

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

Electric Storage Participation in )  
Markets Operated by Regional )  
Transmission Organizations and )  
Independent System Operators )  
\_\_\_\_\_ )

Docket Nos. RM16-23; AD16-20

**MOTION FOR CLARIFICATION AND, IN THE ALTERNATIVE, REQUEST FOR  
REHEARING OF THE CALIFORNIA INDEPENDENT SYSTEM  
OPERATOR CORPORATION**

**I. Introduction**

The California Independent System Operator Corporation (CAISO) respectfully submits this motion for clarification or, in the alternative, request for rehearing of Commission Order No. 841,<sup>1</sup> which seeks to remove barriers to electric storage resources participating in the capacity, energy, and ancillary service markets operated by regional transmission organizations (RTOs) and independent system operators (ISOs). The CAISO supports the Commission's proposed reforms, but seeks clarification on issues regarding metering, transmission charges, and double billing. The CAISO requests that the Commission clarify: (A) it is unnecessary for the RTO/ISO itself to directly meter storage resources (only that some entity directly meter them); (B) an RTO/ISO can require storage resources to resolve retail double-billing issues with their retail energy provider as a condition of wholesale market participation; and (C) charging a storage resource pursuant to RTO/ISO dispatch provides a service such

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<sup>1</sup> The CAISO submits this motion pursuant to Rules 212 and 713 of the Commission's Rules of Practice and Procedure, 18 C.F.R. §§ 385.212, 385.713 and section 313 of the Federal Power Act, 16 U.S.C. 825l.

that the storage resource should not incur transmission charges.

## **II. Background**

### **A. Metering and Accounting Practices for Charging Energy: Direct Metering by the RTO/ISO**

In its final rule, the Commission states it will “require each RTO/ISO to directly meter electric storage resources, so all the energy entering and exiting the resources is measured by that meter.”<sup>2</sup> Although the Commission recognizes that it will consider other metering requirements that could recognize complex storage resources such as those on distribution systems or behind customer meters, the CAISO is concerned that the most plain reading of the text is that the RTO/ISO *itself* should directly meter storage resources.

### **B. Metering and Accounting Practices for Charging Energy: Avoiding Double Billing**

Order No. 841 states that resources using the participation model for electric storage resources should not be required to pay both the wholesale and retail price for the same charging energy because it would create market inefficiencies due to the double payment.<sup>3</sup> The CAISO agrees with this principle; however, Order No. 841 then adds that to prevent storage resources from paying twice for the same energy, the RTO/ISO cannot settle/charge the resource for charging where “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 a resource

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<sup>2</sup> Order No. 841 at P 322.

<sup>3</sup> Order No. 841 at P 326.

using the participation model for electric storage resources' wholesale charging activities from the host customer's retail bill."<sup>4</sup>

### **C. Price for Charging Energy**

In Order No. 841, the Commission states it disagrees with comments arguing that "transmission charges that apply to load should not apply to electric storage resources. 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 we find that applicable transmission charges should apply."<sup>5</sup> However, the Commission later states that storage resources "that are dispatched to consume electricity to provide a service in the RTO/ISO markets (such as frequency regulation or a downward ramping service) should not pay the same transmission charges as load during the provision of that service."<sup>6</sup> The Commission states that such treatment would be consistent with the treatment afforded traditional generation resources that provide ancillary services, because they are not charged for their impacts on the transmission system when they reduce their output to provide a service such as frequency regulation down.<sup>7</sup> The Commission summarizes that

electric storage resources should not be charged transmission charges when they are dispatched by an RTO/ISO to provide a service because (1) their physical impacts on the bulk power system are comparable to traditional generators providing the same service and (2) assessing transmission charges when they are dispatched to provide a service would create a disincentive for them to provide the service.<sup>8</sup>

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

<sup>5</sup> Order No. 841 at P 297.

<sup>6</sup> Order No. 841 at P 298.

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

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

### **III. Statement of Issue and Specification of Error or Clarification**

#### **A. Metering and Accounting Practices for Charging Energy: Direct Metering by the RTO/ISO**

The Commission should clarify that Order No. 841 does not require the RTO/ISO *itself* to directly meter every storage resource participating in its markets; only that storage resources should be directly metered. Scheduling coordinators could directly meter storage resources and then provide settlement quality meter data to the RTO/ISO for settlement. Absent this clarification, the CAISO requests rehearing on this limited issue on the grounds that Order No. 841 is in error and should be modified. As explained below, such a requirement is inconsistent with precedent and current just and reasonable RTO/ISO practices, and unnecessarily restricts storage resources and RTO/ISOs.<sup>9</sup>

#### **B. Metering and Accounting Practices for Charging Energy: Avoiding Double Billing**

The Commission should clarify how an RTO/ISO should verify 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 a resource using the participation model for electric storage resources’ wholesale charging activities from the host customer’s retail bill.”<sup>10</sup> Alternatively, the Commission should clarify that where an RTO/ISO cannot verify the host distribution utility’s reticence, the RTO/ISO can either (1) require the storage resource to use a participation

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<sup>9</sup> See, e.g., *California System Independent System Operator Corp.*, Letter Order Approving Tariff Revisions, Docket No. ER17-949-000 (March 31, 2017).

<sup>10</sup> Order No. 841 at P 326.

model designed for retail customer participation (such as demand response), or (2) continue settling the storage resource's charging demand under the wholesale LMP. Absent these clarifications, the CAISO requests rehearing on this limited issue on the grounds that Order No. 841 is in error and should be modified. As explained below, existing demand response models already accommodate resources that face retail charges, and zeroing out a market participant's demand will materially affect how that resource bids into the CAISO markets, and adversely affect such markets.

### **C. Price for Charging Energy**

The Commission should clarify that RTO/ISOs may, but are not required, to impose transmission charges on storage resources when they are charging pursuant to ISO/RTO dispatch. Alternatively, the Commission should clarify that each RTO/ISO may determine what types of charging activities would not cause a storage resource to incur transmission charges, that those services are not limited to ancillary services, and that charging pursuant to economic dispatch may qualify as such a service. The Commission also should clarify that storage resources participating as transmission or reliability assets under the Commission's Policy Statement should not incur transmission charges for charging demand.<sup>11</sup> Absent these clarifications, the CAISO requests rehearing on this limited issue on the grounds that Order No. 841 is in error and should be modified. As explained below, charging pursuant to dispatch is one of the most critical services that storage resources can provide. It is dissimilar from load-serving entity's bids for demand, which cannot be curtailed or shifted despite economic

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<sup>11</sup> *Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery*, 158 FERC ¶ 61,051 (2017).

signals. Assessing transmission charges on charging storage resources will blunt the effectiveness of storage resources and shift transmission revenue requirement recovery into the energy market.

#### **IV. Discussion**

##### **A. Metering and Accounting Practices for Charging Energy: Direct Metering by the RTO/ISO**

Order No. 841 states that the Commission will “require each RTO/ISO to directly meter electric storage resources, so all the energy entering and exiting the resources is measured by that meter.”<sup>12</sup> Although the Commission recognizes there may be other metering requirements that could recognize complex storage resources such as those on distribution systems or behind customer meters, the CAISO is concerned that the most plain reading of the text is that the RTO/ISO *itself* should be the entity directly metering storage resources. The CAISO respectfully requests that the Commission clarify that the RTO/ISOs themselves need not be the entity that directly meters electric storage resources. It is a common and useful practice in RTO/ISOs for third parties—typically scheduling coordinators—to perform the metering, validation, estimation, and editing to submit settlement quality meter data to the RTO/ISO. The CAISO and others use many methods to ensure this meter data is accurate, including unaccounted for energy calculations, comparisons with telemetry and AGC values, and audits.

As the CAISO explained in its comprehensive Metering Rules Enhancement filing last year,<sup>13</sup> the CAISO obtains settlement quality meter data from two types of market

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<sup>12</sup> Order No. 841 at P 322.

<sup>13</sup> *California System Independent System Operator Corp.*, Letter Order Approving Tariff Revisions, Docket No. ER17-949-000 (March 31, 2017).

participants: CAISO metered entities (CAISOMEs) and scheduling coordinator metered entities (SCMEs).<sup>14</sup> For CAISOMEs, the CAISO directly polls the meters, and the CAISO performs the validation, estimation, and editing procedures to produce settlement quality meter data. For SCMEs, the scheduling coordinator polls the meters, performs the validation, estimation, and editing procedures, and submits the resulting settlement quality meter data to the CAISO. In the past, the CAISO required participating generators (including storage resources) to be CAISOMEs directly polled by the CAISO. To provide greater flexibility to entities that participate in the CAISO markets, the Commission approved as just and reasonable the CAISO's proposal to allow generators and other resources to be an SCME or a CAISOME.<sup>15</sup> New resources choosing to be SCMEs can forego the higher upfront costs associated with CAISO metering and inspection. Resources participating in other markets also can participate in the CAISO markets without modifying their existing meters. This change gave generators the same metering flexibility afforded to other suppliers of energy and ancillary services—demand response resources, distributed energy resources, and external resources—to ensure a level playing field.

For storage resources, it can be particularly useful to be an SCME. As the Commission recognizes elsewhere in Order No. 841, unlike traditional generators storage resources have much more complex accounting issues, such as distinguishing between charging energy and station power. Behind-the-meter resources likewise can alternate among providing wholesale, distribution, and retail services. If the RTO/ISO

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<sup>14</sup> See Appendix A to the CAISO tariff.

<sup>15</sup> *California System Independent System Operator Corp.*, Letter Order Approving Tariff Revisions, Docket No. ER17-949-000 (March 31, 2017).

must directly poll such resources, then the process for configuring, inspecting, and sealing the various meters can be cost-prohibitive. Additionally, that process is slow, and generally occurs only when a new resource is interconnecting. If a storage resource sought to make any change that could affect its metering or settlement, it would have to break its metering seals, reconfigure its meters, and then retain a CAISO authorized inspector to re-certify and re-seal all affected meters. Perhaps more critically, the RTO/ISO does not have the capability, jurisdiction, or mandate to assist storage resources with their retail settlement.

In contrast, a scheduling coordinator easily can work with the RTO/ISO and the local distribution company to ensure that a storage resource complies with all applicable metering standards. The scheduling coordinator can then meter and account for which capacity, energy, and demand are settled by whom and for how much. The CAISO believes that its current practice of allowing resources the option to be directly metered by the RTO/ISO or to submit settlement quality meter data from a scheduling coordinator is optimal, and is standard among RTO/ISOs. The CAISO requests that the Commission clarify that it intended to mandate that storage resources be directly metered, but not necessarily that the RTO/ISOs are the entity that must directly poll the meters.

In the alternative the CAISO requests rehearing on this issue. A requirement for the RTO/ISO to be the sole entity directly metering storage resources is inconsistent with previous precedent, inconsistent with the CAISO and other RTO/ISO's current just and reasonable metering practices, and unnecessarily restrictive for storage resources and RTO/ISOs.

## **B. Metering and Accounting Practices for Charging Energy: Avoiding Double Billing**

Order No. 841 states that resources using the participation model for electric storage resources should not be required to pay both the wholesale and retail price for the same charging energy because it would create market inefficiencies due to the double payment.<sup>16</sup> To prevent storage resources from paying twice for the same energy, the Commission states that the RTO/ISO cannot settle/charge the resource for charging where “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 a resource using the participation model for electric storage resources’ wholesale charging activities from the host customer’s retail bill.”<sup>17</sup>

The CAISO supports the Commission’s efforts to avoid double billing. The CAISO also recognizes that it is outside the Commission’s jurisdiction to require retail energy providers to net out the wholesale demand consumption from a storage resources’ total demand. The CAISO is concerned, however, that the Commission has not specified what constitutes an unable or unwilling host distribution utility. Put another way, the CAISO is uncertain how it will verify that the host distribution utility has refused to net wholesale demand from the storage resource’s retail bill, and whether it should do so before or after the resource participates in the CAISO markets. The Commission should clarify 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 a storage resources’ wholesale demand. This is an

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<sup>16</sup> Order No. 841 at P 326.

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

especially critical question for behind-the-meter and distribution-sited resources participating in the CAISO market and potentially providing services to other entities, *i.e.*, “multiple-use applications.”

The CAISO also requests that the Commission clarify that where an RTO/ISO cannot verify the host distribution utility’s reticence, the RTO/ISO can either (1) require the storage resource to use a participation model designed for retail customer participation (such as demand response), or (2) continue settling the storage resource’s charging demand under the wholesale locational marginal price. The CAISO notes that a majority of its customer- and distribution-sited storage resources already participate under the CAISO’s demand response model. The CAISO’s metering generator output methodology for demand response allows these storage resources to establish baselines for both their demand and their typical energy output, and then to be settled on performance in response to dispatch that exceeds these baselines.<sup>18</sup>

This issue is significant for the CAISO because not permitting designated resources to be settled for wholesale demand will require new participation models, modeling, and software upgrades. The CAISO also is concerned that zeroing out a market participant’s demand will materially affect how that resource bids for demand, and could distort the market. Zeroing out a market participant’s wholesale demand also will negatively affect the host utility distribution company’s settlement charges in the form of unaccounted for energy, for example. Absent these clarifications, the CAISO requests rehearing on this limited issue on the grounds that Order No. 841 is in error

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<sup>18</sup> See Sections 4.13.4 and 11.6 of the CAISO tariff; *California Independent System Operator Corp.*, Letter Order approving tariff revisions, 156 FERC 61,110 (2016).

and should be modified.

### **C. Price for Charging Energy**

In Order No. 841, the Commission states it disagrees with comments arguing that “transmission charges that apply to load should not apply to electric storage resources. 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 we find that applicable transmission charges should apply.”<sup>19</sup> However, the Commission later states that storage resource “that are dispatched to consume electricity to provide a service in the RTO/ISO markets (such as frequency regulation or a downward ramping service) should not pay the same transmission charges as load during the provision of that service.”<sup>20</sup> The CAISO requests that the Commission clarify that charging (*i.e.*, consuming energy) qualifies as a “service” when the storage resource does so pursuant to dispatch from the RTO/ISO market. The Commission correctly states that storage resources in RTO/ISO markets should not pay transmission charges when providing demand as part of an ancillary service such as frequency response or regulation; however, charging, when it is economic to do so as instructed by the RTO/ISO to help balance the system, is a critically important “service” storage resources provide the grid. Unlike load-serving entities with firm load and little to no ability to curb or curtail demand, storage resources can charge during periods of excess generation and low prices, thereby shifting demand and combatting over-generation, providing ramping flexibility, addressing negative prices, and mitigating potential reliability issues in

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<sup>19</sup> Order No. 841 at P 297.

<sup>20</sup> Order No. 841 at P 298.

systems like the CAISO that operate with a high degree of supply and demand variability.<sup>21</sup> Requiring RTO/ISOs to assess transmission charges on storage devices when charging could blunt storage resources' market effectiveness and financial viability.

Moreover, requiring RTO/ISOs to assess transmission charges on storage devices will force storage resources to include those costs into their market bids, thus affecting therefore the energy market prices. This requirement would contravene prior Commission precedent. For example, when the Commission approved the CAISO's non-generator resource model, it approved as just and reasonable the CAISO's proposal to treat non-generator resource demand as negative generation, which would not incur transmission charges.<sup>22</sup> Since then, the Commission has noted in other proceedings that the negative generation model is a best practice that "may allow transmission providers to better account for the transitions of electric storage resources between generation and load and may better enable the use of existing generator interconnection procedures and agreements due to their treatment as negative generation instead of load."<sup>23</sup>

In addition to the issues regarding market resources, the CAISO also seeks clarification on whether (or when) storage resources participating as transmission resources under the Commission's Policy Statement should incur transmission charges

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<sup>21</sup> See, e.g., U.S. Energy Information Administration, "California wholesale electricity prices are higher at the beginning and end of the day," available at: <https://www.eia.gov/todayinenergy/detail.php?id=32172> (July 24, 2017); see also [http://www.caiso.com/Documents/FlexibleResourcesHelpRenewables\\_FastFacts.pdf](http://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf).

<sup>22</sup> *California Independent System Operator Corp.*, 132 ¶ 61,211 (2010).

<sup>23</sup> *Reform of Generator Interconnection Procedures and Agreements*, 82 F.R. 4464-01, 157 FERC ¶ 61,212 at PP 226-230 (2017).

for charging demand.<sup>24</sup> The CAISO contemplates that it may soon approve storage resources to provide reliability/transmission services in its transmission planning process. These resources would then be eligible to recover some of their costs through regulated transmission rates and the remainder through participation in the wholesale markets. Whether these resources will incur transmission charges for charging will significantly affect their projected costs in competitive solicitations, and how the resource intends to recover those costs. The CAISO requests that the Commission clarify that storage resources being treated as transmission assets should not incur transmission charges for their charging demand.

Absent these clarifications, the CAISO requests rehearing on this limited issue on the grounds that Order No. 841 is in error and should be modified. A requirement to assess transmission charges on storage resources errs in considering charging demand as similar to load-serving entity demand, inappropriately shifts transmission costs into energy markets, and is inconsistent with Commission precedent.<sup>25</sup> Additionally, the Commission has not provided guidance on whether its rules for market resources should apply to transmission (or hybrid) resources as well.

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<sup>24</sup> *Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery*, 158 FERC ¶ 61,051 (2017).

<sup>25</sup> *See, e.g., California Independent System Operator Corp.*, 132 ¶ 61,211 (2010); *Reform of Generator Interconnection Procedures and Agreements*, 82 F.R. 4464-01, 157 FERC ¶ 61,212 at PP 226-230 (2017).

## V. Conclusion

The CAISO respectfully requests that the Commission clarify the issues described above, or in the alternative, grant rehearing.

Respectfully submitted

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Dated: March 19, 2018

## CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon all of the parties listed on the official service list for the captioned proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California, this day of 19<sup>th</sup> day of March, 2018.

*/s/ Grace Clark*  
Grace Clark