

173 FERC ¶ 61,146  
FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, DC 20426

November 19, 2020

In Reply Refer To:  
California Independent System Operator  
Corporation  
Docket No. ER20-2890-000

California Independent System Operator Corporation  
250 Outcropping Way  
Folsom, CA 95630

Attention: Andrew Ulmer

Dear Mr. Ulmer:

1. On September 16, 2020, California Independent System Operator Corporation (CAISO) submitted, pursuant to section 205 of the Federal Power Act,<sup>1</sup> proposed revisions to the CAISO Open Access Transmission Tariff (Tariff) regarding modeling separate resources that are co-located at a single generating facility, and data requirements for hybrid resources that include a wind or solar generation component. As discussed below, we accept the Tariff revisions, effective December 1, 2020, as requested.
2. CAISO explains that co-located resources operate as separate resources with separate resource identification numbers (Resource ID) that are part of a generating facility (or, in the case of Energy Imbalance Market (EIM) participating resources, part of a single resource with other EIM participating resources), whereas hybrid resources operate as a single resource with one Resource ID at a single point of interconnection with fuel components that use different fuel sources or technologies. According to CAISO, many co-located resources and hybrid resources are expected to commence commercial operation imminently by modifying existing generating facilities and leveraging existing infrastructure. CAISO states that its proposed Tariff revisions allow developers to elect whether to be co-located resources or hybrid resources, and are an

---

<sup>1</sup> 16 U.S.C. § 824d.

initial step toward developing more robust rules and models to integrate these resources and optimize their performance.<sup>2</sup>

3. Regarding co-located resources, CAISO proposes to establish market rules for using an aggregate capability constraint in its market model for co-located resources at a single generating facility. CAISO states that its current market rules can result in stranded capacity because they restrict the sum of the maximum operating levels for the resources at a generating facility that can be registered in CAISO's master file so that the sum does not exceed the generating facility's interconnection service capacity. CAISO explains that using the aggregate capability constraint will promote market efficiency by allowing co-located resources to manage the sum of their maximum operating level without the need for additional interconnection upgrades. CAISO notes that although this could allow co-located resources' combined maximum capability to exceed the generating facility's interconnection service capacity, CAISO will limit any awards or self-schedules for energy in the day-ahead and real-time markets to the generating facility's interconnection service capacity, and require the generating facility to install generator limiter controls so that the combined output of the co-located resources does not exceed the generating facility's interconnection service capacity.<sup>3</sup>

4. CAISO proposes to apply the aggregate capability constraint only to energy awards and dispatches for the first year of implementation. CAISO states that co-located resources electing to use this constraint will therefore be ineligible to offer ancillary services or receive uncertainty awards for flexible ramping capability during this time. CAISO states that this interim period will allow it to monitor the performance of the aggregate capability constraint to ensure it effectively and reliably clears energy awards and provides energy dispatches in a manner that respects the generating facility's interconnection service rights. For purposes of pricing energy dispatches, CAISO will price co-located resources at their point of delivery to the CAISO controlled grid. CAISO notes that the constraint will not limit or affect the bid amount or bid prices of the co-located resources. CAISO adds that a generating facility whose co-located resources do not comply with CAISO's dispatch instructions will be ineligible to use the aggregate capability constraint, and that if an interconnection customer elects to forego using the aggregate capability constraint, the aggregate maximum capability registered in CAISO's master file for that generating facility may not exceed the generating facility's interconnection service capacity.<sup>4</sup>

---

<sup>2</sup> CAISO Transmittal at 1, 3-4.

<sup>3</sup> *Id.* at 5, 12.

<sup>4</sup> *Id.* at 5-6, 8-9, 13.

5. CAISO states that use of the aggregate capability constraint within an EIM Entity's balancing authority area will be subject to the EIM Entity's written pre-approval,<sup>5</sup> and that the EIM Entity balancing authority will remain responsible for processing any interconnection requests for co-located resources that may exceed a generating facility's interconnection rights at its point of interconnection to the EIM Entity's transmission facilities. CAISO asserts that interconnection rules for these EIM Entities should include proper control technologies to ensure the generating facility does not inject energy above its level of interconnection service.<sup>6</sup>

6. As to hybrid resources, CAISO proposes to establish data requirements for hybrid resources with a wind generation or solar generation component. CAISO proposes to require that these hybrid resources provide the same meteorological data that a wind or solar resource would have to provide CAISO if it were a standalone resource in the CAISO market systems. CAISO states that the data it will receive from scheduling coordinators is necessary for forecasting production at the wind or solar generation component of the hybrid resource, and that this set of proposed Tariff revisions will ensure that CAISO can maintain visibility over intermittent resource production at hybrid resources that include a wind or solar generation component. CAISO explains that this information includes data to support accurate power generation forecasting and the communication of such forecast and meteorological data.<sup>7</sup>

7. CAISO proposes to allow such hybrid resources to receive from CAISO an informational production forecast based on their meteorological data, and to charge scheduling coordinators electing to use the forecast developed by CAISO a forecast fee, similar to the forecast fee all other eligible intermittent resources pay when they elect to use CAISO's forecast. CAISO notes that, if a resource owner does not elect to have CAISO generate a forecast for the wind or solar component of a hybrid resource, the resource owner will still be required to provide CAISO meteorological information as specified in Appendix Q of the Tariff, as well as forecast production information for any wind or solar component of its hybrid resource.<sup>8</sup>

---

<sup>5</sup> CAISO notes that it will establish a process for submitting this written pre-approval through its business practice manuals. *Id.* at 8.

<sup>6</sup> *Id.* at 6.

<sup>7</sup> *Id.* at 10-11.

<sup>8</sup> *Id.* at 11.

8. Finally, CAISO proposes to make a clarifying change to section 4.8.2 of its Tariff to delete the reference to Appendix Q as requiring Eligible Intermittent Resources<sup>9</sup> to provide outage data to CAISO, because Eligible Intermittent Resources provide outage data to CAISO pursuant to section 9 of the CAISO Tariff, and not Appendix Q.<sup>10</sup>

9. Notice of CAISO's filing was published in the *Federal Register*, 85 Fed. Reg. 59,520 (Sept. 22, 2020), with interventions and protests due on or before, October 7, 2020. Timely motions to intervene were filed by Calpine Corporation; Southern California Edison Company; the Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California; American Wind Energy Association; the City of Santa Clara, California; Modesto Irrigation District; San Diego Gas & Electric Company; California Department of Water Resources State Water Project; and Northern California Power Agency. A timely motion to intervene and comment was filed by CAISO's Department of Market Monitoring (DMM).

10. DMM agrees with CAISO that the aggregate capability constraint for co-located resources could allow more efficient dispatch than the current approach and help avoid the potential for stranded capacity.<sup>11</sup> DMM also supports CAISO's proposal with regard to hybrid resources. DMM, however, notes that although the Commission's Order No. 845<sup>12</sup> appears to recognize the need for penalties to ensure that generating facilities do not exceed interconnection service capacity, CAISO has not proposed penalties for co-located resources that generate in excess of established interconnection limits. DMM asserts that, should physical controls to limit the output of co-located resources prove inadequate, penalties of sufficient magnitude could be a valuable complement to physical generation controls, and could also address co-located resources that do not operate under the aggregate capability constraint and choose to operate above the maximum operating levels. DMM also notes that in order to gain complete assessment of hybrid resources, CAISO will need to require additional data, such as the state-of-charge for hybrid resources that contain a storage component. DMM states that such requirements, which will serve as important complements to the meteorological and forecast data requirements of the current proposal and support ex post monitoring and analysis of market

---

<sup>9</sup> Eligible Intermittent Resource is defined in the CAISO Tariff as certain variable energy resource that is subject to specified agreements. CAISO Tariff, App. A.

<sup>10</sup> CAISO Transmittal at 12.

<sup>11</sup> DMM Comments at 4.

<sup>12</sup> *Reform of Generator Interconnection Procedures and Agreements*, Order No. 845, 163 FERC ¶ 61,043, at P 367 (2018), *errata notice*, 167 FERC ¶ 61,123, *order on reh'g*, Order No. 845-A, 166 FERC ¶ 61,137 (2019), *errata notice*, 167 FERC ¶ 61,124, *order on reh'g*, Order No. 845-B, 168 FERC ¶ 61,092 (2019).

performance, are currently under consideration in the ongoing phase of CAISO's hybrid resources initiative.<sup>13</sup>

11. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2020), the timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.

12. The Commission finds that CAISO's proposed Tariff revisions are just and reasonable and not unduly discriminatory or preferential and therefore we accept them, effective December 1, 2020, as requested. As CAISO explains, the proposed Tariff revisions are initial steps toward developing more robust rules and models to integrate co-located resources and hybrid resources and optimize their performance. We find that CAISO's proposed Tariff revisions will provide for modeling the aggregate capabilities of co-located resources, and should enhance efficiency in utilizing their capacities. We also find that the proposed Tariff revisions will ensure that CAISO can maintain visibility for purposes of forecasting resource production at hybrid resources, and thus support forecasting of renewable production of hybrid resources.

13. As to the DMM's comments regarding the need for penalty provisions for co-located resources that generate in excess of interconnection limits, we find that CAISO has proposed a just and reasonable means of ensuring that the co-located resources will not generate in excess of interconnection limits because CAISO will limit any awards or self-schedules for energy in the day-ahead and real-time markets to the generating facility's interconnection service capacity, and require the generating facility to install generator limiter controls so that the combined output of the co-located resources does not exceed the generating facility's interconnection service capacity.<sup>14</sup> Although we accept CAISO's proposal, we encourage CAISO to remain engaged with the DMM and stakeholders on this issue to assess whether the use of penalties should be implemented as a complement to physical generation controls. As to the DMM's comments regarding additional data requirements for hybrid resources that include a wind or solar generation component, such as the state-of-charge requirements, those issues are not

---

<sup>13</sup> DMM Comments at 7-9.

<sup>14</sup> See, e.g., *Cal. Indep. Sys. Operator Corp.*, 128 FERC ¶ 61,282, at P 31 (2009) ("the issue before the Commission is whether the CAISO's proposal is just and reasonable and not whether the proposal is more or less reasonable than the alternatives").

before the Commission in this filing and are therefore outside the scope of this proceeding.

By direction of the Commission

Kimberly D. Bose,  
Secretary.