibilities.⁴²⁴ MISO also states that Order No.

⁴²⁰ *Id.* at 8.

⁴²¹ *Id.* at 10.

⁴²² *Id.* at 11.

⁴²³ *Id.* at 11-12.

⁴²⁴ *Id.* at 17.

841 does not require an RTO's/ISO's tariff to specify the inclusion of NERC standards applicable to NERC-registered distribution utilities; moreover, MISO broadly refers to NERC standards to sufficiently encompass NERC standards applicable to distribution utilities.⁴²⁵

242. MISO claims that its proposal does not change the existing requirements of Module E-1 regarding the recallability of capacity resources, and that such provisions will apply to any distribution-connected Electric Storage Resource that is a capacity resource under Module E-1.⁴²⁶ MISO states that section 2(i) of Attachment HHH provides that a distribution utility may potentially recall an Electric Storage Resource pursuant to an exception "specified in the agreement between MISO and the [distribution utility], or if none, in Appendix 2 to [Attachment HHH]." ⁴²⁷ MISO asserts that, absent an agreement between MISO and a distribution utility on the rules regarding recallability, the associated Electric Storage Resource cannot be recalled if it is participating in MISO's markets as a capacity resource.⁴²⁸

243. In their reply, Midwest TDUs state that they agree with MISO's characterization of the challenges associated with tracking and accounting for Electric Storage Resources connected to the distribution system or behind the retail meter, including MISO's limited visibility and lack of authority over these resources, but argue that MISO's proposal fails to address these challenges.⁴²⁹ According to Midwest TDUs, MISO proposes to leave specific details for separating wholesale and retail activities to future arrangements between Electric Storage Resources, distribution utilities, and RERRAs, while asserting that it must only describe the minimum requirements for these arrangements in Attachment HHH.⁴³⁰ Midwest TDUs allege that MISO's proposed Attachment HHH is flawed and does not comply with Order No. 841 because it does not develop metering

⁴²⁵ *Id.* at 18.

⁴²⁶ *Id.*

⁴²⁷ *Id.* (citing MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System), § 2(i) (Non-recallability) (31.0.0)).

⁴²⁸ *Id.* at 19.

⁴²⁹ Midwest TDUs Reply at 6.

⁴³⁰ *Id.* at 6-7.

and accounting solutions for distribution-connected and behind-the-meter Electric Storage Resources.⁴³¹

244. Midwest TDUs state that MISO should be required to clarify the scope of the non-recallability provision, including by stating that it is not intended to address the ability of a distribution utility to interrupt an Electric Storage Resource if required for distribution safety and reliability.⁴³²

iv. Data Request Response

245. Regarding the prevention of duplicative payments for charging energy, MISO states that section 6 of Attachment HHH requires Electric Storage Resource owners to provide MISO with all necessary information, including details of retail payments, in order for MISO to exclude settlement of charging energy at wholesale prices.⁴³³ MISO also states that its Tariff contains residual load provisions that account for and assign the costs and benefits of over and under claimed energy in a Local Balancing Authority Area and accommodate instances where an Electric Storage Resource is being assessed duplicative charging energy.⁴³⁴ MISO states that it requires market participants to directly meter injections and withdrawals from Electric Storage Resources, and that Electric Storage Resource Transactions must be metered separately from other injections and withdrawals. MISO asserts that metering submittals must exclude non-wholesale injections and withdrawals and that, to the extent any distribution-connected Electric Storage Resources are subject to other metering requirements that can be used in lieu of direct metering, such arrangements must be included in Attachment HHH. MISO also states that the current Tariff establishes the metering requirements and standards for market participants.⁴³⁵ For example, MISO states that the Tariff requires market participants to provide metered values for settlement purposes for injections and withdrawals of energy at commercial pricing nodes where they have injections and withdrawals, including withdrawals for later injections. MISO also states that

⁴³¹ *Id.* at 7 (referring to Order No. 841, 162 FERC ¶ 61,127 at PP 322-324).

⁴³² *Id.* at 8-9.

⁴³³ MISO Data Request Response at 17-18.

⁴³⁴ *Id.* at 18.

⁴³⁵ *Id.* (citing MISO, FERC Electric Tariff, Module C, § 38.2.5.e (Market Participant Obligations) (43.0.0)).

this requirement is covered more generally in Tariff sections 2.e, 2.g, and 3 of Attachment HHH.⁴³⁶

246. MISO asserts that Electric Storage Resource Transactions will be settled at the applicable wholesale LMP.⁴³⁷ MISO states that Electric Storage Resources interconnected to the transmission system and participating in MISO's Energy Markets will be paid or pay the appropriate LMP for injections and withdrawals, respectively. MISO contends that it will establish procedures to provide an Electric Storage Resource's market participant energy credits or debits to account for other payments to the extent that a distribution-connected Electric Storage Resource is subject to retail rates for purchases of charging energy or paid retail rates for sale of discharge energy. MISO claims that such credits or debits will be allocated to other market participants under the Tariff's residual load provisions.⁴³⁸

247. MISO states that, depending on the location of an Electric Storage Resource, it may or may not include on-site generation.⁴³⁹ MISO explains that Module A of the Tariff defines a facility as an electric generating unit or an electric generating station composed of one or more contiguous electric generating units aggregated at a single geographical site. MISO also states that, to the extent a facility referenced in Attachment HHH includes on-site generation, such on-site generation would need to be coordinated with the distribution utility and provided to MISO pursuant to section 4 of Attachment HHH.

v. **Comments on Data Request Response**

248. Midwest TDUs state that MISO's Data Request Response does not demonstrate how MISO's proposal complies with Order No. 841's directive to develop metering and accounting practices to distinguish between wholesale and retail transactions for distribution-connected Electric Storage Resources.⁴⁴⁰ Midwest TDUs claim that MISO has not explained why a market participant's energy credits or debits would be allocated to other market participants to bear costs associated with an Electric Storage Resource's

⁴³⁶ *Id.* at 20.

⁴³⁷ *Id.* at 18.

⁴³⁸ *Id.* at 19.

⁴³⁹ *Id.* at 20.

⁴⁴⁰ Midwest TDUs Protest of the Data Request Response at 5.

retail sales and purchases, or provided any information about MISO's yet-to-be developed procedures.⁴⁴¹

249. Midwest TDUs claim that MISO states in its Data Request Response that the term Facility in Attachment HHH could include Electric Storage Resources with co-located generation, and that contrasts with MISO's prior position in its answer that such Electric Storage Resources are beyond the scope of Order No. 841.⁴⁴² Midwest TDUs state that MISO's proposed inclusion of Electric Storage Resources with co-located generation in Attachment HHH does not address the accounting or provide any models or rules that MISO previously recognized would need to be developed.⁴⁴³ Midwest TDUs assert that the Commission should direct MISO not to allow Electric Storage Resources with co-located generation to participate until MISO adequately clarifies how co-located generation and retail consumption can be accounted for and addressed and demonstrates that those models and rules are just and reasonable.⁴⁴⁴ Midwest TDUs also state that MISO should clarify how the inclusion of co-located generation in the Attachment HHH term "facility" affects other provisions using that term, specifically whether co-located generation must be included in MISO's network and commercial model and must be able to receive MISO instructions.

250. Midwest TDUs assert that, while MISO has revised the non-recallability provision in section 2(i) of Attachment HHH to remove the reference to Appendix 2, MISO has not identified which obligations under MISO's Tariff would trigger this provision or addressed the potential impact on a distribution utility's ability to curtail an Electric Storage Resource in response to distribution system reliability and safety needs.⁴⁴⁵

vi. **Commission Determination**

251. We find that MISO's proposed Tariff revisions partially comply with the requirements of Order No. 841 pertaining to metering and accounting practices for electric storage resources. MISO's proposal to require Electric Storage Resources to meet the existing requirements applicable to all market participants in section 38.2.5.e of the Tariff, or have an alternative arrangement documented in Attachment HHH, is

⁴⁴¹ *Id.* at 5-6.

⁴⁴² *Id.* at 8.

⁴⁴³ *Id.* at 8-9.

⁴⁴⁴ *Id.* at 9.

⁴⁴⁵ *Id.* at 7.

consistent with Order No. 841's requirement that electric storage resources be directly metered, or that RTOs/ISOs otherwise address the complexities of implementing the requirement that the sales of energy from the RTO/ISO markets to an electric storage resource that are then resold back to those markets be at the wholesale LMP.

252. However, we share protestors' concerns that MISO's compliance filing does not include sufficient information about its metering and accounting practices for distribution-connected and behind-the-meter Electric Storage Resources in its Tariff, including how it will settle deviation and uplift charges during times of distribution utility curtailments and accurately track and separate the retail and wholesale uses of charging energy. We find that MISO's Tariff should include a description of MISO'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.⁴⁴⁶ The unique physical and operational characteristics of Electric Storage Resources require unique metering and accounting practices to ensure that these resources are charged LMP for charging energy and are not double charged, as required by Order No. 841. We find that these practices significantly affect rates, terms, and conditions and should be included in the Tariff.⁴⁴⁷ Further, we find that the Tariff should reference the specific documents that contain the implementation details for MISO's metering methodology and accounting practices for Electric Storage Resources so that market participants may plan and manage their participation accordingly. Therefore, we direct MISO to file, within 60 days of the date of issuance of this order, revisions to its Tariff to include a description of MISO's metering methodology and accounting practices for Electric Storage Resources, as well as references to the specific documents in MISO's BPM or other documents that contain the implementation details.

⁴⁴⁶ *Energy Storage Ass'n v. PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,296, at P 103 (2018) (*Energy Storage Ass'n*); see also *City of Cleveland v. FERC*, 773 F.2d 1368, 1376 (D.C. Cir. 1985) (*City of Cleveland*) (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").

⁴⁴⁷ *Energy Storage Ass'n*, 162 FERC ¶ 61,296 at P 103; see also *City of Cleveland*, 773 F.2d at 1376.

253. Regarding Midwest TDUs' concern about prohibited wholesale resales of retail energy, we note that section 25 of Attachment HHH requires Electric Storage Resources to operate in accordance with state and local laws. However, we agree with EDF and Midwest TDUs that MISO's compliance filing does not include sufficient information to explain how Electric Storage Resources will simultaneously participate in the wholesale and 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.⁴⁴⁸ 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. 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.⁴⁴⁹

254. MISO explains that Electric Storage Resources that are separately metered may participate in both retail and wholesale markets; however, MISO's Tariff does not specify this requirement to be separately metered, nor does it otherwise contain any metering and accounting provisions to ensure the separation and proper accounting of wholesale and retail activity. Accordingly, we direct MISO to file, within 60 days of the date of issuance of this order, a further compliance filing to revise its Tariff to include this requirement or further explain how its proposed participation model allows for Electric Storage Resources to participate in both wholesale and retail markets, as required by Order No. 841.

255. Order No. 841 also requires RTOs/ISOs to prevent electric storage resources from paying twice (i.e., both the wholesale and retail price) for the same charging energy.⁴⁵⁰ Section 6 of proposed Attachment HHH states that, for Electric Storage Resources that pay retail rates for energy associated with wholesale transactions, "the [Electric Storage Resource] shall provide all information requested by MISO in order for MISO to exclude settlement at wholesale prices for the same charging energy." MISO also explains that it will establish procedures to provide the market participant of the Electric Storage Resource with appropriate energy credits or debits to account for other payments, and

⁴⁴⁸ Order No. 841, 162 FERC ¶ 61,127 at P 325.

⁴⁴⁹ Order No. 841-A, 167 FERC § 61,154 at P 140.

⁴⁵⁰ Order No. 841, 162 FERC ¶ 61,127 at P 326.

that such credits or debits will be allocated to other appropriate market participants under the residual load provisions of the Tariff.⁴⁵¹ We find that Attachment HHH is not specific enough to demonstrate how MISO will prevent duplicative charges for the same charging energy. We agree with Midwest TDUs that: (1) MISO may not be contemplating all potential misuses of wholesale purchases (such as end-user consumption); and (2) it is unclear how MISO's proposed reliance on the residual load provisions of its Tariff in allocating credits and debits to other market participants would accurately account for wholesale and retail activities. Therefore, we direct MISO to file, within 60 days of the date of issuance of this order, revisions to section 6 of Attachment HHH to include a description of the type of information that MISO may request from Electric Storage Resources in order to prevent duplicative payments for the same charging energy. In addition, MISO should either: (1) provide citations to the residual load provisions of its Tariff in Attachment HHH and explain in its compliance filing how the existing debiting/crediting procedures accurately account for wholesale and retail activities; or (2) include appropriate debiting and crediting procedures in Attachment HHH.

256. We find that Midwest TDUs' concern regarding metering requirements for Electric Storage Resources co-located with generation is beyond the scope of compliance with Order No. 841. In Order No. 841, the Commission did not address co-location of electric storage resources with other resources.

257. Regarding data sharing and excess distribution utility charge concerns raised by Midwest TDUs, we find that section 2(f) of Attachment HHH requires Electric Storage Resources to provide the distribution utility with all measurement values required by MISO; therefore, we decline to require MISO to further revise its Tariff to require that MISO provide distribution utilities with data it receives from Electric Storage Resources or ensure that Electric Storage Resources will not impose uncompensated costs on distribution utilities. We also note that sections 25 and 27 of Attachment HHH require that an Electric Storage Resource represent that execution, delivery and performance of the Agreement for Electric Storage Resource Located on a Distribution System are conducted in accordance with state and local laws and attest that the necessary coordination and authorization have been secured. Therefore, we decline to require MISO to further revise Attachment HHH to state that MISO will not accept offers that would constitute a resale of retail charging energy that violates state or local law, regulation, or retail tariff.

258. As to Advanced Energy Economy's and EDF's concerns regarding the ability of Electric Storage Resources located on the distribution system or behind the meter to participate in MISO's markets, we reiterate that MISO's definition of Electric Storage

⁴⁵¹ MISO Vannoy Test. at 32.

Resource is inclusive of those resources located on a distribution system or behind the meter.⁴⁵² As described above, we find that MISO has demonstrated that its proposed market rules 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.⁴⁵³

259. In response to Midwest TDUs' concern regarding distribution system safety and reliability, we note that Order No. 841 does not require the RTOs/ISOs to revise their tariffs to specify the way their respective electric storage resource participation models would preserve the distribution utilities' abilities to carry out responsibilities related to distribution system safety and reliability. As the Commission acknowledged in Order No. 841-A, nothing in Order No. 841 preempts the states' right to regulate the safety and reliability of the distribution system, and we reiterate here that all Electric Storage Resources must comply with any applicable interconnection and operating requirements.⁴⁵⁴ According to MISO's proposed Tariff, Electric Storage Resources located on the distribution system must be contractually permitted to participate in MISO markets by the distribution utility.⁴⁵⁵ Therefore, a distribution utility is able to determine how an Electric Storage Resource may participate in MISO markets without compromising distribution system safety and reliability.

260. We also find that MISO's proposed section 2(i) of Attachment HHH that prohibits an Electric Storage Resource from being recalled by a distribution utility if that resource is otherwise obligated under MISO's Tariff (e.g., to serve as a capacity resource) is not prohibited by Order No. 841. We find that MISO may specify exceptions in an agreement with a distribution utility so long as those exceptions are applied on a non-discriminatory basis. We decline to require MISO to include in Attachment HHH every possible circumstance in which an Electric Storage Resource may not be recalled by a distribution utility due to obligations pursuant to MISO's Tariff. We recognize that MISO may not be aware of all such circumstances and that Attachment HHH reasonably provides flexibility for MISO to individually coordinate with distribution utilities.

⁴⁵² See *supra* P 32; MISO Transmittal Letter at 4; MISO Proposed Tariff, Module A, § 1.E (Definitions) (73.0.0).

⁴⁵³ See *supra* P 32; MISO Transmittal Letter at 4.

⁴⁵⁴ Order No. 841-A, 167 FERC § 61,154 at P 46.

⁴⁵⁵ See MISO Proposed Tariff, Attachment HHH (Form of Agreement for Electric Storage Resource Located on a Distribution System) (32.0.0).

9. Effective Date and Implementation Date

261. 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 provisions.⁴⁵⁶ 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.⁴⁵⁷ The Commission stated that the regional flexibility allowed in the Final Rule will assist the RTOs/ISOs in meeting the compliance and implementation deadlines.⁴⁵⁸ 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.⁴⁵⁹

a. MISO Filing

262. In its compliance filing, MISO asks the Commission to accept its proposed Tariff revisions effective on December 3, 2019.⁴⁶⁰ MISO asserts that, on that date, eligible Electric Storage Resources may start registering for the quarterly update of MISO's network model and commercial model that will take effect on March 1, 2020. MISO claims that it requires a Commission order accepting MISO's compliance filing by April 2, 2019 to implement the proposed Tariff revisions by December 3, 2019.

b. Protests/Comments

263. Union of Concerned Scientists asks the Commission to review MISO's proposal to delay the availability of its proposed Tariff revisions until March 1, 2020 and to provide guidance on an appropriate date.⁴⁶¹ Union of Concerned Scientists states that MISO should not be allowed to delay the deployment of software past the proposed effective date of its Tariff revisions.

⁴⁵⁶ Order No. 841, 162 FERC ¶ 61,127 at P 348.

⁴⁵⁷ *Id.* P 349.

⁴⁵⁸ *Id.* P 350.

⁴⁵⁹ Order No. 841-A, 167 FERC ¶ 61,154 at P 154.

⁴⁶⁰ MISO Transmittal Letter at 20.

⁴⁶¹ Union of Concerned Scientists Comments at 4, 10.

c. Answers

264. MISO states that Order No. 841 does not require RTOs/ISOs to deviate from their existing resource registration and modeling schedules, and argues that it is reasonable for MISO to facilitate Electric Storage Resource market participation consistent with MISO's quarterly timeline for registering and modeling all resources.⁴⁶² MISO also states that this is consistent with the transitional approach MISO has followed with other types of resources when they were first introduced in MISO's markets. MISO notes that, for example, when Dispatchable Intermittent Resources were introduced, the Commission granted an effective date of March 1, 2011 to allow Dispatchable Intermittent Resources to be registered March 15, 2011 in the quarterly model update for June 1, 2011.⁴⁶³

d. Data Request Response

265. MISO states that, because its compliance filing was not accepted by April 2, 2019, it cannot implement the proposed changes on December 3, 2019.⁴⁶⁴ MISO claims that it requires a minimum of 18 months from the date of a Commission order accepting its Tariff revisions in order to plan and complete the software and system changes and testing so that it may properly implement the Electric Storage Resource participation model. MISO states that it needs additional time because recent advancements in its Market System Enhancement (MSE) require that Electric Storage Resource related Tariff revisions and software design must be built on the MSE upgrades, rather than on portions of the existing system that will be superseded by the MSE upgrades.⁴⁶⁵ MISO further requests that the Commission issue an order accepting its proposed Tariff revisions by July 1, 2019, so that the software work can be started for an implementation date of February 2021.

e. Deferral Request

266. In its Deferral Request filed November 1, 2019, MISO asks the Commission to defer the effective date of its compliance filing to June 6, 2022, approximately 31 months

⁴⁶² MISO Answer at 19.

⁴⁶³ *Id.* (citing *Midwest Indep. Transmission Sys. Inc.*, 134 FERC ¶ 61,141, at PP 108, 112 (2011)).

⁴⁶⁴ MISO Data Request Response at 21.

⁴⁶⁵ *Id.* at 21-22.

from the date of its request.⁴⁶⁶ MISO states that the delay in getting an order is causing the need for MISO to re-plan the development and implementation of the Electric Storage Resource related systems and software, given other major market and reliability enhancements.⁴⁶⁷ Specifically, MISO states that it has filed Tariff language establishing a Short-Term Reserve market product, and that filing is pending in Docket No. ER20-42-000, with a requested effective date of December 7, 2021. MISO avers that the Short-Term Reserve proposal is being pursued in response to the recommendation of the independent market monitor, and that stakeholders have ranked the establishment of the Short-Term Reserve as a high priority.⁴⁶⁸ MISO contends that the implementation of the Short-Term Reserve product will provide significant and immediate reliability benefits and economic efficiencies to the MISO region.⁴⁶⁹

267. MISO asserts that the implementation of the Short-Term Reserve product on December 7, 2021 necessitates deferring the implementation of Electric Storage Resource market participation to June 2022.⁴⁷⁰ MISO explains that the software and system changes necessary for Short-Term Reserves and Electric Storage Resource market participation, respectively, are best developed, tested and implemented sequentially, because they both involve the same software vendor and developers, and the same MISO resources. Moreover, MISO contends that building two major products simultaneously risks additional complexity in testing, validating and troubleshooting to ensure they are working properly both on their own, and together in areas where they may interact. MISO argues that the software and system work for these two filings cannot be performed simultaneously or on parallel paths, as doing so would be unduly burdensome, more expensive and potentially inefficient and complicate the coordination of such improvements to the existing system with the ongoing MSE efforts. MISO further argues that the deferral of Electric Storage Resource implementation should have limited impacts on the ability of storage-type resources to participate in MISO's markets storage-type resources are currently able to participate in MISO's markets as SER – Type II Resources. MISO commits to making a subsequent filing with the Commission to update the Tariff sheets to reflect the most up-to-date versions of the then-current

⁴⁶⁶ MISO Deferral Request at 1.

⁴⁶⁷ *Id.* at 2.

⁴⁶⁸ *Id.* at 2-3.

⁴⁶⁹ *Id.* at 3.

⁴⁷⁰ *Id.*

Tariff provisions, which will be submitted at least 60 days prior to the proposed effective date of the Tariff provisions.⁴⁷¹

f. Commission Determination

268. While the Commission in Order Nos. 841 and 841-A declined to provide the RTOs/ISOs with additional time for implementation, we find here that MISO'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 filings. Specifically, we accept MISO's explanation that: (1) it is not feasible for MISO to fully develop and implement the Electric Storage Resource related systems and software concurrently with its implementation of the Short-Term Reserve product; and (2) the software necessary to implement the Electric Storage Resource participation model should be consistent with software changes related to ongoing advancements in its MSE. We note that MISO's request to defer the effective date of its compliance filing was not opposed. Therefore, we grant MISO's request to defer the effective date of its compliance filing to June 6, 2022. However, we direct MISO to make annual informational filings with the Commission, beginning one year after the issuance of this order, that: (1) report on MISO's progress in implementing the Electric Storage Resource related Tariff revisions; and (2) explain in full whether all, or any aspects of, the Electric Storage Resource related Tariff revisions can be implemented on a shorter timeframe.⁴⁷²

The Commission orders:

(A) MISO's compliance filing is hereby accepted in part and rejected in part, subject to a further compliance filing, to be effective June 6, 2022, as discussed in the body of this order.

(B) MISO is hereby directed to submit a further compliance filing, within 60 days of the date of issuance of this order, as discussed in the body of this order.

⁴⁷¹ *Id.* at 5.

⁴⁷² These annual reports should be filed in the instant docket and will not be noticed for comment or require Commission action.

(C) MISO is hereby directed to make annual informational filings with the Commission, beginning one year after the issuance of this order, as discussed in the body of this order.

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

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Appendix A
Tariff Records Filed
Midcontinent Independent System Operator, Inc.
FERC FPA Electric Tariff
FERC Electric Tariff

Docket No. ER19-465-000

1.A, Definitions - A, 56.0.0

1.B, Definitions - B, 49.0.0

1.C, Definitions - C, 61.0.0

1.D, Definitions - D, 56.0.0

1.E, Definitions - E, 73.0.0

1.F, Definitions - F, 47.0.0

1.H, Definitions - H, 51.0.0

1.I, Definitions - I, 45.0.0

1.M, Definitions - M, 58.0.0

1.O, Definitions - O, 42.0.0

1.R, Definitions - R, 63.0.0

1.S, Definitions - S, 61.0.0

1.U, Definitions - U, 36.0.0

33.8.1, Circumstances Requiring Manual Redispatch, 31.0.0

33.8.2, Manual Redispatch Compensation and Eligibility, 42.0.0

33.8.3, Manual Redispatch Cost Recovery, 31.0.0

33.8.4, Notice and Posting, 31.0.0

38.1.1, Scope of Services, 35.0.0

38.2.2, Market Participant Application and Qualifications, 34.0.0

38.3, Generation Owners, Load Serving Entities and ARCs, 34.0.0

[39.1.2, Rules for Self-Scheduled Resources, 34.0.0](#)

[39.2.1A, Product Requirements for Operating Reserve, 37.0.0](#)

[39.2.1B, Resource Requirements for Operating Reserve, 38.0.0](#)

[39.2.5D, Electric Storage Resource Offer Rules in the Day-Ahead, 31.0.0](#)

[39.2.9, Day-Ahead Energy and Operating Reserve Market Process, 50.0.0](#)

[39.2.10, Shortage Conditions in the Day-Ahead EORM, 39.0.0](#)

[39.2.11, Surplus Conditions in the Day-Ahead EORM, 38.0.0](#)

[39.3.1, Charges for DA EORM Purchases, 35.0.0](#)

[39.3.1A, Day-Ahead Revenue Sufficiency Guarantee Charges, 33.0.0](#)

[39.3.2A, Day-Ahead Operating Reserve Procurement Credits, 37.0.0](#)

[39.3.2B, Day-Ahead Revenue Sufficiency Guarantee Payments, 47.0.0](#)

[40.1.3, RAC Data Inputs, 37.0.0](#)

[40.1.4, RAC Process, 38.0.0](#)

[40.1.A.2, LAC Data Inputs, 34.0.0](#)

[40.1.A.3, LAC Process, 35.0.0](#)

[40.2.2, Transmission Provider Obligations, 36.0.0](#)

[40.2.3, Product Requirements for Operating Reserve, 37.0.0](#)

[40.2.4, Resource Requirements for Operating Reserve, 38.0.0](#)

[40.2.7B, Electric Storage Resource Offer Rules in the Real-Time, 31.0.0](#)

[40.2.8, Self-Scheduled Resources, 35.0.0](#)

[40.2.15, Real-Time Energy and Operating Reserve Market Process, 41.0.0](#)

[40.2.17, Calculation of Real-Time Ex Post LMPs and Ex Post MCPs, 49.0.0](#)

[40.2.19, Real-Time Revenue Sufficiency Guarantee, 35.0.0](#)

[40.2.20, Capacity Shortage Conditions in the Real-Time Energy and Ope, 42.0.0](#)

[40.2.21, Capacity Surplus under Minimum Load Conditions in Real-Time, 35.0.0](#)

[40.2.23, Contingency Reserve Deployment, 32.0.0](#)

[40.3.3.2, Real-Time Revenue Sufficiency Guarantee Distribution, 37.0.0](#)

[40.3.3.3, Credits for Real-Time Energy and Operating Reserve Market, 38.0.0](#)

[40.3.4, Charge for Excessive/Deficient Energy and Reserve Deployment, 44.0.0](#)

[40.3.5.1, Rationale for RTORSGP, 37.0.0](#)

[40.3.5.2, Types of Resources Covered by RTORSGP, 32.0.0](#)

[40.3.5.3, Resources, 31.0.0](#)

[40.3.5.4, RTORSGP Eligibility for Day-Ahead Committed Hours for Genera, 37.0.0](#)

[40.3.5.5, RTORSGP Eligibility for Real-Time Must-Run Resources, 37.0.0](#)

[40.3.5.6, Calculation of RTORSGP., 34.0.0](#)

[40.3.6.1, Rationale for DAMAP, 33.0.0](#)

[40.3.6.2, Types of Resources Covered by DAMAP, 32.0.0](#)

[40.3.6.3, Eligibility Criteria, 31.0.0](#)

[40.3.6.4, DAMAP Eligibility, 39.0.0](#)

[53.1, Conditions, Functions or Actions Monitored, 35.0.0](#)

[53.1A, Auditing for Physical Withholding, 33.0.0](#)

[54.1, Access to Transmission Provider's Data and Information, 35.0.0](#)

[61.1, Data, 37.0.0](#)

[63.3, Categories of Conduct that May Warrant Mitigation, 45.0.0](#)

[63.4.1, Determination of Narrow Constrained Areas and Dynamic NCAs, 43.0.0](#)

[63.4.2, Broad Constrained Areas, 38.0.0](#)

[64.1.1, Thresholds for Identifying Physical Withholding, 47.0.0](#)

[64.1.3, Thresholds for Identifying Uneconomic Production, 38.0.0](#)

[64.1.4, Reference Levels, 58.0.0](#)

[65.2.2, Implementation, 41.0.0](#)

[65.3.1, Imposition, 40.0.0](#)

[66, Annual Review, 33.0.0](#)

[69A.3.1, Capacity Resources, 36.0.0](#)

[69A.3.1.a, Generation Resources that are not Dispatchable Intermittent, 38.0.0](#)

[69A.3.1.d, Use Limited Resources, 32.0.0](#)

[69A.3.1.g, Determination of Deliverability, 34.0.0](#)

[69A.4.1, Unforced Capacity of Capacity Resources, 33.0.0](#)

[69A.7.1, PRA Procedures, 43.0.0](#)

[SCHEDULE 2, Reactive Supply and Voltage Control From Generation or Other, 37.0.0](#)

[SCHEDULE 26A, Multi-Value Project Usage Rate, 33.0.0](#)

[SCHEDULE 27, RTORSGP and DAMAP, 48.0.0](#)

[SCHEDULE 29, Energy and Operating Reserve Market Simultaneous Co-optimize, 46.0.0](#)

[SCHEDULE 29A, ELMP for Energy and Operating Reserve Market: Ex-Post Prici, 56.0.0](#)

[SCHEDULE 33, Blackstart Service, 32.0.0](#)

[ATTACHMENT MM, Multi-Value Project Charge \(MVP Charge\), 41.0.0](#)

[ATTACHMENT HHH, Form of Agreement for Electric Storage Resource, 31.0.0](#)

[ATTACHMENT HHH: App 1, Appendix 1 - Facility Specifications, 31.0.0](#)

[ATTACHMENT HHH: App 2, Appendix 2 - Operational Specifications for Distribution, 31.0.0](#)

[ATTACHMENT HHH: App 3, Appendix 3 - Avoidance of Double Payment for Charging Energy, 31.0.0](#)

[Docket No. ER19-465-001](#)

[1.E, Definitions - E, 75.0.0](#)

[1.V, Definitions - V, 42.0.0](#)

[38.2.2, Market Participant Application and Qualifications, 35.0.0](#)

[ATTACHMENT HHH, Form of Agreement for Electric Storage Resource, 32.0.0](#)

[ATTACHMENT HHH: App 1, Appendix 1 - Facility Specifications, 31.0.0](#)

[ATTACHMENT HHH: App 2, Appendix 2 - Operational Specifications for Distribution, 31.0.0](#)

[ATTACHMENT HHH: App 3, Appendix 3 - Avoidance of Double Payment for Charging Energy, 31.0.0](#)

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

5. While I approve MISO'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

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.

¹² *See Nat'l Ass'n of Regulatory Comm'rs v. FERC*, Nos. 19-1142 and 19-1147

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

(D.C. Cir. filed July 11, 2019).