

184 FERC ¶ 61,209
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Willie L. Phillips, Acting Chairman;
James P. Danly, Allison Clements,
and Mark C. Christie.

California Independent System Operator Corporation Docket No. ER23-2537-000

ORDER ACCEPTING TARIFF REVISIONS

(Issued September 29, 2023)

1. On August 1, 2023, pursuant to section 205 of the Federal Power Act,¹ California Independent System Operator Corporation (CAISO) submitted two sets of revisions to its Open Access Transmission Tariff (Tariff) to implement the second phase of CAISO's energy storage enhancements stakeholder initiative. In this order, we accept the proposed Tariff revisions, effective as of the actual implementation date, as requested, subject to CAISO notifying the Commission of the actual effective date within five business days after the actual implementation date.

I. CAISO Filing

2. CAISO submits two sets of proposed Tariff revisions for storage resources that are co-located with other generating technologies. First, CAISO proposes to extend the use of the aggregate capability constraint (ACC)² to pseudo-tied resources. Second, CAISO proposes to provide biddable parameters that allow storage resources to avoid charging schedules that would exceed the energy output of co-located renewable resources.³ According to CAISO, both enhancements will help storage resources manage their resources while providing CAISO more accurate information about the resources'

¹ 16 U.S.C. § 824d.

² Co-located resources use ACCs to optimize bidding while maintaining safety and reliability. ACCs ensure that co-located resources' aggregate market awards do not exceed the interconnection service capacity for the site. Transmittal at 3.

³ *Id.* at 1.

capabilities.⁴ CAISO requests that the Commission issue an order by October 1, 2023 accepting the proposed Tariff revisions, to be effective no later than December 1, 2023. CAISO states that it intends to implement these Tariff revisions in its fall software release, currently scheduled for October 1, 2023.⁵

A. Extending ACC Technology to Pseudo-Tied Resources

3. CAISO states that it uses the generic term “mixed-fuel resource” to refer to any generating facility with components that use different fuel sources or technologies. CAISO explains that developers of mixed-fuel resources may choose to participate as either a hybrid resource or as co-located resources. CAISO states that a hybrid resource refers to a mixed-fuel resource with a single Resource ID and a single bid curve for all components, which receives one dispatch instruction from CAISO. A hybrid resource self-optimizes the components of its resource to meet CAISO dispatch instructions.⁶ According to CAISO, co-located resources operate as separate and independent resources, have separate Resource IDs, submit separate bids, and receive separate dispatch instructions from CAISO.⁷ CAISO states that, unlike hybrid resources, co-located resources use ACCs that optimize the bidding of co-located resources while maintaining safety and reliability and ensuring that co-located resources’ aggregate market awards do not exceed the interconnection service capacity for the site.⁸ CAISO states that ACCs also allow co-located resources to manage the sum of their maximum operating level with no additional interconnection upgrades or stranding generating capacity.⁹

4. According to CAISO, ACCs have proven to be effective since the Commission approved their use in 2020,¹⁰ but initially CAISO did not have the technology to extend

⁴ *Id.* CAISO explains that the two sets of proposed Tariff revisions are severable but were filed together because they result from the energy storage enhancement initiative and because CAISO intends to implement them simultaneously. *Id.* at 1 n.2.

⁵ *Id.* at 1-2, 7. CAISO represents that it will notify the Commission of the actual effective date of these Tariff revisions. *Id.* at 7 n.28.

⁶ *Id.* at 2-3.

⁷ *Id.* at 3.

⁸ *Id.*

⁹ *Id.*

¹⁰ *Cal. Indep. Sys. Operator Corp.*, 173 FERC ¶ 61,146 (2020).

the use of ACCs to pseudo-tied resources.¹¹ Also, CAISO explains that its current Tariff expressly prohibits the use of ACCs by pseudo-tied co-located resources.¹²

5. CAISO states that having gained experience with ACCs for internal co-located resources, it proposes to extend ACC functionality to pseudo-tied resources. Therefore, in this filing, CAISO proposes to revise Tariff section 27.13 (Aggregate Capability Constraint) to extend the use of ACCs to pseudo-tied resources, which CAISO asserts will allow more resources to take advantage of the benefits of ACCs and reduce the barriers for co-located resources to pseudo-tie into CAISO.¹³ CAISO also explains that its stakeholders identified its proposed Tariff revisions as critical to the success of mixed-fuel resource configurations, providing more flexibility for resources to choose the co-located model and allowing each resource to be optimized for the grid.¹⁴

B. Establishing a Charging Constraint

6. CAISO explains that local and federal tax incentives for renewable resources limit the tax incentives a developer can receive if it charges the storage resources from sources external to the co-located renewable resource, also known as “grid-charging.”¹⁵ CAISO asserts that storage resources try to manage their grid-charging constraints by balancing bids to charge against their forecasts and schedules for their co-located renewable resources.¹⁶ However, CAISO explains that this balancing can be challenging for scheduling coordinators and for CAISO if resources try to avoid grid-charging in order to maximize tax incentives.¹⁷

¹¹ CAISO states that pseudo-tied resources are resources physically outside of the CAISO balancing authority area but modeled within it as if they were internal resources. CAISO states that pseudo-tied resources must demonstrate reliable transmission rights to deliver their energy to CAISO. Transmittal at 3.

¹² *Id.* at 4 n.13.

¹³ *Id.* at 4.

¹⁴ *Id.* at 7.

¹⁵ *Id.* at 4. CAISO explains that “grid-charging” actually “refers to charging beyond the output of the co-located renewable resource, which is the relevant question for tax purposes.” *Id.* at 4 n.17.

¹⁶ *Id.* at 5.

¹⁷ CAISO also explains that while resources could avoid grid-charging by switching to the hybrid resource model, the majority of developers and load-serving

7. CAISO proposes to add the definition of “Charging Constraint” to Appendix A of its Tariff, and states that using this constraint can help co-located storage resources avoid grid-charging. CAISO states that a Charging Constraint is defined as “a constraint that reflects a storage resource’s election not to charge beyond the output of its co-located Variable Energy Resource.”¹⁸ CAISO states that the Charging Constraint will be a biddable parameter that affects the potential range of dispatch for the hours that the scheduling coordinator designates with its bids.

8. CAISO also explains that when a scheduling coordinator for a co-located storage resource includes a Charging Constraint in its bid, CAISO will not issue day-ahead schedules for energy less than the negative value of the co-located renewable resource’s day-ahead schedules, or real-time market schedules for energy that are less than the negative value of the co-located renewable resources’ dispatch operating targets, in the same operating intervals in the designated hour.¹⁹ CAISO asserts that the Charging Constraint will mitigate the risk of grid-charging for co-located storage resources that seek to avoid it. CAISO states that its proposed Tariff revisions are consistent with federal and local tax laws and promote public policy.

9. Further, CAISO proposes to revise Tariff section 30.5.6.3 to provide that a Charging Constraint will not apply in operating intervals where the storage resource receives an award to provide regulation. CAISO states that where a storage resource bids both to provide energy with a Charging Constraint and to provide regulation, and the optimization gives that resource a regulation award, CAISO will not apply the Charging Constraint. CAISO states that depending on storage resources following their regulation awards for reliability and requiring the optimization software to balance the storage resources’ real-time regulation signal—based on the frequency of the grid at that moment—against the output of the co-located renewable resources, would be too complex and risk reliability. CAISO further explains that any exceptional dispatches to charge would also take precedence over a Charging Constraint.²⁰

entities strongly prefer (or even require) the co-located model because they can optimize, meter, and settle each resource separately, or even split the resources into several independently modeled resources to accommodate multiple off-takers. CAISO explains that the creation of a Charging Constraint will provide more flexibility for storage resources to elect either model. *Id.*

¹⁸ CAISO, CAISO eTariff, app. A (Definitions) (0.0.0), Charging Constraint (0.0.0).

¹⁹ Transmittal at 5.

²⁰ *Id.* at 6.

10. CAISO states that co-located resources can use more than one ACC at a single site, with sub-ACCs controlling the maximum output of a subset of onsite resources, then feeding to a master ACC. CAISO explains that because the interconnection customer has a contractual relationship with the onsite resources, the interconnection customer currently is the entity responsible for arranging ACCs with CAISO. CAISO proposes that only a single storage Resource ID at the ACC may submit Charging Constraints. However, CAISO states that the interconnection customer will continue to be the entity that coordinates ACCs among resources and will designate the scheduling coordinator and storage resource that may submit Charging Constraints for each ACC.²¹

11. Further, CAISO states that where multiple resources, owners, and operators are all located at one site, they already have existing agreements with each other for the interconnection, and that CAISO has a contractual relationship with the interconnection customer through the generator interconnection agreement. CAISO asserts that its proposal takes advantage of these existing relationships, thereby avoiding any resource making elections for the other co-located resources without contract parity.²²

12. CAISO proposes to revise section 34.13.3 of its Tariff to expressly allow co-located storage resources to deviate from any dispatch instructions that would conflict with their Charging Constraints, with the exceptions, as previously noted, of regulation awards and exceptional dispatches.²³ CAISO states that this type of conflict would generally occur when the renewable resource's real-time output is slightly less than forecasted, such as due to unexpected cloud cover. CAISO states that the storage resources would still be subject to imbalance energy charges for the deviation but would not be subject to the other penalties in the CAISO Tariff.²⁴

13. CAISO states that the proposed Tariff revisions will close the gap between the functionality of the hybrid resource model and the co-located resources model with grid-charging. CAISO states that this will greatly improve the accuracy of dispatch

²¹ *Id.*

²² *Id.*

²³ *Id.* at 6 & n.26.

²⁴ *Id.* at 7 (citing CAISO, CAISO eTariff, § 34 (Real-Time Market) (7.0.0); *id.*, § 34.13 (Means Of Dispatch Communication) (1.0.0); *id.*, § 34.13.3 (Co-located Resources and Dispatch Instructions) (1.0.0)).

instructions to co-located storage resources and reduce their incentives to deviate unexpectedly from any awards that would result in grid-charging.²⁵

II. Notice of Filing, Responsive Pleadings, and CAISO's Answer

14. Notice of CAISO's filing was published in the *Federal Register*, 88 Fed. Reg. 52,158 (Aug. 7, 2023), with interventions and comments due on or before August 22, 2023. Calpine Corporation, the City of Santa Clara, California, Boston Energy Trading and Marketing LLC, Pacific Gas and Electric Company, the Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California, and the Northern California Power Agency filed timely motions to intervene. The Department of Market Monitoring of the California Independent System Operator Corporation (DMM), Southern California Edison Company (SoCal Edison), and Elevate Renewables F7, LLC (Elevate Renewables) filed timely motions to intervene and comment. On September 6, 2023, CAISO filed an answer.

A. Comments

15. DMM filed comments in support of each of CAISO's proposed Tariff revisions as enhancements that will promote the continued growth of mixed-fuel resources. DMM supports extending ACC functionality to co-located pseudo-tied resources.²⁶ Further, DMM states that it supports CAISO's proposed Charging Constraint, but it also asserts that a significantly more efficient approach would be to develop a model for incorporating investment tax credits into bids as costs or constraints. Finally, DMM states that it supports CAISO's proposal to prevent the use of the proposed Charging Constraint for resources providing regulation.²⁷

16. Elevate Renewables also filed comments in support of CAISO's proposed Tariff revisions, which Elevate Renewables asserts will narrow the gap between the functionality of the various mixed-fuel resource models by allowing co-located storage resources to limit their charging from the grid so as not to exceed the output of their co-located generation resources.²⁸ Elevate Renewables agrees with comments made during the stakeholder process that a mechanism is needed to allow co-located resources to

²⁵ *Id.* at 5.

²⁶ DMM Comments at 4.

²⁷ *Id.* at 2-3.

²⁸ Elevate Renewables Comments at 1.

avoid the risk of unexpected grid-charging, which can have negative federal and local tax ramifications.²⁹

17. SoCal Edison explains that it generally supports the proposed Tariff revisions. However, it seeks clarification regarding whether the proposed Tariff revisions authorize CAISO to prevent co-located storage resources providing ancillary services other than regulation, such as spinning and non-spinning reserves, from deviating from CAISO's dispatch instructions pursuant to a Charging Constraint.³⁰ SoCal Edison states that proposed section 30.5.6.3 clarifies that a co-located storage resource may not use its Charging Constraint to prevent grid-charging when it is providing regulation as an ancillary service, but CAISO's proposed Tariff revisions include no such provision for other ancillary services. SoCal Edison explains that in earlier drafts of the Tariff language shared with stakeholders, CAISO made this non-deviation policy for all ancillary services explicit under Tariff sections 30.5.6.3 and 34.13.3.³¹ Because this language was deleted from the language of the proposed Tariff revisions as submitted to the Commission in this filing, SoCal Edison requests that CAISO provide clarity. SoCal Edison explains that should CAISO's policy change, SoCal Edison and its contractors would need to re-program resources to effectuate this change and ongoing operational costs would increase.³²

18. Additionally, SoCal Edison requests that CAISO clarify how it will enforce the prohibition on deviation from dispatch instructions by storage resources providing ancillary services.³³

B. CAISO Answer

19. In response to SoCal Edison's request that CAISO clarify how it will enforce the prohibition on deviating from dispatch instructions for resources providing ancillary services, CAISO explains that the optimization will only use Charging Constraints in the absence of day-ahead regulation awards or exceptional dispatches.³⁴ However, if the storage resource receives a regulation award or exceptional dispatch, the optimization

²⁹ *Id.* at 4-5.

³⁰ SoCal Edison Comments at 3.

³¹ *Id.* at 4.

³² *Id.*

³³ *Id.* at 5.

³⁴ CAISO Answer at 3.

will disregard the scheduling coordinator's submission of Charging Constraints and use its Master File operating range instead.³⁵ CAISO further explains that in addition to its proposed Tariff revisions, implementation and software documentation is available on the CAISO website along with market simulation scenarios, and associated training presentations.³⁶

20. In response to SoCal Edison's requests for clarification about CAISO's proposed removal of a provision of Tariff section 34.13.3 concerning co-located resources that are Non-Generator Resources, CAISO explains that it included a description of this change in its transmittal letter.³⁷ According to CAISO, it struck this provision because it is overly broad and is now limited to regulation awards. CAISO states that this clarification avoids conflicting exceptions.³⁸

21. CAISO also explains that co-located storage resources may deviate from dispatch instruction in two limited situations. First, they may deviate up to avoid grid-charging in contravention of their Charging Constraint, unless they have a regulation award or exceptional dispatch. CAISO asserts that its optimization should avoid the need to deviate in the first place, but it included the express exception out of an abundance of caution.³⁹ Second, as established in the CAISO Tariff since 2021,⁴⁰ storage resources may deviate down due to weather conditions that would raise the resources' combined output beyond their interconnection capacity, or otherwise threaten reliability or safety.⁴¹

22. Finally, CAISO notes that while SoCal Edison refers to various CAISO policy papers and draft Tariff revisions considered by stakeholders, SoCal Edison does not allege that CAISO's proposed Tariff revisions are not just and reasonable. CAISO

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.* (quoting deleted sentence: "A Co-located Resource that is a Non-Generator Resource may not deviate from a Dispatch Instruction pursuant to this section if it is providing Ancillary Services in the same Dispatch Interval.").

³⁸ *Id.* at 4 (quoting Transmittal at 6, n.26).

³⁹ *Id.*

⁴⁰ *Cal. Indep. Sys. Operator Corp.*, Docket No. ER21-843-000 (Mar. 9, 2021) (delegated order); CAISO, CAISO eTariff, § 34.13.3 (Co-located Resources and Dispatch Instructions) (0.0.0).

⁴¹ *Id.*

represents that as storage resources and co-located configurations proliferate rapidly, CAISO will continue to monitor their performance and revise its Tariff to optimize market performance and maintain reliability.⁴²

III. Discussion

A. Procedural Matters

23. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 382.214(d) (2022), the timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.

24. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2022) prohibits an answer to a protest unless otherwise ordered by the decisional authority. We will accept CAISO's answer because it has provided information that assisted us in our decision-making process.

B. Substantive Matters

25. We find that CAISO's proposed Tariff revisions are just and reasonable and not unduly discriminatory or preferential, and therefore we accept them effective as of the actual implementation date, as requested, subject to CAISO notifying the Commission of the actual effective date within five business days after the actual implementation date.⁴³ We agree with CAISO that extending the use of ACCs to pseudo-tied co-located resources will reduce the barriers to these resources' participation in the CAISO markets. Further, CAISO's proposal will allow pseudo-tied co-located storage resources to better optimize their operations while providing CAISO more accurate information about the resources' capabilities. We also find that establishing the Charging Constraint bidding parameter improves the ability of co-located resources to avoid grid-charging and improves the accuracy of dispatch instructions to co-located storage resources. Moreover, by allowing co-located resources to avoid grid-charging, the proposed Tariff revisions will enhance the ability of co-located resource owners to manage grid-charging. In response to DMM's proposed alternative and SoCal Edison's request for clarification about CAISO's proposed removal of a provision of Tariff section 34.13.3 concerning co-located resources that are Non-Generator Resources, because we find CAISO's proposed

⁴² *Id.* at 5.

⁴³ CAISO must submit its subsequent filing to confirm the actual effective date for the Tariff revisions using Type of Filing Code 150 - Report.

Tariff revisions to be just and reasonable, we need not consider these alternative proposals.⁴⁴

The Commission orders:

(A) CAISO's proposed Tariff revisions are hereby accepted, to become effective on CAISO's actual implementation date, as requested, as discussed in the body of this order.

(B) CAISO is hereby directed to notify the Commission of the actual effective date of the Tariff revisions within five business days after the actual implementation date in an eTariff submittal using Type of Filing Code 150 – Report.

By the Commission.

(S E A L)

Kimberly D. Bose,
Secretary.

⁴⁴ For a rate design proposal to be acceptable, it need be neither perfect nor even the most “desirable;” it need only be reasonable. *See New England Power Co.*, 52 FERC ¶ 61,090, at 61,336 (1990), *reh'g denied*, 54 FERC ¶ 61,055, *aff'd*, *Town of Norwood v. FERC*, 962 F.2d 20 (D.C. Cir. 1992); *City of Bethany v. FERC*, 727 F.2d 1131, 1136 (D.C. Cir. 1984) *cert. denied*, 469 U.S. 917 (1984) (utility need establish that its proposed rate design is reasonable, not that it is superior to alternatives); *OXY USA, Inc. v. FERC*, 64 F.3d 679, 692 (D.C. Cir. 1995) (“[T]he Commission may approve the methodology proposed in the settlement agreement if it is ‘just and reasonable’; it need not be the only reasonable methodology or even the most accurate.”).