

August 15, 2022

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Re: California Independent System Operator Corporation
Compliance Filing
Motion to Amend Effective Date
Docket No. ER21-2455-___**

Dear Secretary Bose:

The California Independent System Operator Corporation (“CAISO”) submits this filing to comply with the Commission order issued in this proceeding on June 17, 2022 (“Compliance Order”),¹ in response to the CAISO’s initial filing to comply with Order No. 2222 on distributed energy resource (“DER”) aggregations (“DERAs”).² The Commission’s Compliance Order generally accepts the CAISO’s initial compliance filing, and directs the CAISO to submit a further compliance filing with certain incremental tariff revisions. The CAISO addresses these revisions below, and requests that the Commission find this compliance filing satisfies the directives in the Compliance Order and Order No. 2222.³

I. Small Utility Opt-in

The Compliance Order finds that the CAISO generally satisfies Order No. 2222’s small utility opt-in requirement, but directs the CAISO tariff to make three corrections, principally to conform to changes the Commission made in Order No. 2222-B: (1) to revise Article 4.14 of the Distributed Energy Resource

¹ *California Independent System Operator Corp.*, 179 FERC ¶ 61,197 (2022) (“Compliance Order”). Capitalized terms not otherwise defined herein have the meanings set forth in the CAISO tariff, and references to specific sections, articles, and appendices are references to sections, articles, and appendices in the current CAISO tariff as revised or proposed in this filing, unless otherwise indicated.

² *Participation of Distributed Energy Res. Aggregations in Mkts. Operated by Reg’l Transmission Orgs. & Indep. Sys. Operators*, Order No. 2222, 172 FERC ¶ 61,247 (2020), *order on reh’g*, Order No. 2222-A, 174 FERC ¶ 61,197, *order on reh’g*, Order No. 2222-B, 175 FERC ¶ 61,227 (2021).

³ Consistent with its original compliance filing, the CAISO maintains that “everything will be alright if we just keep . . . 22, 22.” TAYLOR SWIFT, 22 (Taylor’s Version) (Republic Records 2021).

Provider (“DERP”) Agreement (“DERPA”) to specify the DERs are customers in the small utilities; (2) to explain the process by which a DERP must notify CAISO of a change in the local regulatory authority’s opt-in determination; and (3) to remove language requiring DERPs in large utilities to certify their participation is not prohibited.⁴ To comply, the CAISO proposes to revise Article 4.14 of the DERPA precisely as prescribed by the Compliance Order. This satisfies the first and third directives regarding small utility opt-in provisions. To satisfy the second directive, the CAISO proposes to include an additional provision in Article 4.14 stating, “Distributed Energy Resource Providers that met this requirement previously must notify the CAISO immediately if the Local Regulatory Authority prohibits participation.” This provision “clarifies the Distributed Energy Resource Provider’s responsibilities associated with changes to a [local regulatory authority’s] opt-in determination,” as prescribed by the Compliance Order.

II. Eligibility to Participate in RTO/ISO Markets through a DERA

The Compliance Order finds that the CAISO complies with the requirement to establish DERAs as a type of market participant.⁵ However, the Commission disagrees with the CAISO that “allowing Distributed Energy Resource Aggregations to consist of demand response resources alone would not provide developers with any new market opportunities but would allow them to choose among Tariff requirements despite having no underlying difference in resource characteristics.”⁶ The Commission directs the CAISO to “(1) revise[] its Distributed Energy Resource Aggregation model to allow a homogeneous aggregation of Distributed Curtailment Resources to participate; or (2) demonstrate[] that its existing demand response models are compliant with Order No. 2222.”⁷

The CAISO proposes to comply via the first option. Previously, the CAISO proposed unique tariff provisions for heterogeneous DERAs that included traditional energy-injecting DERs and “Distributed Curtailment Resources,” which provide demand response energy by curtailing expected load. These heterogeneous DERAs would have been subject to the tariff requirements of Order No. 2222 and Order Nos. 719 and 745. The CAISO also included tariff provisions requiring that heterogeneous DERAs include both distributed curtailment resources and DERs that would inject energy, thus making the DERA “heterogeneous.” Consistent with the Compliance Order, the CAISO now proposes simply to remove the relevant “heterogeneous” language and the

⁴ Compliance Order at PP 26-29.

⁵ *Id.* at P 47.

⁶ *Id.* at P 49.

⁷ *Id.*

requirement these DERAs be heterogeneous.⁸ Instead, the CAISO has revised these provisions to refer to DERAs that include any—or consist entirely of—distributed curtailment resources.⁹ This will provide DERPs with two DERA models, each with a corresponding set of tariff provisions: (1) a homogenous DERA model for energy-injecting DERs subject to Order No. 2222 only, and (2) a model for heterogeneous DERAs or homogenous demand-curtailling DERAs subject to Order No. 2222 and Order Nos. 719 and 745. The CAISO believes this simple change complies with Order No. 2222 and the Compliance Order, minimizes the costs and development timeline of additional unnecessary models, and avoids the regulatory and technological challenges with bringing the CAISO’s existing demand response models into compliance with Order No. 2222 unnecessarily.

III. Double Counting of Services

The Compliance Order finds that the CAISO’s tariff provisions generally comply with Order No. 2222’s double counting requirements, enabling DERAs to provide multiple wholesale and retail services.¹⁰ However, the Compliance Order directs the CAISO to change the wording of its double counting revisions slightly to clarify the DERA may not receive wholesale compensation where it already receives retail compensation for the same.¹¹ The CAISO thus proposed to revise Section 4.17.3(g)¹² exactly as the Compliance Order prescribes.

Additionally, the Compliance Order directs the CAISO to remove language regarding net energy metering from the CAISO’s current, approved language in section 4.17.3(d) and criterion (3) in proposed tariff section 4.17.4. The Commission finds these provisions may operate as an opt-in for local regulatory authorities, and thus conflict with Order No. 2222.¹³ The Commission states that “DERs participating in net energy metering programs arguably can also provide distinctly different services (*e.g.*, ancillary services) without constituting a double

⁸ Proposed Sections 4.17.3(h) (previously 4.17.3(i)) (removing “heterogeneous” and “Aggregations of only Distributed Curtailment Resources without other Distributed Energy Resources that inject Energy must participate as Proxy Demand Resources or Reliability Demand Response Resources”); 4.17.7; 11.6.5.1; and 30.5.2.6 of the CAISO tariff; and “Distributed Curtailment Resource,” Appendix A to the CAISO tariff.

⁹ *Id.*

¹⁰ Compliance Order at P 103 *et seq.*

¹¹ *Id.* at P 107.

¹² The Compliance Order directs the CAISO to revise subsection (h), but because the CAISO also proposes to remove subsection (d), this subsection has become subsection (g).

¹³ *Id.* at PP 108-9.

counting concern.” The CAISO proposes to strike the two tariff provisions, as the Compliance Order prescribes.

IV. Minimum and Maximum Capacity Requirements for DERs Participating in an Aggregation

The Compliance Order finds that the CAISO’s DERA size requirements comply with Order No. 2222; however, the Commission disagrees with the CAISO that ancillary service requirements are out of Order No. 2222’s scope.¹⁴ The Commission requires the CAISO to lower its reserve and regulation minimum capacity requirements from 500 kW to 100 kW for DERAs. The CAISO proposes to do so.¹⁵

V. Metering and Telemetry System Requirements

The Compliance Order finds that the CAISO’s metering requirements comply with Order No. 2222,¹⁶ and that the CAISO’s telemetry requirements generally comply with Order No. 2222, with the exceptions discussed here.¹⁷ The Compliance Order states the CAISO failed to explain why its telemetry requirements do not impose “unnecessary burdens on distributed energy resource aggregators” and “do not pose an unnecessary and undue barrier to individual distributed energy resources joining a distributed energy resource aggregation due to the lack of specificity in CAISO’s Tariff.”¹⁸ Specifically, the Compliance Order states “the Tariff does not specify the methods available to an aggregator for providing telemetry to CAISO without requiring telemetry from all of the individual DERs in the aggregation.”¹⁹ Likewise, “neither the Tariff nor the relevant business practice manual provide sufficient detail regarding how an aggregator could provide this constant telemetry signal without requiring the individual Distributed Energy Resources to invest in telemetry equipment.”²⁰ The Compliance Order therefore directs the CAISO to “modify[] its Tariff to specify the methods available to an aggregator for providing telemetry to CAISO without requiring telemetry from all of the individual Distributed Energy Resources in the aggregation.”²¹

¹⁴ Compliance Order at P 120.

¹⁵ Proposed sections A.1.1.1, B.1.1, and C.1.1 of Appendix K to the CAISO tariff.

¹⁶ Compliance Order at P 170.

¹⁷ *Id.* at P 172.

¹⁸ *Id.* (internal quotations omitted).

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.* at P 173.

As an initial matter, the CAISO clarifies that requiring telemetry from large resources and resources electing to provide ancillary services is neither unnecessary nor undue. The CAISO requires all supply resources over 10 MW or electing to provide ancillary services to provide telemetry because the CAISO cannot maintain reliability without telemetry. The CAISO tariff provision for resources to provide telemetry is, in fact, titled “Actions for Maintaining Reliability of CAISO Controlled Grid.”²² It states that participating generators must provide:

the provision of communications, telemetry and direct control requirements, including the establishment of a direct communication link from the control room of the Generator to the CAISO in a manner that ensures that the CAISO will have the ability, consistent with this CAISO Tariff, to direct the operations of the Generator as necessary to maintain the reliability of the CAISO Controlled Grid.²³

Without compliance with this provision, suppliers would be invisible to the CAISO, making the real-time monitoring of line flows, thermal limits, contingencies, and emergencies impossible. Without telemetry, the CAISO also would lack the ability to verify resources that elected to provide ancillary services actually do so, depriving the CAISO of visibility into whether those resources can adequately respond to contingencies and emergencies, and whether the CAISO complies with real-time reliability standards.

Besides risking reliability, removing telemetry requirements for DERAs also would be unduly preferential treatment under the Federal Power Act. Neither conventional DERs nor demand response aggregations²⁴ are exempt from telemetry requirements. There is no evidentiary basis in Order No. 2222 that DERAs cannot meet minimum telemetry requirements. The Commission cannot rely on a single protest by one party to a compliance proceeding as an evidentiary record.²⁵ The CAISO is unaware of any instance where actual resource owners and aggregators have simply declared they cannot meet telemetry requirements forever. As the CAISO has explained in this proceeding, demand response aggregations are subject to the same telemetry requirements as DERAs, and aggregators have never presented those telemetry requirements as an obstacle to participation in the energy or ancillary services markets. The CAISO has over 2,000 MW of demand response participating in its markets

²² Section 7.6.1 of the CAISO tariff.

²³ *Id.* As noted in the CAISO’s compliance filing, generators less than 10 MW are exempt unless they elect to provide ancillary services.

²⁴ *I.e.*, proxy demand resources and reliability demand response resources.

²⁵ Protest of CPower, Docket No. ER21-2455 (Aug. 9, 2021).

today. Conventional participating generators likewise poll multiple sub-meters to provide the CAISO with telemetry for a single resource, just as a DERP would for a DERA. To provide telemetry of the total response of the resource, participating generators generally use, read, and calculate a value based on meters reading each onsite generating unit's output, meters reading the onsite auxiliary load, and calculating any transformer losses.²⁶

Supply resources provide real-time telemetry to the CAISO's Energy Management System ("EMS") through a Remote Intelligence Gateway ("RIG"), which is a protocol converter and security gateway to the CAISO's EMS;²⁷ however, the CAISO's telemetry requirements allow supply resource to provide telemetry via any DNP3-capable²⁸ device that meets CAISO accuracy requirements for real-time data and has the ability to monitor processes, provide advanced local control intelligence, and communicate directly to the CAISO's EMS.²⁹ These requirements purposely conform to national IEEE standards so manufactures and resource owners do not face any unique technological requirements from the CAISO, and can rely on readily available hardware and software. The CAISO does not require supply resources to use any specific vendor, system, or RIG engineering firm.³⁰ Nor does the CAISO set forth specific methods for reading or statistically sampling meters.³¹

Order No. 2222 requires ISOs and RTOs "to allow distributed energy resources to provide all services that they are technically capable of providing through aggregation."³² Consistent with Order No. 841, Order No. 2222 clarifies that "technically capable of providing a service" means "meeting all of the technical, operational, and/or performance requirements that are necessary to reliably provide that service."³³ If DERAs are incapable of meeting the CAISO's telemetry requirements, they do not meet the technical, operational, and

²⁶ See, e.g., Section 14.1 of the CAISO Business Practice Manual for Direct Telemetry, available at <https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Direct%20Telemetry>.

²⁷ See *id.* at Section 2.2.1.

²⁸ DNP3 (Distributed Network Protocol, Version 3) refers to IEEE Standard 1815-2012 for electric power systems communications.

²⁹ *Id.* at Section 2.2.

³⁰ *Id.* at Section 2.2.3.

³¹ *Id.* at Section 12.1.1.

³² Compliance Order at P 30 (citing Order No. 2222 at P 130).

³³ *Id.* at P 30 n. 50 (quoting *Elec. Storage Participation in Mkt Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 841, 162 FERC ¶ 61,127, at P 78 (2018), *order on reh'g*, Order No. 841-A, 167 FERC ¶ 61,154 (2019), *aff'd sub nom. Nat'l Ass'n of Regul. Util. Comm'rs v. FERC*, 964 F.3d 1177 (D.C. Cir. 2020)).

performance requirements necessary to reliably provide that service, and are therefore not technically capable of providing a service. Here that is particularly true because the “service” consists of *electing* to participate as a DERA 10 MW or greater or *electing* to provide ancillary services.³⁴ Unlike for conventional supply resources, the physical characteristics of the DERs do not constrain a DERP’s elections.³⁵ A DERP with an 18 MW DERA could simply elect to split the DERA into two separate 9 MW DERAs, especially given the CAISO’s accommodating locational requirements for DERAs “that are as geographically broad as technically feasible.”³⁶ Likewise, nothing requires any DERA of any size to provide ancillary services *in lieu* of energy, demand response energy, and capacity.

The Compliance Order affirms that ISOs and RTOs may require telemetry from DERAs, but directs the CAISO to “specify the methods available to an aggregator for providing telemetry to CAISO without requiring telemetry from all of the individual DERs in the aggregation.”³⁷ The CAISO proposes to revise its tariff to memorialize that DERPs can acquire the data from their DERs to provide the CAISO with accurate telemetry by any means, including calculation, and DERPs need not have direct telemetry on each DER.³⁸ This is consistent with how the CAISO requires telemetry from generators and demand response aggregations, which can provide load data the aggregator acquires directly or indirectly, including by calculation.³⁹ Beyond this level of detail, explaining how to comply with minimum telemetry requirements is beyond the purview or expertise of the CAISO. Just as CAISO documents do not explain how generators can produce energy and transmit it to load, it is not the CAISO’s role to explain how supply resources meet telemetry requirements. The CAISO’s role is to explain what it needs to maintain efficient markets and reliability, and set forth the terms and conditions of service. Moreover, the CAISO does not have experience with DERAs. Once it does, the CAISO intends to provide examples in its business

³⁴ Section 7.6.1 of the CAISO tariff. The 10 MW requirement is based on the CAISO’s operational experience for maintaining reliability. A large resource without telemetry could exacerbate reliability issues because the CAISO will only see the impact of the resource within line flows or at substations, requiring operators to investigate which resource in the area is deviating from its market dispatch or otherwise impacting the grid. Smaller resources are less likely to have as significant and immediate of an impact on the grid. The CAISO also notes that resources under 10 MW are *eligible* for an exemption to the telemetry requirements, but many eligible resources still provide telemetry because they understand the CAISO’s reliability needs.

³⁵ DERs within a DERA cannot exceed 1 MW. Compliance Order at P 127-28.

³⁶ Compliance Order at P 17.

³⁷ *Id.* at P 173.

³⁸ Proposed Section 4.17.5.2 of the CAISO tariff.

³⁹ See Section 12.1.1 of the CAISO Business Practice Manual for Direct Telemetry, *available at* <https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Direct%20Telemetry>.

practice manuals detailing how DERAs have met telemetry requirements. This is how the CAISO has allowed new technologies to meet requirements in the past: The CAISO provides general, flexible requirements to maintain reliability, and participants identify solutions that can meet those requirements. Doing otherwise constrains participants and limits their options.

VI. Role of Distribution Utilities

The Compliance Order finds that the CAISO tariff generally complies with Order No. 2222's myriad requirements to coordinate with distribution utilities.⁴⁰ As discussed above, however, the Compliance Order directs the CAISO to remove its provisions regarding net energy metering.⁴¹ The Commission also notes that "there are sufficient differences among regions to warrant flexibility in determining specific standardized criteria," and the CAISO lacks the ability "to identify and review distribution utility reliability criteria."⁴² The CAISO "does not have the expertise and jurisdiction to set distribution utility safety and reliability criteria."⁴³ The Commission thus found that the CAISO generally complies with Order No. 2222's requirements to coordinate with utility distribution companies to prevent DERAs from threatening the safety and reliability of the distribution grids. However, the Commission directs the CAISO to clarify that the utility distribution grid's review "that the scope of the distribution utility review of distribution system reliability impacts is limited to any incremental impacts from a resource's participation in a distributed energy resource aggregation that were not previously considered by the distribution utility during the interconnection study process for that resource."⁴⁴ The CAISO proposes to do so by including a provision expressly clarifying that safety and reliability review "must be limited to those impacts resulting from the aggregation, exclusive of issues previously considered during the interconnection study process for each Distributed Energy Resource."⁴⁵

The Compliance Order also directs the CAISO to clarify that it will share all information the utility distribution company provides the CAISO in its review, and

⁴⁰ Compliance Order at PP 200-03.

⁴¹ *Id.* at P 205. See Section III, above.

⁴² *Id.* at P 207.

⁴³ *Id.*

⁴⁴ *Id.* at P 208.

⁴⁵ Proposed Section 4.17.4 of the CAISO tariff. As a practical matter, the CAISO notes that the safety and reliability of any grid is paramount, and nothing in the CAISO tariff would preclude utility distribution companies from availing themselves of the rights and obligations established in their own distribution interconnection tariffs and agreements.

not only where the utility distribution company raises concerns with the DERA.⁴⁶ The CAISO thus proposes to strike the conditional clause, “If the Utility Distribution Company or Metered Subsystem raises concerns,” and simply state the CAISO “will provide the Distributed Energy Resource Provider with the Utility Distribution Company or Metered Subsystem’s written comments.”⁴⁷ Similarly, the Compliance Order takes issue with the CAISO “conferring” with utility distribution companies regarding the DERA criteria.⁴⁸ The Compliance Order prescribes that the CAISO revise its tariff to state the CAISO will “share with distribution utilities any necessary information and data collected about the individual Distributed Energy Resources participating in a Distributed Energy Resource Aggregation.”⁴⁹ The CAISO proposes to revise its tariff accordingly.⁵⁰

Although the Commission agrees that disputes in the utility distribution review process may be jurisdictional to local regulatory authorities and resolved therein,⁵¹ the Compliance Order takes issue with the CAISO’s current, approved tariff language that refers disputes to local regulatory authorities and not the CAISO’s dispute resolution procedures. The Commission thus directs the CAISO to allow parties to use the CAISO’s dispute resolution procedures to resolve any issues related to the distribution utility review process that “fall within CAISO’s authority.”⁵² The CAISO thus proposes to remove its prohibition on using the CAISO’s dispute resolution provisions for utility distribution company review disputes, and instead allow parties to resolve disputes with the Governmental Authority for the utility distribution company or metered subsystem or the CAISO’s alternative dispute resolution procedures, as applicable to the dispute.⁵³

VII. Ongoing Operational Coordination

The Compliance Order finds that the CAISO generally satisfies Order No. 2222’s requirements regarding operational coordination, outages, and non-

⁴⁶ Compliance Order at P 209.

⁴⁷ Proposed Section 4.17.4 of the CAISO tariff.

⁴⁸ Compliance Order at P 210.

⁴⁹ *Id.*

⁵⁰ Proposed Section 4.17.4 of the CAISO tariff.

⁵¹ Compliance Order at P 212 (“We do not expect CAISO to resolve issues that are beyond its authority”).

⁵² *Id.*

⁵³ Proposed Section 4.17.4 of the CAISO tariff (incorporating by reference Section 13 of the CAISO tariff, which sets forth the CAISO’s dispute resolution procedures, including good faith negotiation, mediation, and arbitration options).

performance penalties.⁵⁴ Although the Commission finds that the CAISO sufficiently addresses ongoing coordination between: (1) the CAISO and the DERP; and (2) the CAISO and the utility distribution company, the Compliance Order directs the CAISO to address data flows and communication between the DERP and the utility distribution company. The Compliance Order states, “it is unclear whether CAISO’s reference to utility distribution companies’ limitations or operating orders only include planned or forced outages, or a broader range of Utility Distribution Companies’ potential actions such as limiting injections into the grid for a particular time.”⁵⁵

As the CAISO explained in its initial compliance filing, ongoing operational coordination is not new to the CAISO, DERs, distributed aggregations, and the utility distribution companies. Since 2005, over 500 new resources comprising over 2,200 MW have interconnected to the distribution grid to participate in the CAISO’s wholesale markets. The CAISO also has thousands of megawatts of demand response aggregations, nearly all of which are interconnected to the distribution grid. Like DERAs, these aggregations frequently include energy injection and energy storage.⁵⁶ For these DERs and demand response aggregations, the CAISO’s existing communication protocols have worked well. Utility distribution companies use planned or forced outages or communicate to the CAISO via scheduling coordinators, and the CAISO publishes any restrictions or orders on OASIS, its outage management system, and real-time scheduling coordinator applications. The CAISO, utility distribution companies, demand response providers, DER owners, and scheduling coordinators all have significant experience with such orders due to California’s public safety power shutoff program and other distribution emergencies that have occurred over the last few years.

The CAISO recognizes that DERAs may present the need for new communication protocols between DERPs and utility distribution companies; however, it is unclear from Order No. 2222 and the Compliance Order what additional “data flows and communication” the CAISO tariff must facilitate between the DERP and the utility distribution company beyond the specific mandates the CAISO has now satisfied.⁵⁷ Order No. 2222 states that “to account for different regional approaches and to provide flexibility, we are not prescribing specific protocols or processes for the RTOs/ISOs to adopt as part of the operational coordination requirements, but rather we will allow each RTO/ISO to

⁵⁴ Compliance Order at P 222-24.

⁵⁵ Compliance Order at P 226.

⁵⁶ See, e.g., Section 4.13.4.2 of the CAISO tariff; (the metering generator output methodology for demand response with generation or storage); Section 4.13.4.7 (the load-shift methodology for demand response with behind-the-meter storage).

⁵⁷ Compliance Order at P 222-24.

develop an approach to ongoing operational coordination in compliance with this final rule.” The CAISO agrees with this approach, especially because DERAs will likely have DERs subject to different retail and wholesale interconnection tariffs simultaneously, all of which may specify different communication protocols between the utility distribution company and the DER. To provide a flexible approach that can accommodate unique communication needs and various interconnection tariffs, the CAISO proposes to include a tariff requirement that “Where the Utility Distribution Company requires its own direct communication with the Distributed Energy Resource Provider for the safety and reliability of the Distribution System, those communication and data protocols will be established in Schedule 4 to the Distributed Energy Resource Provider Agreement.”⁵⁸ This will allow the parties to negotiate and memorialize any unique communication and data protocols the utility distribution company may need besides those the CAISO and the utility distribution company’s own interconnection tariffs already provide.⁵⁹

VIII. Motion to Amend Effective Date

The Compliance Order approves the CAISO’s proposed effective dates, with the vast majority of tariff revisions effective coincident with the Compliance Order, and the tariff revisions related to DERAs with distributed curtailment resources effective by November 1, 2022.⁶⁰ As the CAISO explained in its compliance filing,⁶¹ the CAISO needed certainty over its proposed compliance and then sufficient time to develop, test, and implement the new software to implement the new DERA model that could incorporate demand response energy. The CAISO has no challenge with the tariff revisions already effective; however, the CAISO does not have sufficient time to develop, test, and implement the required software changes by November 1, 2022. The CAISO is concerned that developing software before it has received a final compliance order will cause unnecessary delay and undue costs at the expense of ratepayers. More problematically, the CAISO’s software development capabilities are finite. Developing DERA software displaces other software enhancements. Currently, the CAISO’s software development efforts focus on market and operational enhancements to ensure reliability after the 2020 extreme weather events and significant resource retirements. Additionally, the

⁵⁸ Proposed Section 4.17.6 of the CAISO tariff; proposed Article 4.2.5 of Appendix B.21 to the CAISO tariff.

⁵⁹ To the extent there are disputes over new communication protocol requirements, the parties may avail themselves of the CAISO’s dispute resolution procedures or file the DERPA unexecuted.

⁶⁰ Compliance Order at P 240. The delayed tariff revisions are contained in Sections 4.17.7, 11.6.5.1, and 30.5.2.6 (formerly known as the heterogeneous DERA provisions).

⁶¹ *Id.*

software enhancements required for this compliance will be highly complex, incorporating both energy injection and load curtailment into a single model that allows aggregations over a wider footprint than the majority of ISOs and RTOs have proposed. They will take significant time and effort to develop after the CAISO receives a final order in this proceeding. The CAISO therefore moves to amend its effective date for the tariff revisions related to DERAs with distributed curtailment resources to no later than November 1, 2024.⁶² This date will provide the CAISO with sufficient time to receive a final order in this compliance proceeding and then develop, test, and implement the required software enhancements without imposing undue costs to ratepayers or delaying software development for reliability needs. The CAISO notes that its amended effective date for this limited set of tariff revisions is still well before the majority of proposed effective dates for other ISOs and RTOs' compliance with Order No. 2222.

To the extent waiver from the Compliance Order is necessary to extend the November 1, 2022 effective date, good cause exists for the Commission to find the motion satisfies the waiver criteria. The CAISO has acted in good faith: It sought no prior extensions to comply with Order No. 2222, and did not receive an initial order for 11 months. Because the CAISO already had functional models for demand-response-only aggregations, the CAISO's original proposed compliance was not unreasonable. The CAISO's motion is limited in scope because it pertains to only one aspect of Order No. 2222 and the extension would still put the CAISO's complete compliance with Order No. 2222 well ahead of other ISOs and RTOs. Granting the motion also will remedy the concrete problem that the CAISO cannot put the tariff revisions into effect on November 1, 2022 because the CAISO has not received a final order accepting the proposed tariff revisions, and needs sufficient time to develop, test, and implement the software. Granting the motion will not have undesirable consequences. As the CAISO explained in its initial compliance filing, developers are unlikely to use the DERA model in the foreseeable future. DER developers prefer their resources participate as stand-alone wholesale resources or participate in retail net energy metering programs. Small DERs that would make up a DERA generally are co-located with load and eligible to participate under net energy metering programs, which compensate them at a much higher retail rate instead of a lower wholesale

⁶² Consistent with Commission precedent recognizing the actual implementation date of some market rule changes can depend on variables that cannot be fully predicted in advance and additional time may be needed to implement some market rule changes, the CAISO further requests authorization to inform the Commission of the actual effective date of the tariff changes through a subsequent filing within five business days following the implementation. See *Cal. Indep. Sys. Operator Corp.*, 172 FERC ¶ 61,263 at PP 1, 39 (2020). The CAISO has included an effective date of 12/31/9998 as part of the tariff records submitted in this filing. The CAISO will notify the Commission of the actual effective date of these tariff records within five business days of implementation in an eTariff submittal using Type of Filing code 150 – Report.

rate.⁶³ Developers and aggregators also would be unlikely to use the DERA model to provide load curtailment because the CAISO's existing demand response models are already well-proven, and Western stakeholders are very familiar with them. Even if developers intended to use the DERA model, they still could. The CAISO's DERA model is already available for energy injection resources, and developers could easily use the CAISO's demand response models to provide load curtailment meanwhile. As such, no party will be harmed by extending the CAISO's effective date for the tariff revisions related to DERAs with distributed curtailment resources.

IX. Service

The CAISO has served copies of this filing on the California Public Utilities Commission, the California Energy Commission, all parties with scheduling coordinator agreements under the CAISO tariff, and all parties in this proceeding. In addition, the CAISO has posted a copy of the filing on the CAISO website.

X. Contents of Filing

Besides this transmittal letter, this compliance filing includes these attachments:

- | | |
|--------------|---|
| Attachment A | Clean CAISO tariff sheets incorporating this compliance filing; and |
| Attachment B | Red-lined document showing the revisions in this compliance filing. |

⁶³ For example, according to the U.S. Energy Information Administration, the average retail price of electricity in California in 2019 was \$168.90/MWh, compared to an average CAISO wholesale rate of about \$41/MWh.

XI. Conclusion

For the reasons set forth above, the CAISO respectfully requests that the Commission find that the CAISO complies with Order No. 2222 and the Compliance Order.

Respectfully submitted,

/s/ William H. Weaver

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Attachment A – Clean Tariff

FERC Order No. 2222 – Compliance Filing

California Independent System Operator Corporation

August 15, 2022

***Grey highlighting denotes approved tariff language not yet effective in this docket number.**

4.17.3 Requirements for Distributed Energy Resource Aggregations

The following requirements apply to Distributed Energy Resource Aggregations:

- (a) A Distributed Energy Resource Aggregation will consist of one (1) or more Distributed Energy Resources.
- (b) A Distributed Energy Resource may not participate in more than one Distributed Energy Resource Aggregation.
- (c) A Distributed Energy Resource participating in a Distributed Energy Resource Aggregation may not participate as a resource in the CAISO Market separate from the Distributed Energy Resource Aggregation.
- (d) Each Distributed Energy Resource Aggregation must be located in a single Sub-LAP.
- (e) A Distributed Energy Resource Aggregation must provide a net response at its PNode(s) within its sub-LAP that is consistent with CAISO Dispatch Instructions and applicable Generation Distribution Factors submitted through the Distributed Energy Resource Aggregation's Bid or as registered in the Master File.
- (f) Distributed Energy Resource Aggregations are Scheduling Coordinator Metered Entities. Scheduling Coordinators for a Distributed Energy Resource Aggregation must have entered into a Scheduling Coordinator Metering Agreement with the CAISO. A Distributed Energy Resource participating in a Distributed Energy Resource Aggregation may not also participate in the CAISO Markets as a CAISO Metered Entity.
- (g) A Distributed Energy Resource Aggregation may not receive compensation for capacity, Energy, or other services it provides in CAISO's markets if it provides the same services in retail programs.
- (h) Distributed Curtailment Resources may participate in Distributed Energy Resource Aggregations pursuant to these rules and Section 4.17.7.

4.17.4 Identification of Distributed Energy Resources

Each Distributed Energy Resource Provider will provide information, as described in the Business

Practice Manual, identifying each of its Distributed Energy Resource Aggregations and such information regarding the location, capacity, operating characteristics and applicable Generation Distribution Factors of its Distributed Energy Resource Aggregation(s) as may be reasonably requested from time to time by the CAISO, and when the information changes due to the removal, addition, or modification of a Distributed Energy Resource or Distributed Curtailment Resource within the Distributed Energy Resource Aggregation. All information provided to the CAISO by a Distributed Energy Resource Provider regarding the operational and technical characteristics of its Distributed Energy Resource Aggregation(s) must be accurate.

As further described in the Business Practice Manual, the CAISO will share any necessary information and data about the Distributed Energy Resources comprising a Distributed Energy Resource Aggregation with the applicable Utility Distribution Company or Metered Subsystem regarding information provided about Distributed Energy Resources comprising a Distributed Energy Resource Aggregation(s). The Utility Distribution Company or Metered Subsystem will have an opportunity to provide written comments within thirty (30) days regarding the accuracy of the information about Distributed Energy Resources comprising a Distributed Energy Resource Aggregation(s) or raise concerns with respect to whether the Distributed Energy Resources (1) are participating in another Distributed Energy Resource Aggregation; (2) are participating as a Proxy Demand Response resource or a Reliability Demand Response Resource; (3) do not comply with applicable Utility Distribution Company tariffs or requirements of the relevant Local Regulatory Authority; (4) receive compensation from retail programs for capacity, Energy, or other services that would be offered to the CAISO Markets; or (5) may pose a significant threat to the safe and reliable operation of the Distribution System, if operated as part of a Distributed Energy Resource Aggregation. The Utility Distribution Company or Metered Subsystem review of criterion (5) must be limited to those impacts resulting from the aggregation, exclusive of issues previously considered during the interconnection study process for each Distributed Energy Resource. The CAISO will provide the Distributed Energy Resource Provider with the Utility Distribution Company or Metered Subsystem's written comments, and the Distributed Energy Resource Provider will resolve any concerns with the Utility Distribution Company or Metered Subsystem prior to the CAISO allowing the individual Distributed Energy Resource to participate in a Distributed Energy Resource Aggregation. Parties may resolve any

disputes regarding these concerns with the applicable Governmental Authority for the Utility Distribution Company or Metered Subsystem or Section 13 of the CAISO tariff, as applicable to the dispute.

4.17.4.1 Modifications to Distributed Energy Resource Aggregations

The Distributed Energy Resource Provider will notify the CAISO of any changes to the information it provided during the registration process due to the removal, addition, or modification of a Distributed Energy Resource or Distributed Curtailment Resource within the Distributed Energy Resource Aggregation. The Distributed Energy Resource Provider also will notify the CAISO of any changes to its Distributed Energy Resource Aggregation's physical or operational characteristics. The CAISO will notify the applicable Utility Distribution Company or Metered Subsystem of any changes, and the Utility Distribution Company or Metered Subsystem will have fourteen (14) days to provide the CAISO any written comments raising concerns under Section 4.17.4.

4.17.5 Characteristics of Distributed Energy Resource Aggregations

4.17.5.1 Size Limits

A Distributed Energy Resource Aggregation will be no smaller than 100 kW. A Distributed Energy Resource Aggregation that includes Distributed Energy Resources located at different PNodes will be no larger than 20 MW.

4.17.5.2 Metering and Telemetry

Scheduling Coordinators shall submit to the CAISO Actual Settlement Quality Meter Data or Estimated Settlement Quality Meter Data for Distributed Energy Resource Aggregations they represent for each Settlement Period in an Operating Day. Distributed Energy Resources and Distributed Curtailment Resources participating in a Distributed Energy Resource Aggregation will be directly metered pursuant to a meter that complies with any applicable Utility Distribution Company tariff and any standards of the relevant Local Regulatory Authority or, if no such tariff exists or no standards have been set by that Local Regulatory Authority, the metering standards as further detailed in the CAISO's Business Practice Manual. Distributed Energy Resource Providers must make Settlement Quality Meter Data from individual Distributed Energy Resources and Distributed Curtailment Resources comprising a Distributed Energy Resource Aggregation available to the CAISO upon request.

Distributed Energy Resource Providers shall provide information regarding Distributed Energy Resource

Aggregation(s) with a rated capacity of 10 MW or greater or, if the Distributed Energy Resource Aggregation(s) provides Ancillary Services, through telemetry to the CAISO's EMS in accordance with the CAISO's standards for direct telemetry and consistent with the requirement for telemetry set forth in Section 7.6.1. Distributed Energy Resource Providers are not required to have their own direct telemetry on each DER, and may acquire the data required to provide the CAISO with accurate telemetry data for the DERA by any means, including calculation.

4.17.6 Operating Requirements

Distributed Energy Resource Aggregations will respond to (1) CAISO Dispatch Instructions and (2) instructions from the Utility Distribution Company to maintain the safety and reliability of the Distribution System. The CAISO may dispatch a Distributed Energy Resource Aggregation to the extent the Distributed Energy Resource Aggregation bids or schedules Energy or Ancillary Services into the CAISO Markets and receives an award. The CAISO may also issue an Exceptional Dispatch Instruction for the Distributed Energy Resource Aggregation for reliability pursuant to Section 34.10. Distributed Energy Resource Aggregations shall respond to Dispatch Instructions consistent with Generation Distribution Factors for the Distributed Energy Resource Aggregation.

Each Distributed Energy Resource Provider will operate its Distributed Energy Resource Aggregation(s) in a manner consistent with limitations or operating orders established by the Utility Distribution Company or Metered Subsystem. Scheduling Coordinators for Distributed Energy Resources Providers shall submit Outages to the CAISO as necessary to reflect any distribution constraints impacting Distributed Energy Resources that comprise a Distributed Energy Resource Aggregation under its control. The CAISO shall have the authority to coordinate and approve Outage schedules for the Distributed Energy Resource Aggregation(s) listed in a Distributed Energy Resource Provider Agreement, in accordance with the provisions of Section 9. Where the Utility Distribution Company requires its own direct communication with the Distributed Energy Resource Provider for the safety and reliability of the Distribution System, those communication and data protocols will be established in Schedule 4 to the Distributed Energy Resource Provider Agreement.

4.17.7 Distributed Energy Resource Aggregations with Demand Curtailment

Distributed Energy Resource Aggregations that include Distributed Curtailment Resources are subject to

all the requirements in Section 4.17 and this subsection. The Scheduling Coordinator for a Distributed Energy Resource Aggregation that includes a Distributed Curtailment Resource will submit Bids for Energy or Ancillary Services or Energy Self-Schedules representing the net injection of Energy from the Distributed Energy Resources that are not Distributed Curtailment Resources, if any, plus the Demand curtailment from the Distributed Curtailment Resources. Scheduling Coordinators must include Bid parameters consistent with Section 30.5.2.6. A Distributed Energy Resource Aggregation must provide a net response of Energy, Demand curtailment, or both at its PNode(s) within its sub-LAP that is consistent with CAISO Dispatch Instructions and applicable Generation Distribution Factors submitted through the Distributed Energy Resource Aggregation's Bid or as registered in the Master File. To calculate the Demand curtailment provided by the Distributed Curtailment Resources within a Distributed Energy Resource Aggregation, the Scheduling Coordinator must calculate a Demand Response Energy Measurement for the Distributed Curtailment Resources, excluding any Distributed Energy Resources that are injecting Energy and not Distributed Curtailment Resources, consistent with the requirements in Sections 4.13.4 and 11.6.

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11.6.5 Settlement of Distributed Energy Resource Aggregations

Settlements for Energy provided by a Distributed Energy Resource Provider from a Distributed Energy Resource Aggregation shall be based on the applicable PNode or Aggregated PNode of the Distributed Energy Resource Aggregation. For Distributed Energy Resource Aggregations comprising a single PNode, settlement for Energy transactions would reflect the LMP at that PNode. For Distributed Energy Resource Aggregations comprising multiple PNodes settlement for Energy transactions would be the weighted average LMP of the PNode(s) based on the applicable Generation Distribution Factors submitted through the Distributed Energy Resource Aggregation's Bid or as registered in the Master File. Consistent with the provisions of Section 11.5.2, the CAISO will impose UIE on a Distributed Energy Resource Provider if the Distributed Energy Resource Provider's Distributed Energy Resource Aggregation does not follow a Dispatch Instruction.

11.6.5.1 Settlement of Distributed Energy Resource Aggregations with Demand Curtailment

Settlements for Energy and Demand curtailment provided by a Distributed Energy Resource Provider from a Distributed Energy Resource Aggregation that includes Distributed Curtailment Resources will be consistent with Section 11.6.5. The CAISO will settle such Distributed Energy Resource Aggregations based on the sum of (1) the net Energy provided by the Distributed Energy Resources, if any, accounting for any Load and any negative Energy from energy storage resources, and (2) the Demand curtailment provided by the Distributed Curtailment Resources, represented as positive Supply. For settlement, monitoring, compliance, and audit purposes, the Scheduling Coordinator for such Distributed Energy Resource Aggregation must submit in the Settlement Quality Meter Data Systems:

- (1) the net injection or withdrawal of Energy from any Distributed Energy Resources that are not Distributed Curtailment Resources;
- (2) the Demand curtailment provided by the Distributed Curtailment Resources, calculated consistent with the requirements of Section 11.6.1;
- (3) the Customer Load Baseline or Generator Output Baseline used to calculate the Demand curtailment for the Distributed Curtailment Resources, calculated consistent with the requirements of Section 4.13.4; and
- (4) the actual underlying consumption or Energy during all hourly intervals for the calendar days for which the Meter Data was collected to develop the baseline.

Only the net injection of Energy and the Demand curtailment will be considered Settlement Quality Meter Data.

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30.5.2.6 Supply Bids for Distributed Energy Resource Aggregations

In addition to the common elements listed in Section 30.5.2.1, Supply Bids for Distributed Energy Resource Aggregations will contain the following components as applicable: Generation Distribution Factors, Ramp Rate, Minimum and Maximum Operating Limits; Energy Limit, and Contingency Flag. If the Scheduling Coordinator does not submit the Generation Distribution Factors for the Bid, the CAISO

will use default Generation Distribution Factors registered in Master File. The CAISO will apply a net benefits test to determine a threshold Market Clearing Price for Demand Response Providers and Distributed Energy Resource Aggregations that include Distributed Curtailment Resources. The CAISO will not accept Bids from Distributed Energy Resource Aggregations that include Distributed Curtailment Resources for Energy below this threshold Market Clearing Price in the CAISO Markets.

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Appendix A

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- Distributed Curtailment Resource

A Distributed Energy Resource providing Demand curtailment as part of a Distributed Energy Resource Aggregation.

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Appendix B.21

Distributed Energy Resource Provider Agreement

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4.1.4 Small Utility Limits. A Distributed Energy Resource Provider that aggregates Distributed Energy Resources that are customers in utilities that distribute (four million MWh or less in the previous fiscal year must certify to the CAISO that its participation is permitted by the Local Regulatory Authority applicable to Distributed Energy Resources, and that it has satisfied all applicable rules and regulations of the Local Regulatory Authority. Distributed Energy Resource

Providers that met this requirement previously must notify the CAISO immediately if the Local Regulatory Authority prohibits participation.

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4.2.5 Distribution System Communications. Where the Utility Distribution Company requires its own direct communication with the Distributed Energy Resource Provider for the safety and reliability of the Distribution System, those communication and data protocols will be established in Schedule 4 to the Distributed Energy Resource Provider Agreement.

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Appendix K

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A 1.1.1 the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Regulation) unless the resource is participating in an aggregation arrangement approved by the CAISO, or is a storage resource or Distributed Energy Resource Aggregation 100 KW or greater;

* * * * *

B 1.1 the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Spinning Reserve) unless the resource is participating in an aggregation arrangement approved by the CAISO, or is a storage resource or Distributed Energy Resource Aggregation 100 KW or greater;

* * * * *

C 1.1 the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Non-Spinning Reserve) unless the resource is participating in an aggregation arrangement approved by the CAISO, or is a storage resource or Distributed Energy Resource Aggregation 100 KW or greater;

Attachment B – Marked Tariff
FERC Order No. 2222 – Compliance Filing
California Independent System Operator Corporation
August 15, 2022

***Grey highlighting denotes approved tariff language not yet effective in this docket number.**

4.17.3 Requirements for Distributed Energy Resource Aggregations

The following requirements apply to Distributed Energy Resource Aggregations:

- (a) A Distributed Energy Resource Aggregation will consist of one (1) or more Distributed Energy Resources.
- (b) A Distributed Energy Resource may not participate in more than one Distributed Energy Resource Aggregation.
- (c) A Distributed Energy Resource participating in a Distributed Energy Resource Aggregation may not participate as a resource in the CAISO Market separate from the Distributed Energy Resource Aggregation.
- ~~(d) A Distributed Energy Resource participating in a Distributed Energy Resource Aggregation may not also participate in a retail net energy metering program that does not expressly permit wholesale market participation.~~
- (~~d~~e) Each Distributed Energy Resource Aggregation must be located in a single Sub-LAP.
- (~~e~~f) A Distributed Energy Resource Aggregation must provide a net response at its PNode(s) within its sub-LAP that is consistent with CAISO Dispatch Instructions and applicable Generation Distribution Factors submitted through the Distributed Energy Resource Aggregation's Bid or as registered in the Master File.
- (~~f~~g) Distributed Energy Resource Aggregations are Scheduling Coordinator Metered Entities. Scheduling Coordinators for a Distributed Energy Resource Aggregation must have entered into a Scheduling Coordinator Metering Agreement with the CAISO. A Distributed Energy Resource participating in a Distributed Energy Resource Aggregation may not also participate in the CAISO Markets as a CAISO Metered Entity.
- (~~g~~h) A Distributed Energy Resource Aggregation may not receive compensation for capacity, Energy, or other services it provides in CAISO's markets if it provides the same services in from-retail programs ~~for capacity, Energy, or other services it provides the CAISO Markets.~~

- (h) Distributed Curtailment Resources may participate in ~~heterogeneous~~ Distributed Energy Resource Aggregations pursuant to these rules and Section 4.17.78. ~~Aggregations of only Distributed Curtailment Resources without other Distributed Energy Resources that inject Energy must participate as Proxy Demand Resources or Reliability Demand Response Resources.~~

4.17.4 Identification of Distributed Energy Resources

Each Distributed Energy Resource Provider will provide information, as described in the Business Practice Manual, identifying each of its Distributed Energy Resource Aggregations and such information regarding the location, capacity, operating characteristics and applicable Generation Distribution Factors of its Distributed Energy Resource Aggregation(s) as may be reasonably requested from time to time by the CAISO, and when the information changes due to the removal, addition, or modification of a Distributed Energy Resource or Distributed Curtailment Resource within the Distributed Energy Resource Aggregation. All information provided to the CAISO by a Distributed Energy Resource Provider regarding the operational and technical characteristics of its Distributed Energy Resource Aggregation(s) must be accurate.

As further described in the Business Practice Manual, the CAISO will ~~confer~~ share any necessary information and data about the Distributed Energy Resources comprising a Distributed Energy Resource Aggregation with the applicable Utility Distribution Company or Metered Subsystem regarding information provided about Distributed Energy Resources comprising a Distributed Energy Resource Aggregation(s). The Utility Distribution Company or Metered Subsystem will have an opportunity to provide written comments within thirty (30) days regarding the accuracy of the information about Distributed Energy Resources comprising a Distributed Energy Resource Aggregation(s) or raise concerns with respect to whether the Distributed Energy Resources (1) are participating in another Distributed Energy Resource Aggregation; (2) are participating as a Proxy Demand Response resource or a Reliability Demand Response Resource; ~~(3) are participating in a retail net energy metering program that does not expressly permit wholesale market participation;~~ (3) do not comply with applicable Utility Distribution Company tariffs or requirements of the relevant Local Regulatory Authority; ~~(4)~~ (4) receive compensation from retail programs for capacity, Energy, or other services that would be offered to the

CAISO Markets; or (56) may pose a significant threat to the safe and reliable operation of the Distribution System, if operated as part of a Distributed Energy Resource Aggregation. The Utility Distribution Company or Metered Subsystem review of criterion (5) must be limited to those impacts resulting from the aggregation, exclusive of issues previously considered during the interconnection study process for each Distributed Energy Resource. If the Utility Distribution Company or Metered Subsystem raises concerns based on these factors, the CAISO will provide the Distributed Energy Resource Provider with the Utility Distribution Company or Metered Subsystem's written comments, and the Distributed Energy Resource Provider will resolve ~~those~~ any concerns with the Utility Distribution Company or Metered Subsystem prior to the CAISO allowing the individual Distributed Energy Resource to participate in a Distributed Energy Resource Aggregation. Parties may resolve Aany disputes regarding these concerns ~~shall be undertaken~~ with the applicable Governmental Authority for the Utility Distribution Company or Metered Subsystem ~~and shall not be arbitrated or in any way resolved through a~~ or Section 13 of the CAISO tariff, as applicable to the dispute ~~CAISO dispute resolution mechanism.~~

4.17.4.1 Modifications to Distributed Energy Resource Aggregations

The Distributed Energy Resource Provider will notify the CAISO of any changes to the information it provided during the registration process due to the removal, addition, or modification of a Distributed Energy Resource or Distributed Curtailment Resource within the Distributed Energy Resource Aggregation. The Distributed Energy Resource Provider also will notify the CAISO of any changes to its Distributed Energy Resource Aggregation's physical or operational characteristics. The CAISO will notify the applicable Utility Distribution Company or Metered Subsystem of any changes, and the Utility Distribution Company or Metered Subsystem will have fourteen (14) days to provide the CAISO any written comments raising concerns under Section 4.17.4.

4.17.5 Characteristics of Distributed Energy Resource Aggregations

4.17.5.1 Size Limits

A Distributed Energy Resource Aggregation will be no smaller than 100 kW. A Distributed Energy Resource Aggregation that includes Distributed Energy Resources located at different PNodes will be no larger than 20 MW.

4.17.5.2 Metering and Telemetry

Scheduling Coordinators shall submit to the CAISO Actual Settlement Quality Meter Data or Estimated Settlement Quality Meter Data for Distributed Energy Resource Aggregations they represent for each Settlement Period in an Operating Day. Distributed Energy Resources and Distributed Curtailment Resources participating in a Distributed Energy Resource Aggregation will be directly metered pursuant to a meter that complies with any applicable Utility Distribution Company tariff and any standards of the relevant Local Regulatory Authority or, if no such tariff exists or no standards have been set by that Local Regulatory Authority, the metering standards as further detailed in the CAISO's Business Practice Manual. Distributed Energy Resource Providers must make Settlement Quality Meter Data from individual Distributed Energy Resources and Distributed Curtailment Resources comprising a Distributed Energy Resource Aggregation available to the CAISO upon request.

Distributed Energy Resource Providers shall provide information regarding Distributed Energy Resource Aggregation(s) with a rated capacity of 10 MW or greater or, if the Distributed Energy Resource Aggregation(s) provides Ancillary Services, through telemetry to the CAISO's EMS in accordance with the CAISO's standards for direct telemetry and consistent with the requirement for telemetry set forth in Section 7.6.1. Distributed Energy Resource Providers are not required to have their own direct telemetry on each DER, and may acquire the data required to provide the CAISO with accurate telemetry data for the DERA by any means, including calculation.

4.17.6 Operating Requirements

Distributed Energy Resource Aggregations will respond to (1) CAISO Dispatch Instructions and (2) instructions from the Utility Distribution Company to maintain the safety and reliability of the Distribution System. The CAISO may dispatch a Distributed Energy Resource Aggregation to the extent the Distributed Energy Resource Aggregation bids or schedules Energy or Ancillary Services into the CAISO Markets and receives an award. The CAISO may also issue an Exceptional Dispatch Instruction for the Distributed Energy Resource Aggregation for reliability pursuant to Section 34.10. Distributed Energy Resource Aggregations shall respond to Dispatch Instructions consistent with Generation Distribution Factors for the Distributed Energy Resource Aggregation.

Each Distributed Energy Resource Provider will operate its Distributed Energy Resource Aggregation(s) in a manner consistent with limitations or operating orders established by the Utility Distribution Company

or Metered Subsystem. Scheduling Coordinators for Distributed Energy Resources Providers shall submit Outages to the CAISO as necessary to reflect any distribution constraints impacting Distributed Energy Resources that comprise a Distributed Energy Resource Aggregation under its control. The CAISO shall have the authority to coordinate and approve Outage schedules for the Distributed Energy Resource Aggregation(s) listed in a Distributed Energy Resource Provider Agreement, in accordance with the provisions of Section 9. Where the Utility Distribution Company requires its own direct communication with the Distributed Energy Resource Provider for the safety and reliability of the Distribution System, those communication and data protocols will be established in Schedule 4 to the Distributed Energy Resource Provider Agreement.

4.17.7 ~~Heterogeneous~~ Distributed Energy Resource Aggregations with Demand Curtailment

~~Heterogeneous~~ Distributed Energy Resource Aggregations that include Distributed Curtailment Resources are subject to all the requirements in Section 4.17 and this subsection. ~~Heterogeneous Distributed Energy Resource Aggregations must consist of at least one Distributed Energy Resource that injects Energy and at least one Distributed Curtailment Resource, participating together under a single Resource ID as a Distributed Energy Resource Aggregation through a Distributed Energy Resource Provider.~~ The Scheduling Coordinator for a ~~heterogeneous~~ Distributed Energy Resource Aggregation that includes a Distributed Curtailment Resource will submit Bids for Energy or Ancillary Services or Energy Self-Schedules representing the net injection of Energy from the Distributed Energy Resources that are not Distributed Curtailment Resources, if any, plus the Demand curtailment from the Distributed Curtailment Resources. Scheduling Coordinators must include Bid parameters consistent with Section 30.5.2.6. A ~~heterogeneous~~ Distributed Energy Resource Aggregation must provide a net response of Energy, Demand curtailment, or both at its PNode(s) within its sub-LAP that is consistent with CAISO Dispatch Instructions and applicable Generation Distribution Factors submitted through the Distributed Energy Resource Aggregation's Bid or as registered in the Master File. To calculate the Demand curtailment provided by the Distributed Curtailment Resources within a ~~heterogeneous~~ Distributed Energy Resource Aggregation, the Scheduling Coordinator must calculate a Demand Response Energy Measurement for the Distributed Curtailment Resources, excluding ~~the any~~ Distributed Energy Resources that are injecting Energy and not Distributed Curtailment Resources, consistent with the requirements in

Sections 4.13.4 and 11.6.

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11.6.5 Settlement of Distributed Energy Resource Aggregations

Settlements for Energy provided by a Distributed Energy Resource Provider from a Distributed Energy Resource Aggregation shall be based on the applicable PNode or Aggregated PNode of the Distributed Energy Resource Aggregation. For Distributed Energy Resource Aggregations comprising a single PNode, settlement for Energy transactions would reflect the LMP at that PNode. For Distributed Energy Resource Aggregations comprising multiple PNodes settlement for Energy transactions would be the weighted average LMP of the PNode(s) based on the applicable Generation Distribution Factors submitted through the Distributed Energy Resource Aggregation's Bid or as registered in the Master File. Consistent with the provisions of Section 11.5.2, the CAISO will impose UIE on a Distributed Energy Resource Provider if the Distributed Energy Resource Provider's Distributed Energy Resource Aggregation does not follow a Dispatch Instruction.

11.6.5.1 ~~Settlement of Heterogeneous~~ Distributed Energy Resource Aggregations with Demand Curtailment

Settlements for Energy and Demand curtailment provided by a Distributed Energy Resource Provider from a ~~heterogeneous~~ Distributed Energy Resource Aggregation that includes Distributed Curtailment Resources will be consistent with Section 11.6.5. The CAISO will settle ~~each heterogeneous~~ such Distributed Energy Resource Aggregations based on the sum of (1) the net Energy provided by the Distributed Energy Resources, if any, accounting for any Load and any negative Energy from energy storage resources, and (2) the Demand curtailment provided by the Distributed Curtailment Resources, represented as positive Supply. For settlement, monitoring, compliance, and audit purposes, the Scheduling Coordinator for ~~each such heterogeneous~~ Distributed Energy Resource Aggregation must submit in the Settlement Quality Meter Data Systems:

- (1) the net injection or withdrawal of Energy from ~~the any~~ Distributed Energy Resources that are not Distributed Curtailment Resources;

- (2) the Demand curtailment provided by the Distributed Curtailment Resources, calculated consistent with the requirements of Section 11.6.1;
- (3) the Customer Load Baseline or Generator Output Baseline used to calculate the Demand curtailment for the Distributed Curtailment Resources, calculated consistent with the requirements of Section 4.13.4; and
- (4) the actual underlying consumption or Energy during all hourly intervals for the calendar days for which the Meter Data was collected to develop the baseline.

Only the net injection of Energy and the Demand curtailment will be considered Settlement Quality Meter Data.

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30.5.2.6 Supply Bids for Distributed Energy Resource Aggregations

In addition to the common elements listed in Section 30.5.2.1, Supply Bids for Distributed Energy Resource Aggregations will contain the following components as applicable: Generation Distribution Factors, Ramp Rate, Minimum and Maximum Operating Limits; Energy Limit, and Contingency Flag. If the Scheduling Coordinator does not submit the Generation Distribution Factors for the Bid, the CAISO will use default Generation Distribution Factors registered in Master File. The CAISO will apply a net benefits test to determine a threshold Market Clearing Price for Demand Response Providers and ~~heterogeneous~~ Distributed Energy Resource Aggregations that include Distributed Curtailment Resources. The CAISO will not accept Bids from ~~heterogeneous~~ Distributed Energy Resource Aggregations that include Distributed Curtailment Resources ~~Bids~~ for Energy below this threshold Market Clearing Price in the CAISO Markets.

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Appendix A

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- Distributed Curtailment Resource

A Distributed Energy Resource providing Demand curtailment as part of a ~~heterogeneous~~-Distributed Energy Resource Aggregation.

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Appendix B.21

Distributed Energy Resource Provider Agreement

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4.1.4 Small Utility Limits. A Distributed Energy Resource Provider that aggregates Distributed Energy Resources that are customers in utilities that distribute: ~~(1) over four million MWh in the previous fiscal year must certify to the CAISO that its participation is not prohibited by the Local Regulatory Authority; or (2)~~ four million MWh or less in the previous fiscal year must certify to the CAISO that its participation is permitted by the Local Regulatory Authority applicable to Distributed Energy Resources, and that it has satisfied all applicable rules and regulations of the Local Regulatory Authority. Distributed Energy Resource Providers that met this requirement previously must notify the CAISO immediately if the Local Regulatory Authority prohibits participation.

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4.2.5 Distribution System Communications. Where the Utility Distribution Company requires its own direct communication with the Distributed Energy Resource Provider for the safety and reliability of the Distribution System, those communication and data protocols will be established in Schedule 4 to the Distributed Energy Resource Provider Agreement.

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Appendix K

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A 1.1.1 the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Regulation) unless the resource is participating in an aggregation arrangement approved by the CAISO, or is a storage resource or Distributed Energy Resource Aggregation 100 KW or greater;

* * * * *

B 1.1 the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Spinning Reserve) unless the resource is participating in an aggregation arrangement approved by the CAISO, or is a storage resource or Distributed Energy Resource Aggregation 100 KW or greater;

* * * * *

C 1.1 the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Non-Spinning Reserve) unless the resource is participating in an aggregation arrangement approved by the CAISO, or is a storage resource or Distributed Energy Resource Aggregation 100 KW or greater;

CERTIFICATE OF SERVICE

I certify that I have served the foregoing document upon the parties listed on the official service list in the captioned proceedings, 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 15th day of August, 2022.

/s/ Jacqueline Meredith

Jacqueline Meredith
An employee of the California ISO