

FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, DC 20426

OFFICE OF ENERGY MARKET REGULATION

In Reply Refer to:  
Midcontinent Independent System  
Operator, Inc.  
Docket No. ER19-465-000

Issued: April 1, 2019

Midcontinent Independent System  
Operator, Inc.  
720 City Center Drive  
Carmel, IN 46032

Attention: Daniel M. Malabonga  
Assistant General Counsel

Reference: Compliance Filing for Order No. 841

Dear Mr. Malabonga:

On December 3, 2018, the Midcontinent Independent System Operator, Inc. (MISO) filed tariff revisions<sup>1</sup> to comply with Commission Order No. 841.<sup>2</sup> Please be advised that additional information is necessary to process the filing. Please provide complete responses to the following:<sup>3</sup>

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<sup>1</sup> MISO submitted revisions to its Open Access Transmission, Energy, and Operating Reserve Markets Tariff (MISO Tariff).

<sup>2</sup> *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 841, 162 FERC ¶ 61,127 (2018).

<sup>3</sup> MISO may file revised tariff records where appropriate.

## 1) Definition of Electric Storage Resource

To identify the set of resources that are eligible to use the required participation model for electric storage resources, Order No. 841 revised section 35.38(b) of the Commission's regulations<sup>4</sup> 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."<sup>5</sup>

- a. Please explain and provide citations to the relevant proposed tariff language that demonstrate whether MISO's proposal allows Electric Storage Resources that are not physically located within MISO, but are pseudo-tied into MISO, to participate in MISO markets.

## 2) Creation of a Participation Model for Electric Storage Resources

Order No. 841 added 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 markets that, recognizing the physical and operational characteristics of electric storage resources, facilitates their participation in the RTO/ISO markets.<sup>6</sup> 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 required each RTO/ISO 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).

- a. MISO's proposal, in section 2(k) of Attachment HHH, states that Electric Storage Resources located on a distribution system "may not Pseudo-tie the Facility, or any portion of the Facility, into different Balancing Authorities." Please explain why MISO's proposal prohibits Electric Storage Resources located on a distribution system from pseudo-tying into different balancing authorities.
- b. Please explain and provide citations to the relevant proposed tariff language that demonstrate the following. To the extent MISO intends to comply with Order No. 841 by relying on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to

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<sup>4</sup> 18 C.F.R § 35.28(b).

<sup>5</sup> Order No. 841, 162 FERC ¶ 61,127 at P 29.

<sup>6</sup> *Id.* P 51.

demonstrate that such provisions will apply to electric storage resources as required by Order No. 841.

- i. a participation model consisting of market rules that, recognizing the physical and operational characteristics of Electric Storage Resources, facilitates their participation in MISO's markets.
- ii. whether MISO's proposal allows for Electric Storage Resources physically located within MISO and directly interconnected to MISO's *transmission* system to pseudo-tie into different balancing authorities.

### **3) Eligibility of Electric Storage Resources to Participate in the RTO/ISO Markets**

Order No. 841 added section 35.28(g)(9)(i)(A) to the Commission's regulations to require that each RTO/ISO have tariff provisions providing that a resource using the participation model for electric storage resources is 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.<sup>7</sup>

- a. Please explain and provide citations to the relevant proposed tariff language that demonstrate whether a resource using the participation model for Electric Storage Resources is 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. To the extent MISO intends to comply with Order No. 841 by relying on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to demonstrate that such provisions will apply to electric storage resources as required by Order No. 841.
- b. Please explain how MISO's must offer requirement applies to Electric Storage Resources providing capacity, and describe how Electric Storage Resources can satisfy this requirement.
- c. Please explain how an Electric Storage Resource's use of the Energy Dispatch Status of "Not Participating," or other statuses, affect the must-offer requirement.

### **4) Participation in the RTO/ISO Markets as Supply and Demand**

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<sup>7</sup> *Id.* PP 76, 80.

### **A. Eligibility to Participate as a Wholesale Seller and Wholesale Buyer**

Order No. 841 added 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.<sup>8</sup>

- a. Please explain and provide citations to the relevant proposed tariff language that demonstrate the following. To the extent MISO intends to comply with Order No. 841 by relying on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to demonstrate that such provisions will apply to electric storage resources as required by Order No. 841.
  - i. Whether a resource using the participation model for Electric Storage Resources can be dispatched as supply and demand 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.
  - ii. that (1) resources using the participation model for Electric Storage Resources are able to set the price in the capacity markets, where applicable; (2) RTOs/ISOs must accept wholesale bids from resources using the participation model for Electric Storage Resources to buy energy; and (3) resources using the participation model for Electric Storage Resources must be allowed to participate in the RTO/ISO markets as price takers, consistent with the existing rules for self-scheduled resources.

### **B. Mechanisms to Prevent Conflicting Dispatch Instructions**

To implement the new requirement in section 35.28(g)(9)(i)(B) of the Commission's regulations, Order No. 841 required 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

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<sup>8</sup> *Id.* P 142.

market rules to prevent conflicting supply offers and demand bids from the same resource for the same market interval.<sup>9</sup>

Please explain and provide citations to the relevant proposed tariff language that demonstrate that MISO's market design will not allow for conflicting supply offers and demand bids from the same resource for the same market interval. To the extent MISO intends to comply with Order No. 841 by relying on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to demonstrate that such provisions will apply to electric storage resources as required by Order No. 841.

### **C. Make-Whole Payments**

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 required 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.<sup>10</sup>

- a. Please explain and provide citations to the relevant proposed tariff language that demonstrate the following. To the extent MISO intends to comply with Order No. 841 by relying on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to demonstrate that such provisions will apply to electric storage resources as required by Order No. 841.
  - i. Whether MISO's proposed participation model for Electric Storage Resources allows make-whole payments when a resource is dispatched as load and the wholesale price is higher than the resource's bid price and when it is dispatched as supply and the wholesale price is lower than the resource's offer price.
  - ii. Whether 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.

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<sup>9</sup> *Id.* P 162.

<sup>10</sup> *Id.* P 174.

- iii. Whether a resource using the participation model for Electric Storage Resources is eligible for make-whole payments when acting as a supply resource consistent with the rules governing the eligibility of other supply resources to receive make-whole payments.

## **5) Physical and Operational Characteristics of Electric Storage Resources**

Order No. 841 added section 35.28(g)(9)(i)(C) to the Commission's regulations to require each RTO/ISO to have 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.<sup>11</sup>

- a. In its Transmittal, MISO includes a definition for Minimum Energy Storage Level; however, it does not appear that MISO included this definition in its proposed tariff revisions.<sup>12</sup> Please explain why MISO did not include the definition of an operational characteristic representing an Electric Storage Resource's minimum state of charge.
- b. In its Transmittal, MISO refers to the Hourly Electric Storage Resource Efficiency Factor as "the amount of increase in Energy Storage Level for each 1 MW of Charge Energy withdrawn,"<sup>13</sup> while the tariff definition states "the amount of increase in Energy Storage Level for each 1 MWh of Charge energy withdrawn." Please clarify whether the Hourly Electric Storage Resource Efficiency Factor is based on 1 MW, 1 MWh, or some other unit.

## **6) State of Charge Management**

Order No. 841 required each RTO/ISO to allow resources using the participation model for electric storage resources to self-manage their State of Charge.<sup>14</sup>

- a. Please explain and provide citations to the relevant proposed tariff language that demonstrate whether MISO will allow resources using the participation model for Electric Storage Resources to self-manage their state of charge. To the extent MISO intends to comply with Order No. 841 by relying on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to demonstrate that such provisions will

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<sup>11</sup> *Id.* P 191.

<sup>12</sup> Compliance Filing, Transmittal at 13.

<sup>13</sup> Compliance Filing, Transmittal at 15.

<sup>14</sup> *Id.* P 251.

apply to electric storage resources as required by Order No. 841.

## 7) Minimum Size Requirement

Order No. 841 added 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 the RTO/ISO markets that does not exceed 100 kW.<sup>15</sup>

- a. Please explain and provide citations to the relevant proposed tariff language that demonstrates MISO's proposed process for phasing in the deployment of "very small" resources, including by what year MISO expects all Electric Storage Resources 100 kW or larger to have access to the electric storage participation model.

## 8) Energy Used to Charge Electric Storage Resources

### A. Price for Charging Energy

Order No. 841 added 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.<sup>16</sup>

- a. Please explain and provide citations to the relevant proposed tariff language that demonstrate the following. To the extent MISO intends to comply with Order No. 841 by relying on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to demonstrate that such provisions will apply to electric storage resources as required by Order No. 841.
  - i. Whether MISO proposes to apply transmission charges to Electric Storage Resources when they are charging to resell energy at a later time.
  - ii. Whether MISO proposes to apply 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.

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<sup>15</sup> *Id.* P 270.

<sup>16</sup> *Id.* P 294.

- iii. Whether MISO will assess transmission charges to Electric Storage Resources when they are dispatched by MISO to provide other services.

### **B. Metering and Accounting Practices for Charging Energy**

To help implement the new requirement in section 35.28(g)(9)(ii) of the Commission's regulations, Order No. 841 required 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 the RTO/ISO markets to an electric storage resource that the resource then resells back to those markets be at the wholesale LMP.<sup>17</sup>

- a. Please explain and provide citations to the relevant proposed tariff language that demonstrate the following. To the extent MISO intends to comply with Order No. 841 by relying on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to demonstrate that such provisions will apply to electric storage resources as required by Order No. 841.
  - i. How MISO will prevent Electric Storage Resources located on the distribution system from being assessed duplicative (i.e., both retail and wholesale) charges for charging energy. Additionally, please clarify whether MISO's proposed revisions to ensure that distribution-connected Electric Storage Resources are not charged twice for the same charging energy will apply to Electric Storage Resources located behind the meter, and if so, please describe how.
  - ii. Whether MISO proposes to implement metering and accounting practices as needed to address the complexities of implementing the requirement that the sale of electric energy from MISO markets to an Electric Storage Resource that the resource then resells back to those markets be at the wholesale LMP.
  - iii. Whether MISO proposes to directly meter Electric Storage Resources, so all the energy entering and exiting the resources is measured by that meter; or provide an alternative proposal that may not entail direct metering but nonetheless addresses the complexities of implementing the requirement that the sale of electric energy from MISO markets to a resource using the participation model for Electric Storage Resources

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<sup>17</sup> *Id.* P 322.

that the resource then sells back to those markets be at the wholesale LMP.

- iv. Whether MISO proposes to prevent resources using the participation model for Electric Storage Resources from paying twice for the same charging energy.
- b. MISO's proposed Attachment HHH, section 2(c) states, in part, that "The Company must secure and maintain any and all necessary agreements with the [electric distribution company] to facilitate the operation of the Facility and delivery of Energy *to* the Transmission System" (emphasis added). Please explain whether MISO will additionally require the company to secure and maintain such agreements for delivery of energy *from* MISO's transmission system. Please also clarify whether Attachment HHH contains a requirement that a distribution-connected Electric Storage Resource attest that the necessary coordination, authorization, accounting, metering, and other arrangements and approvals have been secured, as described by Mr. Vannoy in his testimony.<sup>18</sup>
- c. Please clarify whether the Attachment HHH appendices were intentionally left blank. If so, please explain why and describe how these appendices will be utilized. Please describe what information these appendices will contain.
- d. Attachment HHH, section 3 (Metering) requires the Electric Storage Resource to "coordinate all aspects of the Facility with the [Electric Distribution Company] in accordance with this Agreement and the Tariff." Please clarify whether "Facility," as defined in Attachment HHH, includes on-site generation.
- e. Mr. Vannoy states in his testimony that "Electric Storage Resources connected to [the] distribution system must have sufficient metering or accounting for non-wholesale transactions such that only wholesale storage Energy injections and [withdrawals] are reported."<sup>19</sup> However, this requirement does not appear in Attachment HHH. Please explain and provide citations to the relevant proposed tariff language that specify how an Electric Storage Resource can satisfy this requirement. To the extent MISO intends to rely on existing tariff provisions generally applicable to many types of resources, please explain and provide tariff citations to demonstrate that such provisions will apply to electric storage resources.

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<sup>18</sup> Vannoy Test. at 12.

<sup>19</sup> *Id.* at 31.

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This letter is issued pursuant to 18 C.F.R. § 375.307 (b)(3)(ii) (2018) and is interlocutory. This letter is not subject to rehearing pursuant to 18 C.F.R. § 385.713 (2018). A response to this letter must be filed with the Secretary of the Commission within 30 days of the date of this letter. For your response, please use Type of Filing Code 80, Compliance Filing. In addition, submit an electronic version of your response to Thomas Moss at [thomas.moss@ferc.gov](mailto:thomas.moss@ferc.gov).

Failure to respond to this letter order within the time period specified may result in a further order rejecting your filing.

Issued by: Penny Murrell, Director, Division of Electric Power Regulation – Central

Document Content(s)

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