

September 5, 2018

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

**Re: California Independent System Operator Corporation  
Dispatch Operating Target – Tariff Clarification**

**Docket No. ER18-\_\_\_-000**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) submits this tariff amendment to clarify existing obligations for variable energy resources<sup>1</sup> to comply with CAISO-issued dispatch instructions, recognizing that these resources may deviate from such instructions in limited circumstances to accommodate variations in fuel availability and to maintain the accuracy of variable energy resource forecasts. In addition, this amendment updates CAISO-tariff terminology consistent with existing North American Electric Reliability Corporation (NERC) standards and existing practices regarding CAISO-issued operating instructions issued.

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<sup>1</sup> The CAISO submits this filing pursuant to Section 205 of the Federal Power Act (FPA), 16 U.S.C. § 824d, and Section 35.13 of the Commission's regulations, 18 C.F.R. § 35.13. Capitalized terms not otherwise defined herein have the meanings set forth in Appendix A to the CAISO tariff. In the CAISO tariff, variable energy resources generally are referred to as "Eligible Intermittent Resources," which are defined as a "Variable Energy Resource that is a Generating Unit or Dynamic System Resource subject to a Participating Generator Agreement, Net Scheduled PGA, Dynamic Scheduling Agreement for Scheduling Coordinators, or Pseudo-Tie Participating Generator Agreement." The CAISO tariff further defines Variable Energy Resources consistent with the Commission definition in Order No. 764. See *Cal. Indep. Sys. Operator Corp.*, Transmittal Letter to Tariff Amendment to Implement Real-Time Market Design Enhancements Related to Order No. 764, Docket No. ER14-480-000 (November 26, 2013) (Order No. 764 Compliance Filing). For purposes of this filing, the proposed changes apply specifically to Eligible Intermittent Resources, which are simply variable energy resources that participate in the CAISO market through the contractual relationships specified in the definition of Eligible Intermittent Resources. However, for ease of general understanding, the CAISO uses the term variable energy resource in this transmittal letter to refer to the tariff provisions as they apply to Eligible Intermittent Resources.

This tariff amendment is necessary to eliminate any confusion regarding the CAISO's expectation of how variable energy resources should respond to CAISO dispatch instructions and operating instructions. The CAISO has amended its tariff numerous times to implement market rule changes supporting the integration of variable energy resources. These various changes excluded certain details that would have enhanced market participants' understanding of how variable energy resources interact with the market systems. This tariff clarification does implement any rule changes; it more clearly and accurately states current practices and requirements.

The CAISO vetted the proposed tariff clarifications thoroughly with stakeholders through a robust and transparent stakeholder process. No stakeholder opposed the proposed clarifications. The CAISO requests that the Commission approve the proposed tariff modifications effective on November 6, 2018, *i.e.*, 61 days from the date of this filing.

## **I. Background**

### **A. Commission Order No. 764 and CAISO Integration of Variable Energy Resources**

Order No. 764 removed barriers to the integration of variable energy resources by requiring each public utility transmission provider to: (1) offer an option for intra-hourly transmission scheduling; and (2) require variable energy resources to report meteorological and forced outage data for the purpose of power production forecasting.<sup>2</sup> In 2013, the CAISO filed a tariff amendment that in addition to adopting changes to its real-time market to allow for intra-hour transmission scheduling changes, included a new fifteen-minute market structure.

Even prior to Order No. 764, the CAISO tariff contained provisions requiring certain variable energy resources to provide meteorological and forced outage data in exchange for alternative monthly settlement of their imbalance energy to account for their inability to respond to CAISO dispatches in certain cases.<sup>3</sup> The tariff also included several provisions recognizing the distinctive operating characteristics of variable energy resources. Those provisions addressed the process for forecasting, scheduling, and settling the output of a variable energy resource and for settling deviations between scheduled and actual output.

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<sup>2</sup> *Integration of Variable Energy Resources*, Order No. 764, FERC Stats. & Regs. ¶ 31,331, *order on reh'g and clarification*, Order No. 764-A, 141 ¶ 61,232 (2012), *order on clarification and reh'g*, Order No. 764-B, 144 FERC ¶ 61,222 (2013).

<sup>3</sup> Order No. 764 Compliance Filing, p. 8-9.

In its compliance filing, the CAISO (1) modified the definition of an Eligible Intermittent Resource to align it with the term “variable energy resource” as defined in Order No. 764, and (2) incorporated certain requirements regarding variable energy resources forecasting.<sup>4</sup> In addition to its Order No. 764 compliance filing, the CAISO submitted related market rule changes under Section 205 of the FPA that allowed not only for intra-hour scheduling changes as required by the Commission, but also incorporated a fifteen-minute market process that allows the CAISO to clear and settle all market transactions on a fifteen-minute basis.<sup>5</sup> These market rule changes also allow internal and dynamically scheduled external variable energy resources to be scheduled on a 15-minute basis and dispatched on a five-minute basis using resource-specific, rolling multi-hour forecasts with five-minute granularity. The Order No. 764 related enhancements provided that 15-minute schedules for variable energy resources would be based on the average of the relevant three five-minute interval forecasts of their output. This allowed a variable energy resource to schedule a 15-minute forecast in the CAISO’s market, thereby improving upon the prior hourly forecast. It also significantly reduced the forecast lead-time from approximately 90 minutes to 37.5 minutes and provided for forecast updating four times per hour rather than being fixed for the hour as was previously the case.<sup>6</sup>

## **B. Variable Energy Resource Forecasting and Bidding Processes**

The CAISO tariff continues to require that variable energy resources provide the CAISO meteorological and outage information sufficient for the CAISO to develop a forecasted output for the resource.<sup>7</sup> Variable energy resources have the option to use their own forecast or the CAISO-developed forecast in the CAISO’s real-time market. For resources that use the CAISO forecast, the CAISO will use the forecast data to: (a) establish the MWh amounts to be cleared in the fifteen-minute market and five-minute dispatch for self-scheduled resources; and (b) set the upper economic limit in the fifteen-minute market and five-minute dispatch for a resource with an economic bid with or without a self-schedule.<sup>8</sup> After each market run, the scheduling coordinator for a variable energy resource receives a dispatch instruction that communicates the variable energy resource’s dispatch operating target for the relevant interval. Because the CAISO uses the forecasted data to set the upper economic limit in the five-minute real-time dispatch, all dispatch instructions to variable energy resources are at or below the resource’s forecasted output.

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

<sup>5</sup> Order No. 764 Compliance Filing, p. 19-22.

<sup>6</sup> *Id.* at 36.

<sup>7</sup> See CAISO tariff Section 4.8.2.

<sup>8</sup> See CAISO tariff Section 34.1.6.2.

### **C. Existing Requirements to Comply with Dispatch Instructions and Impacts on Variable Energy Resource Forecasting**

The CAISO tariff clearly and repeatedly states that all resources, regardless of type, are required to comply with dispatch instructions. For example, Section 4.2.1, currently titled “Comply with Dispatch Instructions and Operating Orders,” states that “all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating Transmission Owners, Participating Generators, Participating Loads, Demand Response Providers ... and all System Resources shall comply fully and promptly with the Dispatch Instructions and operating orders, unless such operation would impair public health or safety.”<sup>9</sup> Section 34.13.1 similarly provides that “[r]esources must: (a) unless otherwise stated in the Dispatch Instruction, comply with a Dispatch Instruction immediately upon receipt.”<sup>10</sup>

Not complying with a dispatch instruction is not considered a violation of the CAISO’s rules of conduct in contrast to not complying with an operating order issued by CAISO operators.<sup>11</sup> The CAISO also lacks the authority to impose uninstructed deviation penalties, but resources face economic consequences for deviating from dispatch instruction, such as incurring uninstructed imbalance energy charges for undelivered amounts. Furthermore, the CAISO may investigate repeated deviations and refer adverse behavior to the Commission.

After implementing the Order No. 764-related forecasting and scheduling improvements for variable energy resources, the CAISO observed that variable energy resources that strictly adhered to the dispatch operating target in a CAISO dispatch instruction experienced a degradation of their forecast accuracy. This resulted in forecasts increasingly deviating from the variable energy resource’s actual output capability. This degradation occurs because the forecast of a variable energy resource is informed by the historical correlation between meteorological data input into the forecast and actual output. If a resource strictly adheres to its dispatch operating target, the actual output could only cause negative forecast errors because the resource will not allow actual output to exceed the dispatch operating target. However, if there is insufficient wind or sun, the resource cannot control that its actual output will be below the forecast.

To remedy this issue, in 2014 the CAISO clarified in its Business Practice Manual for Market Operations that variable energy resources should generate as capable (*i.e.*, as much as fuel supply allows) if their dispatch operating target is

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<sup>9</sup> CAISO tariff section 4.2.1; see also CAISO tariff sections 4.2.2, 4.5.3, 4.6.1.1, 7.6.1, 7.7.5, 16.5.1 and 34.13.

<sup>10</sup> CAISO tariff section 34.13.1.

<sup>11</sup> CAISO tariff section 37.2

equal to its forecasted output. This allowed a variable energy resource to experience positive and negative deviations from forecasted output, thereby improving the forecast for the resource. This revision largely resolved the forecast degradation issues, but it did not explicitly address the tariff requirement to comply with dispatch instructions, thus creating confusion regarding such expectations. The CAISO submits this tariff clarification to address any ambiguity regarding the CAISO's expectations and specify explicitly the circumstances in which a variable energy resource should not exceed its dispatch operating target.

## **II. Dispatch Operating Target Tariff Clarification Stakeholder Process**

In late 2017, the CAISO proposed changes to its Business Practice Manual for Market Operations to clarify when variable energy resources can generate as capable and when they must not exceed their dispatch operating target. Based on stakeholder comments received in the Business Practice Manual change management process, the CAISO committed to a stakeholder process to develop tariff clarifications specifying the existing policy for variable energy resource dispatch. The CAISO commenced the dispatch operating target tariff clarification process by posting draft tariff language on March 22, 2018. Stakeholders submitted comments on the draft tariff language on April 6, 2018. The CAISO subsequently held a public stakeholder call on April 13, 2018. The CAISO posted responses to initial stakeholder comments on April 23, 2018.

The CAISO posted a revised draft tariff language on April 26, 2018. Stakeholders submitted a second round of comments on May 2, 2018, and the CAISO held a public stakeholder call on May 10, 2018. The CAISO posted detailed responses to stakeholders' second round of comments on May 11, 2018. The CAISO also reached out to the commenting parties to discuss individual concerns.<sup>12</sup>

The CAISO posted a second revised version of the draft tariff language on July 12, 2018. CAISO management briefed both the Energy Imbalance Market Governing Body and CAISO Board of Governors regarding the dispatch operating target tariff clarification.

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<sup>12</sup> Since the proposed modifications do not constitute a policy initiative, there was no need for a full shareholder initiative process.

### **III. Proposed Tariff Modifications**

The CAISO proposes to amend its tariff to make the following clarifications:

- Specifically define the circumstances in which a variable energy resource may generate as capable, in excess of or below its dispatch operating target;
- Clarify the definitions of “dispatch operating target” and “dispatch operating point” consistent with prior Commission orders and existing CAISO practices; and
- Define “operating Instructions” consistent with NERC Standard COM 002-4.

#### **A. Generate as Capable**

As explained above, the CAISO tariff currently requires all resources to comply with dispatch instructions. However, under certain circumstances, variable energy resources that attempt to strictly comply with dispatch instructions will degrade their forecast. Specifically, resources may have consistent negative deviations because they are following a dispatch instruction that is based on the resource’s forecast, which is less than what the resource is capable of producing in that interval based on its variable fuel availability. Without the possibility of positive deviations, the variable energy resource’s forecast will degrade or be artificially low because the forecasting tools are informed by the correlation of actual output as well as meteorological conditions.

The CAISO’s proposed tariff clarifications remedy this issue by defining the circumstances in which variable energy resources may generate as capable, despite the dispatch instruction. Specifically, these tariff revisions clarify that variable energy resources should generate as capable when the resource’s dispatch operating target is equal to its forecasted output. If the resource’s dispatch operating target is below its forecast, the resource cannot exceed its dispatch operating target. This is appropriate because a dispatch operating target below the resource’s forecast output indicates that the market is attempting to decrement the resource to balance load or manage congestion. In such circumstances, if the resource does not follow the dispatch and instead generates as capable, the resource may cause oversupply on the system or render the system unable to manage congestion solved in the market dispatch. This may require exceptional dispatch or other manual actions to avoid adverse impacts on reliability.



The proposed modifications also provide an analogous clarification for variable energy resources that are in the process of developing a CAISO forecast, but have not yet achieved a reliable forecast. The CAISO typically dispatches variable energy resources that have not yet developed a CAISO forecast at their hourly scheduled output. The proposed tariff provisions allow such a resource to generate as capable when its dispatch operating target is equal to its scheduled output.

In addition to the dispatch instruction clarifications, the proposed tariff modifications clarify that the CAISO may, in difficult system conditions, issue operating instructions<sup>13</sup> directing any resource, including a variable energy resource, not to generate in excess of its dispatch operating target. An operating instruction is a command issued by operating personnel responsible for real-time operation of the Bulk Electric System. The CAISO may issue an operating instruction if necessary to maintain system reliability consistent with sections 7.6 or 7.7 of the CAISO tariff. For example, if CAISO operators are concerned there are insufficient effective bids for the market optimization to produce results needed to manage the system, they can issue an operating instruction. Failure to follow a CAISO operational instruction constitutes a violation of the Rules of Conduct contained in section 37 of the CAISO tariff.

Together, these provisions clarify that the CAISO expects variable energy resources to generate as capable when doing so does not hamper reliability. These clarifications are consistent with the CAISO's goal of producing accurate forecasts for variable energy resources and limiting unnecessary manual actions to curtail resources in order to address over-supply conditions.

## **B. Dispatch Operating Target and Dispatch Operating Point Definitions**

The proposed tariff modifications also clarify the definitions of Dispatch Operating Target and Dispatch Operating Point. The proposed amendment specifies that the Dispatch Operating Target is the expected operating point of a resource that has received a Dispatch Instruction.

Dispatch Operating Point is the expected trajectory of the resource as it ramps from one Dispatch Operating Target to the next.

The CAISO's Business Practice Manual for Market Operations uses the terms Dispatch Operating Target and Dispatch Operating Point. This tariff clarification harmonizes the use of these terms in the tariff and the business practice manual.

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<sup>13</sup> "Operating Instruction" is a new CAISO tariff term, replacing "operating order" as discussed in more detail below.

### **C. Operating Instructions**

Since its initial startup, the CAISO has had the authority to issue an “operating order” to direct a Market Participant to undertake a single, clearly specified action to resolve a specific operating condition. In the proposed tariff clarifications, the CAISO has replaced the term “Operating Order” with the term “Operating Instruction.” The tariff amendment defines Operating Instruction consistent with NERC COM 002-4 as “a command by operating personnel responsible for the Real-time operation of the interconnected Bulk Electric System to change or preserve the state, status, output, or input of an Element of the Bulk Electric System or Facility of the Bulk Electric System or the facilities of a Participating Generator.” The CAISO will communicate Operating Instructions in accordance with the requirements outlined in NERC Standard COM 002-4.

### **IV. Effective Date and Request for Waivers**

The CAISO requests that the Commission make the tariff revisions contained in the instant filing effective November 6, 2018, *i.e.*, 61 days after the date of this filing.

In addition, the CAISO respectfully requests waiver of any other Commission regulations as may be necessary in order for these tariff revisions to become effective.

### **V. Communications**

In accordance with Rule 203(b) of the Commission’s Rules of Practice and Procedure,<sup>14</sup> communications regarding this filing should be addressed to the following individuals, whose names should be put on the official service list established by the Commission with respect to this submittal:

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<sup>14</sup> 18 C.F.R. § 385.203(b).



## **VI. Service**

The CAISO has served copies of this transmittal letter, and all attachments, on the California Public Utilities Commission, the California Energy Commission, and all parties with effective Scheduling Coordinator Service Agreements under the CAISO tariff. In addition, the CAISO is posting this transmittal letter and all attachments on the CAISO website.

## **VII. Attachments**

The following attachments, in addition to this transmittal letter, support the instant filing:

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|--------------|--|
| Attachment A | Revised CAISO tariff language that incorporate the proposed changes described above; |
| Attachment B | Proposed changes to the CAISO tariff in red-line format; and                         |
| Attachment C | July 2018 Board of Governors presentation materials.                                 |

## **X. Conclusion**

For the foregoing reasons, the Commission should accept the proposed tariff changes contained in the instant filing to become effective on November 6, 2018. Please contact the undersigned if you have any questions regarding this matter.

Respectfully submitted,

/s/ Jordan Pinjuv

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Independent System Operator  
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**Attachment A – Clean Tariff**

**Dispatch Operating Target Clarification Amendment**

**California Independent System Operator Corporation**

#### **4.2.1 Comply with Dispatch Instructions and Operating Instructions**

With respect to this Section 4.2, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating Transmission Owners, Participating Generators, Participating Loads, Demand Response Providers, Distributed Energy Resource Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources shall comply fully and promptly with the Dispatch Instructions and Operating Instructions, unless such compliance (1) would impair public health or safety; (2) is otherwise exempted pursuant to Section 34.13.1; or (3) it is physically impossible for the Market Participant to perform in compliance with the Dispatch Instruction or Operating Instruction. Shedding Load for a System Emergency does not constitute impairment to public health or safety. The Market Participant shall immediately notify the CAISO of its inability to perform in compliance with the Operating Instruction.

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#### **4.6.3.4.4 Operating Requirements for a Net Scheduled Generating Unit**

A Participating Generator that has entered into a Net Scheduled PGA shall abide by CAISO Tariff provisions regarding the CAISO's ability to dispatch or curtail Generation from the Net Scheduled Generating Units listed in its Net Scheduled PGA. The CAISO shall only dispatch or curtail a Net Scheduled Generating Unit of the Participating Generator: (a) to the extent the Participating Generator bids Energy or Ancillary Services from the Net Scheduled Generating Unit into the CAISO Markets or the Energy is otherwise available to the CAISO under Section 40, subject to the restrictions on Dispatch Instructions or Operating Instructions set forth below; or (b) if the CAISO must dispatch or curtail the Net Scheduled Generating Unit in order to respond to an existing or imminent System Emergency or condition that would compromise CAISO Balancing Authority Area integrity or reliability as provided in Sections 7 and 7.6.1.

The CAISO will not knowingly issue a Dispatch Instruction or Operating Instruction to a Participating Generator that has entered into a Net Scheduled PGA that: (1) requires a Participating Generator to

reduce its Generation below the delineated minimum operating limit, other than in a System Emergency; (2) conflicts with operating limitations provided to the CAISO by the Participating Generator; or (3) results in damage to the Participating Generator's equipment, provided that any such equipment limitation has been provided to the CAISO and incorporated in the Participating Generator's operating limitations. If the Participating Generator: (1) receives a Schedule which requires operation below the minimum operating limit, and (2) deviates from that Schedule to continue to operate at the minimum operating limit, it will not be subject to any penalties or sanctions as a result of operating at the minimum operating limit. The Participating Generator's consequences for deviating from Schedules in Real-Time will be governed by the CAISO Tariff.

The CAISO shall have the authority to coordinate and approve Generation Outage schedules for the Generating Unit(s) listed in a Net Scheduled PGA, in accordance with the provisions of Section 9.

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#### **6.4 Communication of Operating Instructions**

The CAISO shall use normal verbal and electronic communication to issue Operating Instructions to the Connected Entity.

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#### **7.7.6 System Operations in the Event of a Market Disruption**

(a) **Actions in the Event of a Market Disruption, to Prevent a Market Disruption, or to Minimize the Extent of a Market Disruption.** The CAISO may take one or more of the following actions in the event of a Market Disruption, to prevent a Market Disruption, or to minimize the extent of a Market Disruption:

- (1) postpone the closure of the applicable CAISO Market;
- (2) remove Bids, including Self-Schedules, that have resulted in a Market Disruption previously, pursuant to Section 7.7.7;

- (3) suspend the applicable CAISO Market and manually copy Bids, including Self-Schedules, from the previous day or other applicable market period;
- (4) suspend the applicable CAISO Market and use submitted Bids, including Self-Schedules, to the extent possible;
- (5) suspend the applicable CAISO Market, in which case import/export schedules shall be determined by submittal of E-Tags;
- (6) suspend the applicable CAISO Market and apply Administrative Prices established pursuant to Section 7.7.9;
- (7) utilize Exceptional Dispatch and issue Operating Instructions for resources to be committed and dispatched to meet Demand;
- (8) suspend or limit the ability of all Scheduling Coordinators to submit Virtual Bids on behalf of Convergence Bidding Entities at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes; or
- (9) postpone the publication of DAM market results.

(b) **Choices of Action to Prevent a Market Disruption, in the Event of a Market**

**Disruption, or to Minimize the Extent of a Market Disruption.** The CAISO's choice of action in the event of a Market Disruption shall depend on the CAISO Market that is disrupted, the cause of the Market Disruption, the expected time to resolve the Market Disruption, and the status of submitted Bids and Self-Schedules at the time the Market Disruption occurs.

(c) **Notification.** In the event the CAISO may not publish DAM results, it will notify Market Participants as set forth in Section 7.7.9(b)(2).

(d) **Reports.** The CAISO shall include reports on actions taken pursuant to this Section 7.7.6 in the Exceptional Dispatch report provided in Section 34.11.4 of the CAISO Tariff and shall include –

- (1) the frequency and types of actions taken by the CAISO pursuant to this Section 7.7.6;

- (2) the nature of the specific Market Disruptions that caused the CAISO to take action and the CAISO rationale for taking such actions, or the Market Disruption that was successfully prevented or minimized by the CAISO as a result of taking action pursuant to its authority under this Section 7.7.6; and
- (3) general information on the Bids removed pursuant to Section 7.7.7, which may include the megawatt quantity, point of interconnection, specification of the Day-Ahead versus Real-Time Bid, and Energy or Ancillary Services Bid, and the CAISO's rationale for removal; except that any Scheduling Coordinator-specific individual Bid information will be submitted on a confidential basis consistent with FERC's rules and regulations governing requests for confidential treatment of commercially sensitive information.

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**8.10.8 Rescission of Payments for Ancillary Service Capacity**

If Ancillary Services capacity that receives an AS Award or Self-Provided Ancillary Services capacity provided from a resource is Undispatchable Capacity, Unavailable Capacity, or Undelivered Capacity during the relevant Settlement Interval, then payments will be rescinded as described in this Section 8.10.8 and settled in accordance with Section 11.10.9. If the CAISO determines that non-compliance of a resource, with an Operating Instruction or Dispatch Instruction from the CAISO, or with any other applicable technical standard under the CAISO Tariff, causes or exacerbates system conditions for which the WECC imposes a penalty on the CAISO, then the Scheduling Coordinator of such resource shall be assigned that portion of the WECC penalty which the CAISO reasonably determines is attributable to such non-compliance, in addition to any other penalties or sanctions applicable under the CAISO Tariff.

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### **16.5.1 System Emergency Exceptions**

As set forth in Section 4.2.1, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating TOs, Participating Generators (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area), Participating Loads, Demand Response Providers, Distributed Energy Resource Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources must comply fully and promptly with CAISO Dispatch Instructions and Operating Instructions, unless such operation would impair public health or safety or is otherwise exempted pursuant to Section 34.13.1. The CAISO will honor the terms of Existing Contracts, provided that in a System Emergency and circumstances in which the CAISO considers that a System Emergency is imminent or threatened, holders of Existing Rights must follow CAISO Operating Instructions even if those Operating Instructions directly conflict with the terms of Existing Contracts, unless such Operating Instructions are inconsistent with the terms of an agreement between the CAISO and a Balancing Authority. In the event of a conflict between the CAISO Tariff and an agreement between the CAISO and a Balancing Authority, the agreement will govern. For this purpose CAISO Operating Instructions to shed Load shall not be considered as an impairment to public health or safety. This section does not prohibit a Scheduling Coordinator from modifying its Bid or re-purchasing Energy in the Real-Time Market.

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### **17.2.1 System Emergency Exceptions**

As set forth in Section 4.2.1, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating TOs, Participating Generators(which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area), Participating Loads, Demand Response Providers, Distributed Energy Resource Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources must comply fully and promptly with the CAISO's Dispatch Instructions and Operating Instructions, unless such operation would impair public health or safety or is otherwise



exempted pursuant to Section 34.13.1.

The CAISO will honor the terms of TORs, provided that in a System Emergency and circumstances in which the CAISO considers that a System Emergency is imminent or threatened, to enable the CAISO to exercise its responsibilities as Balancing Authority in accordance with Applicable Reliability Criteria, holders of TORs must follow CAISO Operating Instructions even if those Operating Instructions directly conflict with the terms of applicable Existing Contracts or any other contracts pertaining to the TORs, unless such Operating Instructions are inconsistent with the terms of an agreement between the CAISO and a Balancing Authority. In the event of a conflict between the CAISO Tariff and an agreement between the CAISO and a Balancing Authority, the agreement will govern. For this purpose CAISO Dispatch Instructions or Operating Instructions to shed Load shall not be considered as an impairment to public health or safety. This section does not prohibit a Scheduling Coordinator from modifying its Bid or re-purchasing Energy in the RTM.

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### **31.5.7 Rescission of Payments for RUC Capacity**

If capacity committed in RUC provided from a Generating Unit, Participating Load, Proxy Demand Resource, System Unit or System Resource is Undispatchable Capacity or Undelivered Capacity during the relevant Settlement Interval, then payments will be rescinded as described in this Section 31.5.7 and settled in accordance with Section 11.2.2.2. If the CAISO determines that non-compliance of a Participating Load, Proxy Demand Resource, Generating Unit, System Unit or System Resource with an Operating Instruction or Dispatch Instruction from the CAISO, or with any other applicable technical standard under the CAISO Tariff, causes or exacerbates system conditions for which the WECC imposes a penalty on the CAISO, then the Scheduling Coordinator of such Participating Load, Proxy Demand Resource, Generating Unit, System Unit or System Resource shall be assigned that portion of the WECC penalty which the CAISO reasonably determines is attributable to such non-compliance, in addition to any other penalties or sanctions applicable under the CAISO Tariff. The rescission of payments in this Section 31.5.7 shall not apply to a capacity payment for any particular RUC Capacity if the RUC

Availability Payment is less than or equal to zero (0).

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### **34.7 General Dispatch Principles**

The CAISO shall conduct all Dispatch activities consistent with the following principles:

- (1) The CAISO shall issue AGC instructions electronically as often as every four (4) seconds from its Energy Management System (EMS) to resources providing Regulation and on Automatic Generation Control to meet NERC and WECC performance requirements;
- (2) In each run of the RTED or RTCD the objective will be to meet the projected Energy requirements and Uncertainty Requirements over the applicable forward-looking time period of that run, subject to transmission and resource operational constraints, taking into account the short term CAISO Forecast Of CAISO Demand or forecast of EIM Demand, adjusted as necessary by the CAISO or EIM operator to reflect scheduled changes to Interchange and non-dispatchable resources in subsequent Dispatch Intervals;
- (3) Dispatch Instructions will be based on Energy Bids for those resources that are capable of intra-hour adjustments and will be determined through the use of SCED except when the CAISO must utilize the RTDD and RTMD;
- (4) When dispatching Energy from awarded Ancillary Service capacity the CAISO will not differentiate between Ancillary Services procured by the CAISO and Submissions to Self-Provide an Ancillary Service;
- (5) The Dispatch Instructions of a resource for a subsequent Dispatch Interval shall take as a point of reference the actual output obtained from either the State Estimator solution or the last valid telemetry measurement and the resource's operational ramping capability. For Multi-Stage Generating Resources the determination of the point of reference is further affected by the MSG Configuration and the information contained in the Transition Matrix;

- (6) In determining the Dispatch Instructions for a target Dispatch Interval while at the same time achieving the objective to minimize Dispatch costs to meet the forecasted conditions of the entire forward-looking time period, the Dispatch for the target Dispatch Interval will be affected by: (a) Dispatch Instructions in prior intervals, (b) actual output of the resource, (c) forecasted conditions in subsequent intervals within the forward-looking time period of the optimization, and (d) operational constraints of the resource, such that a resource may be dispatched in a direction for the immediate target Dispatch Interval that is different than the direction of change in Energy needs from the current Dispatch Interval to the next immediate Dispatch Interval, considering the applicable MSG Configuration;
- (7) Through Start-Up Instructions the CAISO may instruct resources to start up or shut down, or may reduce Load for Participating Loads, Reliability Demand Response Resources, and Proxy Demand Resources, over the forward-looking time period for the RTM based on submitted Bids, Start-Up Costs and Minimum Load Costs, Pumping Costs and Pump Shut-Down Costs, as appropriate for the resource, or for Multi-Stage Generating Resource as appropriate for the applicable MSG Configuration, consistent with operating characteristics of the resources that the SCED is able to enforce. In making Start-Up or Shut-Down decisions in the RTM, the CAISO may factor in limitations on number of run hours or Start-Ups of a resource to avoid exhausting its maximum number of run hours or Start-Ups during periods other than peak loading conditions;
- (8) The CAISO shall only start up resources that can start within the applicable time periods of the various CAISO Markets Processes that comprise the RTM;
- (9) The RTM optimization may result in resources being shut down consistent with their Bids and operating characteristics provided that: (a) the resource does not need to be on-line to provide Energy, (b) the resource is able to start up within the applicable time periods of the processes that comprise the RTM, (c) the Generating Unit is not providing Regulation or Spinning Reserve, and (d) Generating Units online providing Non-Spinning Reserve may be shut down if they can be brought up within ten (10) minutes as such resources

are needed to be online to provide Non-Spinning Reserves;

- (10) For resources that are both providing Regulation and have submitted Energy Bids for the RTM, Dispatch Instructions will be based on the Regulation Ramp Rate of the resource rather than the Operational Ramp Rate if the Dispatch Operating Target remains within the Regulating Range. The Regulating Range will limit the Ramping of Dispatch Instructions issued to resources that are providing Regulation;
- (11) For Multi-Stage Generating Resources the CAISO will issue Dispatch Instructions by Resource ID and Configuration ID;
- (12) The CAISO may issue Transition Instructions to instruct resources to transition from one MSG Configuration to another over the forward-looking time period for the RTM based on submitted Bids, Transition Costs and Minimum Load Costs, as appropriate for the MSG Configurations involved in the MSG Transition, consistent with Transition Matrix and operating characteristics of these MSG Configurations. The RTM optimization will factor in limitations on Minimum Run Time and Minimum Down Time defined for each MSG configuration and Minimum Run Time and Minimum Down Time at the Generating Unit.

\* \* \* \* \*

#### **34.10 Dispatch of Energy from Ancillary Services**

The CAISO may issue Dispatch Instructions to Participating Generators, Participating Loads, Proxy Demand Resources, (via communication with the Scheduling Coordinators of Demand Response Providers) System Units and System Resources contracted to provide Ancillary Services (either procured through the CAISO Markets, Self-Provided by Scheduling Coordinators, or dispatched in accordance with the RMR Contract) for the Supply of Energy. During normal operating conditions, the CAISO may Dispatch those Participating Generators, Participating Loads, Proxy Demand Resources, System Units and System Resources that have contracted to provide Spinning and Non-Spinning Reserve, except for those reserves designated as Contingency Only, in conjunction with the normal Dispatch of Energy. Contingency Only reserves are Operating Reserve capacity that have been designated, either by the

Scheduling Coordinator or the CAISO, as available to supply Energy in the Real-Time only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency. During normal operating conditions, the CAISO may also elect to designate any reserve not previously identified as Contingency Only by Scheduling Coordinator as Contingency Only reserves. In the event of an unplanned Outage, a Contingency or a threatened or actual System Emergency, the CAISO may dispatch Contingency Only reserves. If Contingency Only reserves are dispatched through the RTCD, which as described in Section 34.5.2 only Dispatches in the event of a Contingency, such Dispatch and pricing will be based on the original Energy Bids. If Contingency Only reserves are dispatched in response to a System Emergency that has occurred because the CAISO has run out of Economic Bids when no Contingency event has occurred, the RTED will Dispatch such Contingency Only reserves using maximum Bid prices as provided in Section 39.6.1 as the Energy Bids for such reserves and will set prices accordingly. If a Participating Generator, Participating Load, System Unit or System Resource that is supplying Operating Reserve is dispatched to provide Energy, the CAISO shall replace the Operating Reserve as necessary to maintain NERC and WECC reliability standards, including any requirements of the NRC. If the CAISO uses Operating Reserve to meet Real-Time Energy requirements, and if the CAISO needs Operating Reserves to satisfy NERC and WECC reliability standards, including any requirements of the NRC, the CAISO shall restore the Operating Reserves to the extent necessary to meet NERC and WECC reliability standards, including any requirements of the NRC through either the procurement of additional Operating Reserve in the RTM or the Dispatch of other Energy Bids in SCED to allow the resources that were providing Energy from the Operating Reserve to return to their Dispatch Operating Target. The Energy Bid Curve is not used by the AGC system when Dispatching Energy from Regulation. For Regulation Up capacity, the upper portion of the resource capacity from its Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve. For a resource providing Regulation Up or Operating Reserves the remaining Energy Bid Curve shall be allocated to any RTM AS Awards in the following order from higher to lower capacity where applicable: (a) Spinning Reserve; and (b) Non-Spinning Reserve. For resources providing Regulation Up, the applicable upper Regulation Limit shall be used as the basis of allocation if it is lower than the upper portion of the Energy Bid Curve. The remaining portion of the Energy Bid Curve, if there is any, shall constitute a Bid for RTM Energy. For

Regulation Down capacity, the lower portion of the resource capacity from its applicable Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve.

\* \* \* \* \*

### **34.13.1 Response Required by Resources to Dispatch Instructions**

Resources must:

- (a) unless otherwise stated in the Dispatch Instruction, comply with a Dispatch Instruction immediately upon receipt;
- (b) respond to all Dispatch Instructions in accordance with Good Utility Practice;
- (c) meet voltage criteria in accordance with the provisions in the CAISO Tariff;
- (d) meet any applicable Operational Ramp Rates;
- (e) respond to Dispatch Instructions for Ancillary Services within the required time periods and (in the case of Participating Generators providing Regulation) respond to AGC from the EMS;
- (f) if a time frame is stated in a Dispatch Instruction, respond to a Dispatch Instruction within the stated time frame; and
- (g) not intentionally generate above or below Dispatch Operating Target.

Notwithstanding the requirements to comply with and respond to Dispatch Instructions, when an Eligible Intermittent Resource's Dispatch Operating Target is equal to its forecasted output, it may produce to its capability. An Eligible Intermittent Resource in the process of developing a CAISO forecast pursuant to Section 3.1 of Appendix Q may produce to its capability when its Dispatch Operating Target is equal to its scheduled output.

In any event, the CAISO may issue an Operating Target if necessary to maintain system reliability consistent with Sections 7.6 or 7.7. Upon receiving such an Operating Instruction, an Eligible Intermittent Resource must not generate in excess of its Dispatch Operating Target until the Operating Instruction expires, except when physically impossible. When such an Operating Instruction is in effect, Eligible Intermittent Resources should follow a linear ramp between Dispatch Operating Targets, except when

physically impossible.

\* \* \* \* \*

### **34.13.2 Failure to Conform to Dispatch Instructions**

In the event that, in carrying out the Dispatch Instruction, an unforeseen problem arises (relating to plant operations or equipment, personnel or the public safety), the recipient of the Dispatch Instruction must notify the CAISO or, in the case of a Generator, the relevant Scheduling Coordinator immediately. The relevant Scheduling Coordinator shall notify the CAISO of the problem immediately. If a resource is unavailable or incapable of responding to a Dispatch Instruction, or fails to respond to a Dispatch Instruction in accordance with its terms, the resource shall be considered to be non-conforming to the Dispatch Instruction unless the resource has notified the CAISO of an event that prevents it from performing its obligations within thirty (30) minutes of the onset of such event through a submission in the CAISO's outage management system pursuant to Section 9. Notification of non-compliance via the Automated Dispatch System (ADS) will not supplant nor serve as the official notification mechanism to the CAISO. If the resource is considered to be non-conforming as described above, the Scheduling Coordinator for the resource concerned shall be subject to Uninstructed Imbalance Energy as specified in Section 11.5.2. This applies whether any Ancillary Services concerned are contracted or Self-Provided. For a Non-Dynamic System Resource Dispatch Instruction prior to the Trading Hour, the Scheduling Coordinator shall inform the CAISO of its ability to conform to a Dispatch Instruction via ADS. The Non-Dynamic System Resource has the option to accept, partially accept, or decline the Dispatch Instruction, but in any case must respond within the timeframe specified in a Business Practice Manual. The Non-Dynamic System Resource can change its response within the indicated timeframe. If a Non-Dynamic System Resource does not respond within the indicated timeframe, the Dispatch Instruction will be considered accepted.

When a resource demonstrates that it is not following Dispatch Instructions, the RTM will no longer assume that the resource will ramp from its current output level. The RTM assumes the resource to be "non-compliant" if it is deviating its five (5)-minute Ramping capability for more than N intervals by a



magnitude determined by the CAISO based on its determination that it is necessary to improve the calculation of the expected imbalance energy as further defined in the BPM. When a resource is identified as “non-compliant,” RTM will set the Dispatch Operating Target for that resource equal to its actual output in the Market Clearing software such that the persistent error does not cause excessive AGC action and consequently require CAISO to take additional action to comply with reliability requirements. Such a resource will be considered to have returned to compliance when the resource’s State Estimator or telemetry value (whichever is applicable) is within the above specified criteria. During the time when the resource is “non-compliant,” the last applicable Dispatch target shall be communicated to the Scheduling Coordinator as the Dispatch Operating Target. The last applicable Dispatch target may be (i) the last Dispatch Operating Target within the current Trading Hour that was instructed prior to the resource becoming “non-compliant;” or (ii) the Day-Ahead Schedule; or (iii) awarded Self-Schedule Hourly Block depending on whether the resource submitted a Bid and the length of time the resource was “non-compliant;” or (iv) for a Dynamic System Resource or a Pseudo-Tie Generating Unit that is an Eligible Intermittent Resource, the most recently available telemetry for the actual output. During the time the resource is deemed to be “non-compliant” the CAISO will suspend the resource’s eligibility for Ancillary Services and Uncertainty Awards.

\* \* \* \* \*

#### **34.17.1 Resource Constraints**

The SCED shall enforce the following resource physical constraints:

- (a) Minimum and maximum operating resource limits. Outages and limitations due to transmission clearances shall be reflected in these limits. The more restrictive operating or regulating limit shall be used for resources providing Regulation so that the SCED shall not Dispatch them outside their Regulating Range.
- (b) Forbidden Operating Regions. When ramping in the Forbidden Operating Region, the implicit ramp rate will be used as determined based on the time it takes for the resource to cross its Forbidden Operating Region. A resource can only be ramped through a

Forbidden Operating Region after being dispatched into a Forbidden Operating Region. The CAISO will not Dispatch a resource within its Forbidden Operating Regions in the Real-Time Market, except that the CAISO may Dispatch the resource through the Forbidden Operating Region in the direction that the resource entered the Forbidden Operating Region at the maximum applicable Ramp Rate over consecutive Dispatch Intervals. A resource with a Forbidden Operating Region cannot provide Ancillary Services in a particular fifteen (15) minute Dispatch Interval unless that resource can complete its transit through the relevant Forbidden Operating Region within that particular Dispatch Interval.

- (c) Operational Ramp Rates and Start-Up Times. The submitted Operational Ramp Rate for resources shall be used as the basis for all Dispatch Instructions, provided that the Dispatch Operating Target for resources that are providing Regulation remains within their applicable Regulating Range. The Regulating Range will limit the Ramping of Dispatch Instructions issued to resources that are providing Regulation. The Ramp Rate for Non-Dynamic System Resources cleared in the FMM will not be observed. Rather, the ramp of the Non-Dynamic System Resource will respect inter-Balancing Authority Area Ramping conventions established by WECC. Ramp Rates for Dynamic System Resources will be observed like Participating Generators in the RTD. Each Energy Bid shall be Dispatched only up to the amount of imbalance energy that can be provided within the Dispatch Interval based on the applicable Operational Ramp Rate. The Dispatch Instruction shall consider the relevant Start-Up Time as, if the resource is off-line, the relevant Operational Ramp Rate function, and any other resource constraints or prior commitments such as Schedule changes across hours and previous Dispatch Instructions. The Start-Up Time shall be determined from the Start-Up Time function and when the resource was last shut down. The Start-Up Time shall not apply if the corresponding resource is on-line or expected to start.
- (d) Maximum number of daily Start-Ups. The SCED shall not cause a resource to exceed its daily maximum number of Start-Ups.

- (e) Minimum Run Time and Down Time. The SCED shall not start up off-line resources before their Minimum Down Time expires and shall not shut down on-line resources before their Minimum Run Time expires. For Multi-Stage Generating Resources these requirements shall be observed both for the Generating Unit and MSG Configuration.
- (f) Operating (Spinning and Non-Spinning) Reserve. The SCED shall Dispatch Spinning and Non-Spinning Reserve subject to the limitations set forth in Section 34.18.2.
- (g) Non-Dynamic System Resources. If Dispatched, each Non-Dynamic System Resource flagged for hourly pre-dispatch in the next Trading Hour shall be Dispatched to operate at a constant level over the entire Trading Hour. The HASP shall perform the hourly pre-dispatch for each Trading Hour once prior to the Operating Hour. The hourly pre-dispatch shall not subsequently be revised by the SCED and the resulting HASP Block Intertie Schedules are financially binding and are settled pursuant to Section 11.5.
- (h) Daily Energy use limitation to the extent that Energy limitation is expressed in a resource's Bid. If the Energy Limits are violated for purposes of Exceptional Dispatches for System Reliability, the Bid will be settled as provided in Section 11.5.6.1.

\* \* \* \* \*

### **34.30.2.3 Eligibility to Set the Real-Time LMP**

All Generating Units, Participating Loads, Proxy Demand Resources, Reliability Demand Response Resources (other than those Reliability Demand Response Resources addressed below in this Section 34.19.2.3), Dynamic System Resources, System Units, or COGs subject to the provisions in Section 27.7, with Bids, including Generated Bids, that are unconstrained due to Ramp Rates or other temporal constraints are eligible to set the LMP, provided that (a) a Generating Unit or a Dynamic Resource-Specific System Resource is Dispatched between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) a Participating Load, a Proxy Demand Resource, a Reliability Demand Response Resource, a Dynamic System Resource that is not a Resource-Specific System Resource, or a System Unit is Dispatched between zero (0) MW and the highest MW value within its

submitted Economic Bid range or Generated Bid. A Reliability Demand Response Resource that is dispatched in Real-Time by an entity other than the CAISO in order to mitigate a local transmission or distribution system emergency pursuant to applicable state or local programs, contracts, or regulatory requirements not set forth in the CAISO Tariff, or to perform a test, will not be eligible to set the LMP. If a resource is Dispatched below its Minimum Operating Limit or above the highest MW value in its Economic Bid range or Generated Bid, or the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch, the resource will not be eligible to set the LMP. Resources identified as MSS Load following resources are not eligible to set the LMP. A resource constrained at an upper or lower operating limit or dispatched for a quantity of Energy such that its full Ramping capability is constraining the ability of the resource to be dispatched for additional Energy in target interval, cannot be marginal (i.e., it is constrained by the Ramping capability) and thus is not eligible to set the Dispatch Interval LMP. Non-Dynamic System Resources are not eligible to set the Dispatch Interval LMP. Dynamic System Resources are eligible to set the Dispatch Interval LMP. A Constrained Output Generator that has the ability to be committed or shut off within applicable time periods that comprise the RTM will be eligible to set the Dispatch Interval LMP if any portion of its Energy is necessary to serve Demand. Dispatches of Regulation resources by EMS in response to AGC will not set the RTM LMP. Dispatches of Regulation resources to a Dispatch Operating Target by RTM SCED will be eligible to set the RTM LMP.

\* \* \* \* \*

### **37.2.1 Comply with Operating Instructions**

#### **37.2.1 Compliance with Orders Generally**

##### **37.2.1.1 Expected Conduct**

Market Participants must comply with Operating Instructions issued by the CAISO as authorized under the CAISO Tariff. Deviation from an ADS Dispatch Instruction shall not constitute a violation of this Section 37.2.1.1. A Market Participant's failure to obey an Operating Instruction containing multiple instructions to address a specific operating condition will result in a single violation of Section 37.2. If

some limitation prevents the Market Participant from fulfilling the action requested by the CAISO then the Market Participant must promptly and directly communicate the nature of any such limitation to the CAISO, pursuant to Section 4.2.1.

\* \* \* \* \*

## **Appendix A**

### **Master Definition Supplement**

\* \* \* \* \*

#### **- Dispatch Instruction**

An instruction by the CAISO for an action with respect to specific equipment, or to a resource for increasing or decreasing its Energy Supply or Demand to a specified Dispatch Operating Target pertaining to Real-Time operations.

\* \* \* \* \*

#### **- Dispatch Operating Point**

The expected trajectory of the resource as it ramps from one Dispatch Operating Target to the next, taking into account any relevant Ramp Rate and time delays. Energy expected to be produced or consumed above or below the Day-Ahead Schedule in response to a Dispatch Instruction constitutes FMM Instructed Imbalance Energy or RTD Instructed Imbalance Energy. For resources that have not received a Dispatch Instruction, the Dispatch Operating Point defaults to the corresponding Day-Ahead Schedule.

\* \* \* \* \*

#### **- Dispatch Operating Target**

The expected operating point of a resource that has received a Dispatch Instruction, which is the optimal Dispatch of a resource as calculated by CAISO based on telemetry and representing a single point on the Dispatch Operating Point trajectory in the middle of the Dispatch Interval. The resource is expected to operate at the Dispatch Operating Target after completing the Dispatch Instruction, taking into account any relevant Ramp Rates and time delays.

\* \* \* \* \*

**- Operating Instruction**

A command by operating personnel responsible for the Real-time operation of the interconnected Bulk Electric System to change or preserve the state, status, output, or input of an Element of the Bulk Electric System or Facility of the Bulk Electric System or the facilities of a Participating Generator. An Operating Instruction will be communicated consistent with the practices described in NERC Reliability Standard COM-002-4.

\* \* \* \* \*

**Appendix B.3 Net Scheduled Participating Generator Agreement**

**ARTICLE IV**

**GENERAL TERMS AND CONDITIONS**

\* \* \* \* \*

**4.2.5 Limitations on CAISO Dispatch Instructions and Operating Instructions.** The CAISO will not knowingly issue a Dispatch Instruction or Operating Instruction that: (1) requires the Participating Generator to reduce its Generation below the delineated minimum operating limit, other than in a System Emergency; (2) conflicts with operating limitations provided by the Participating Generator; or (3) results in damage to the Participating Generator's equipment, provided that any such equipment limitation has been provided to the CAISO and incorporated in the Participating Generator's operating limitations to the CAISO. If the Participating Generator: (1) receives a Schedule which requires operation below the minimum operating limit, and (2) deviates from that Schedule to continue to operate at the minimum operating limit, it will not be subject to any penalties or sanctions as a result of operating at the minimum operating limit. The Participating Generator's consequences for deviating from Schedules in Real-Time will be governed by the CAISO Tariff.

\* \* \* \* \*

**Appendix M**

**Dynamic Scheduling Protocol (DSP)**

\* \* \* \* \*

**1.5 OPERATING AND SCHEDULING REQUIREMENTS**

\* \* \* \* \*

**1.5.7** Notwithstanding any Dispatches of the System Resource in accordance with the CAISO Tariff, the CAISO shall have the right to issue Dispatch Instructions or Operating Instructions as defined in the CAISO Tariff to the System Resource either directly or through the Host Balancing Authority Area for emergency or contingency reasons, or to

ensure the CAISO's compliance with operating requirements based on WECC or NERC requirements and policies (e.g., WECC's Unscheduled Flow Reduction Procedure). However, such Dispatch Instructions or Operating Instructions may be issued only within the range of the CAISO-accepted Energy and Ancillary Services, Bids for a given Operating Hour (or the applicable "sub-hour" interval).

**1.5.8** If there is no Dynamic Schedule in the CAISO's Day-Ahead Market or RTM, the dynamic signal must be at "zero" ("0") except when in response to CAISO's Dispatch Instructions associated with accepted Ancillary Services or Energy Bids.

**1.5.9** The Scheduling Coordinator for the Dynamic System Resource must have the ability to override the associated Dynamic Schedule in order to respond to the Dispatch Instructions or Operating Instructions of the CAISO or the Host Balancing Authority.

\* \* \* \* \*

## **2.5 OPERATING AND SCHEDULING REQUIREMENTS**

\* \* \* \* \*

**2.5.5** Notwithstanding any Dispatches of the Generating Unit in accordance with the CAISO Tariff, the CAISO shall have the right to issue Dispatch Instructions or Operating Instructions as defined in the CAISO Tariff to the Generating Unit either directly or through the receiving Balancing Authority Area for emergency or contingency reasons, or to ensure the CAISO's compliance with operating requirements based on WECC or NERC requirements and policies (e.g., WECC's Unscheduled Flow Reduction Procedure). However, such Dispatch Instructions or Operating Instructions may be issued only within the range of the CAISO-accepted Energy Bids for a given Operating Hour (or the applicable "sub-hour" interval).

**2.5.6** If there is no Dynamic Schedule in the CAISO's Day-Ahead Market or RTM, the dynamic signal must be at "zero" ("0").

**2.5.7** The Scheduling Coordinator for a Dynamic Schedule of an export of Energy from a Generating Unit must have the ability to override the associated Dynamic Schedule in order to respond to the Dispatch Instructions or Operating Instructions of the CAISO or the Host Balancing Authority.

\* \* \* \* \*



**Appendix N**  
**Pseudo-Tie Protocol**

\* \* \* \* \*

**1.2 CAISO Operating, Technical, and Business Requirements**

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**1.2.1.3** A Pseudo-Tie Generating Unit shall operate under the terms of the CAISO Tariff applicable to the Generating Units of Participating Generators in the CAISO Balancing Authority Area except as expressly provided, including requirements to promptly follow CAISO Dispatch Instructions, Exceptional Dispatch Instructions, Operating Instructions as defined in the CAISO Tariff, and other instructions, without limitation, pursuant to Sections 7.6 and 7.7 of the CAISO Tariff and any CAISO Operating Procedure established specifically for the Pseudo-Tie, including in the event of an overload condition at the associated pre-determined CAISO Intertie.

\* \* \* \* \*

**1.2.2.3** If there is no Scheduled Generation in the DAM or Real-Time markets, a Pseudo-Tie Generating Unit shall not generate except when issued an Exceptional Dispatch or Operating Instruction as defined in the CAISO Tariff.

\* \* \* \* \*

**2.2 Operating, Technical, and Business Requirements**

**2.2.1 Operating Requirements**

\* \* \* \* \*

**2.2.1.10** The output of a Pseudo-Tie generating unit may be subject to real-time curtailments and Operating Instructions as defined in the CAISO Tariff as directed by the CAISO in accordance with Good Utility Practices.

\* \* \* \* \*

**Appendix V**

**Large Generator Interconnection Agreement**

\* \* \* \* \*

**Article 13. EMERGENCIES**

\* \* \* \* \*

**13.5 CAISO and Participating TO Authority.**

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, (iii) limit or prevent damage, and (iv) expedite restoration of service.

The Participating TO and the CAISO shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or the Interconnection Customer's Interconnection Facilities. The Participating TO or the CAISO may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing the Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing the Interconnection Customer to assist with black start (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of the CAISO's Dispatch Instructions and Operating Instructions and Participating TO's dispatch instructions or Operating Instructions concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

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**Appendix Z**

**LGIA for Interconnection Requests Processed Under the GIP**

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**ARTICLE 13. EMERGENCIES**

\* \* \* \* \*

**13.5 CAISO and Participating TO Authority.**

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, (iii) limit or prevent damage, and (iv) expedite restoration of service.

The Participating TO and the CAISO shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or the Interconnection Customer's Interconnection Facilities. The Participating TO or the CAISO may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing the Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing the Interconnection Customer to assist with black start (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of the CAISO's Dispatch Instructions and Operating Instructions and Participating TO's dispatch instructions or Operating Instructions concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

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**Appendix BB**

**Standard Large Generator Interconnection Agreement**

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**ARTICLE 13. EMERGENCIES**

\* \* \* \* \*

**13.5 CAISO and Participating TO Authority.**

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, (iii) limit or prevent damage, and (iv) expedite restoration of service.

The Participating TO and the CAISO shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or the Interconnection Customer's Interconnection Facilities. The Participating TO or the CAISO may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing the Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing the Interconnection Customer to assist with black start (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of the CAISO's Dispatch Instructions and Operating Instructions and Participating TO's dispatch instructions or Operating Instructions concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

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**Appendix CC**

**Large Generator Interconnection Agreement for  
Interconnection Requests in a Queue Cluster Window**

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**13.5 CAISO and Participating TO Authority.**

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, (iii) limit or prevent damage, and (iv) expedite restoration of service.

The Participating TO and the CAISO shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or the Interconnection Customer's Interconnection Facilities. The Participating TO or the CAISO may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing the Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing the Interconnection Customer to assist with black start (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of the CAISO's Dispatch Instructions and Operating Instructions and Participating TO's dispatch instructions or Operating Instructions concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

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## Appendix EE

### Large Generator Interconnection Agreement for Interconnection Requests Processed under the Generator Interconnection and Deliverability Allocation Procedures

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#### 13.5 CAISO and Participating TO Authority.

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, (iii) limit or prevent damage, and (iv) expedite restoration of service.

The Participating TO and the CAISO shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or the Interconnection Customer's Interconnection Facilities. The Participating TO or the CAISO may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing the Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing the Interconnection Customer to assist with black start (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of the CAISO's Dispatch Instructions and Operating Instructions and Participating TO's dispatch instructions or Operating Instructions concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

**Attachment B – Marked Tariff**

**Dispatch Operating Target Clarification Amendment**

**California Independent System Operator Corporation**



#### 4.2.1 Comply with Dispatch Instructions and Operating ~~Instructions~~Orders

With respect to this Section 4.2, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating Transmission Owners, Participating Generators, Participating Loads, Demand Response Providers, Distributed Energy Resource Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources shall comply fully and promptly with the Dispatch Instructions and ~~e~~Operating ~~Instructions~~orders, unless such compliance (1) operation would impair public health or safety; (2) is otherwise exempted pursuant to Section 34.13.1; or (3). ~~A Market Participant is not required to comply with a CAISO operating order if~~ it is physically impossible for the Market Participant to perform in compliance with the ~~at~~ Dispatch Instruction or eOperating Instructionorder. Shedding Load for a System Emergency does not constitute impairment to public health or safety. The Market Participant shall immediately notify the CAISO of its inability to perform in compliance with the ~~e~~Operating ~~order~~Instruction.

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#### 4.6.3.4.4 Operating Requirements for a Net Scheduled Generating Unit

A Participating Generator that has entered into a Net Scheduled PGA shall abide by CAISO Tariff provisions regarding the CAISO's ability to dispatch or curtail Generation from the Net Scheduled Generating Units listed in its Net Scheduled PGA. The CAISO shall only dispatch or curtail a Net Scheduled Generating Unit of the Participating Generator: (a) to the extent the Participating Generator bids Energy or Ancillary Services from the Net Scheduled Generating Unit into the CAISO Markets or the Energy is otherwise available to the CAISO under Section 40, subject to the restrictions on Dispatch Instructions or eOperating Instructionsorders set forth below; or (b) if the CAISO must dispatch or curtail the Net Scheduled Generating Unit in order to respond to an existing or imminent System Emergency or condition that would compromise CAISO Balancing Authority Area integrity or reliability as provided in Sections 7 and 7.6.1.

The CAISO will not knowingly issue a ~~Dispatch Instruction or e~~Operating ~~Instruction~~order to a Participating Generator that has entered into a Net Scheduled PGA that: (1) requires a Participating Generator to reduce its Generation below the delineated minimum operating limit, other than in a System Emergency; (2) conflicts with operating ~~instructions-limitations~~ provided to the CAISO by the Participating Generator; or (3) results in damage to the Participating Generator's equipment, provided that any such equipment limitation has been provided to the CAISO and incorporated in the Participating Generator's operating ~~instructions-limitations provided to the CAISO~~. If the Participating Generator: (1) receives a Schedule which requires operation below the minimum operating limit, and (2) deviates from that Schedule to continue to operate at the minimum operating limit, it will not be subject to any penalties or sanctions as a result of operating at the minimum operating limit. The Participating Generator's consequences for deviating from Schedules in Real-Time will be governed by the CAISO Tariff. The CAISO shall have the authority to coordinate and approve Generation Outage schedules for the Generating Unit(s) listed in a Net Scheduled PGA, in accordance with the provisions of Section 9.

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#### **6.4 Communication of Operating ~~Instructions~~Orders**

The CAISO shall use normal verbal and electronic communication to issue ~~e~~Operating ~~Instructions~~orders to the Connected Entity.

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#### **7.7.6 System Operations in the Event of a Market Disruption**

- (a) **Actions in the Event of a Market Disruption, to Prevent a Market Disruption, or to Minimize the Extent of a Market Disruption.** The CAISO may take one or more of the following actions in the event of a Market Disruption, to prevent a Market Disruption, or to minimize the extent of a Market Disruption:

- (1) postpone the closure of the applicable CAISO Market;

- (2) remove Bids, including Self-Schedules, that have resulted in a Market Disruption previously, pursuant to Section 7.7.7;
- (3) suspend the applicable CAISO Market and manually copy Bids, including Self-Schedules, from the previous day or other applicable market period;
- (4) suspend the applicable CAISO Market and use submitted Bids, including Self-Schedules, to the extent possible;
- (5) suspend the applicable CAISO Market, in which case import/export schedules shall be determined by submittal of E-Tags;
- (6) suspend the applicable CAISO Market and apply Administrative Prices established pursuant to Section 7.7.9;
- (7) utilize Exceptional Dispatch and issue ~~eOperating Instructions orders~~ for resources to be committed and dispatched to meet Demand;
- (8) suspend or limit the ability of all Scheduling Coordinators to submit Virtual Bids on behalf of Convergence Bidding Entities at specific Eligible PNodes or Eligible Aggregated PNodes, or at all Eligible PNodes or Eligible Aggregated PNodes; or
- (9) postpone the publication of DAM market results.

(b) **Choices of Action to Prevent a Market Disruption, in the Event of a Market Disruption, or to Minimize the Extent of a Market Disruption.** The CAISO's choice of action in the event of a Market Disruption shall depend on the CAISO Market that is disrupted, the cause of the Market Disruption, the expected time to resolve the Market Disruption, and the status of submitted Bids and Self-Schedules at the time the Market Disruption occurs.

(c) **Notification.** In the event the CAISO may not publish DAM results, it will notify Market Participants as set forth in Section 7.7.9(b)(2).

(d) **Reports.** The CAISO shall include reports on actions taken pursuant to this Section 7.7.6 in the Exceptional Dispatch report provided in Section 34.119.4 of the CAISO Tariff and shall include –

- (1) the frequency and types of actions taken by the CAISO pursuant to this Section 7.7.6;
- (2) the nature of the specific Market Disruptions that caused the CAISO to take action and the CAISO rationale for taking such actions, or the Market Disruption that was successfully prevented or minimized by the CAISO as a result of taking action pursuant to its authority under this Section 7.7.6; and
- (3) general information on the Bids removed pursuant to Section 7.7.7, which may include the megawatt quantity, point of interconnection, specification of the Day-Ahead versus Real-Time Bid, and Energy or Ancillary Services Bid, and the CAISO's rationale for removal; except that any Scheduling Coordinator-specific individual Bid information will be submitted on a confidential basis consistent with FERC's rules and regulations governing requests for confidential treatment of commercially sensitive information.

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#### **8.10.8 Rescission of Payments for Ancillary Service Capacity**

If Ancillary Services capacity that receives an AS Award or Self-Provided Ancillary Services capacity provided from a resource is Undispatchable Capacity, Unavailable Capacity, or Undelivered Capacity during the relevant Settlement Interval, then payments will be rescinded as described in this Section 8.10.8 and settled in accordance with Section 11.10.9. If the CAISO determines that non-compliance of a resource, with an ~~e~~Operating ~~Instruction~~~~order~~ or Dispatch Instruction from the CAISO, or with any other applicable technical standard under the CAISO Tariff, causes or exacerbates system conditions for which the WECC imposes a penalty on the CAISO, then the Scheduling Coordinator of such resource shall be assigned that portion of the WECC penalty which the CAISO reasonably determines is attributable to such non-compliance, in addition to any other penalties or sanctions applicable under the CAISO Tariff.

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### 16.5.1 System Emergency Exceptions

As set forth in Section 4.2.1, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating TOs, Participating Generators (which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area), Participating Loads, Demand Response Providers, Distributed Energy Resource Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources must comply fully and promptly with CAISO Dispatch Instructions and ~~e~~Operating ~~Instruction~~s~~orders~~, unless such operation would impair public health or safety or is otherwise exempted pursuant to Section 34.13.1. The CAISO will honor the terms of Existing Contracts, provided that in a System Emergency and circumstances in which the CAISO considers that a System Emergency is imminent or threatened, holders of Existing Rights must follow CAISO ~~e~~Operating ~~Instruction~~s~~orders~~ even if those ~~e~~Operating ~~Instruction~~s~~orders~~ directly conflict with the terms of Existing Contracts, unless such ~~e~~Operating ~~Instruction~~s~~orders~~ are inconsistent with the terms of an agreement between the CAISO and a Balancing Authority. In the event of a conflict between the CAISO Tariff and an agreement between the CAISO and a Balancing Authority, the agreement will govern. For this purpose CAISO ~~e~~Operating ~~Instruction~~s~~orders~~ to shed Load shall not be considered as an impairment to public health or safety. This section does not prohibit a Scheduling Coordinator from modifying its Bid or re-purchasing Energy in the Real-Time Market.

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### 17.2.1 System Emergency Exceptions

As set forth in Section 4.2.1, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating TOs, Participating Generators(which includes Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area), Participating Loads, Demand Response Providers, Distributed Energy Resource Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources must comply fully and promptly with the CAISO's Dispatch Instructions and

~~e~~Operating ~~Instruction~~s~~orders~~, unless such operation would impair public health or safety or is otherwise exempted pursuant to Section 34.13.1.

The CAISO will honor the terms of TORs, provided that in a System Emergency and circumstances in which the CAISO considers that a System Emergency is imminent or threatened, to enable the CAISO to exercise its responsibilities as Balancing Authority in accordance with Applicable Reliability Criteria, holders of TORs must follow CAISO ~~e~~Operating ~~Instruction~~s~~orders~~ even if those ~~e~~Operating ~~Instruction~~s~~orders~~ directly conflict with the terms of applicable Existing Contracts or any other contracts pertaining to the TORs, unless such ~~e~~Operating ~~Instruction~~s~~orders~~ are inconsistent with the terms of an agreement between the CAISO and a Balancing Authority. In the event of a conflict between the CAISO Tariff and an agreement between the CAISO and a Balancing Authority, the agreement will govern. For this purpose CAISO Dispatch Instructions or ~~e~~Operating ~~Instruction~~s~~orders~~ to shed Load shall not be considered as an impairment to public health or safety. This section does not prohibit a Scheduling Coordinator from modifying its Bid or re-purchasing Energy in the RTM.

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### **31.5.7 Rescission of Payments for RUC Capacity**

If capacity committed in RUC provided from a Generating Unit, Participating Load, Proxy Demand Resource, System Unit or System Resource is Undispatchable Capacity or Undelivered Capacity during the relevant Settlement Interval, then payments will be rescinded as described in this Section 31.5.7 and settled in accordance with Section 11.2.2.2. If the CAISO determines that non-compliance of a Participating Load, Proxy Demand Resource, Generating Unit, System Unit or System Resource with an ~~e~~Operating ~~Instruction~~ or Dispatch Instruction from the CAISO, or with any other applicable technical standard under the CAISO Tariff, causes or exacerbates system conditions for which the WECC imposes a penalty on the CAISO, then the Scheduling Coordinator of such Participating Load, Proxy Demand Resource, Generating Unit, System Unit or System Resource shall be assigned that portion of the WECC penalty which the CAISO reasonably determines is attributable to such non-compliance, in addition to any other penalties or sanctions applicable under the CAISO Tariff. The rescission of payments in this

Section 31.5.7 shall not apply to a capacity payment for any particular RUC Capacity if the RUC Availability Payment is less than or equal to zero (0).

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### **34.7 General Dispatch Principles**

The CAISO shall conduct all Dispatch activities consistent with the following principles:

- (1) The CAISO shall issue AGC instructions electronically as often as every four (4) seconds from its Energy Management System (EMS) to resources providing Regulation and on Automatic Generation Control to meet NERC and WECC performance requirements;
- (2) In each run of the RTED or RTCD the objective will be to meet the projected Energy requirements and Uncertainty Requirements over the applicable forward-looking time period of that run, subject to transmission and resource operational constraints, taking into account the short term CAISO Forecast Of CAISO Demand or forecast of EIM Demand, adjusted as necessary by the CAISO or EIM operator to reflect scheduled changes to Interchange and non-dispatchable resources in subsequent Dispatch Intervals;
- (3) Dispatch Instructions will be based on Energy Bids for those resources that are capable of intra-hour adjustments and will be determined through the use of SCED except when the CAISO must utilize the RTDD and RTMD;
- (4) When dispatching Energy from awarded Ancillary Service capacity the CAISO will not differentiate between Ancillary Services procured by the CAISO and Submissions to Self-Provide an Ancillary Service;
- (5) The Dispatch Instructions of a resource for a subsequent Dispatch Interval shall take as a point of reference the actual output obtained from either the State Estimator solution or the last valid telemetry measurement and the resource's operational ramping capability. For Multi-Stage Generating Resources the determination of the point of reference is further affected by the MSG Configuration and the information contained in the Transition

Matrix;

- (6) In determining the Dispatch Instructions for a target Dispatch Interval while at the same time achieving the objective to minimize Dispatch costs to meet the forecasted conditions of the entire forward-looking time period, the Dispatch for the target Dispatch Interval will be affected by: (a) Dispatch Instructions in prior intervals, (b) actual output of the resource, (c) forecasted conditions in subsequent intervals within the forward-looking time period of the optimization, and (d) operational constraints of the resource, such that a resource may be dispatched in a direction for the immediate target Dispatch Interval that is different than the direction of change in Energy needs from the current Dispatch Interval to the next immediate Dispatch Interval, considering the applicable MSG Configuration;
- (7) Through Start-Up Instructions the CAISO may instruct resources to start up or shut down, or may reduce Load for Participating Loads, Reliability Demand Response Resources, and Proxy Demand Resources, over the forward-looking time period for the RTM based on submitted Bids, Start-Up Costs and Minimum Load Costs, Pumping Costs and Pump Shut-Down Costs, as appropriate for the resource, or for Multi-Stage Generating Resource as appropriate for the applicable MSG Configuration, consistent with operating characteristics of the resources that the SCED is able to enforce. In making Start-Up or Shut-Down decisions in the RTM, the CAISO may factor in limitations on number of run hours or Start-Ups of a resource to avoid exhausting its maximum number of run hours or Start-Ups during periods other than peak loading conditions;
- (8) The CAISO shall only start up resources that can start within the applicable time periods of the various CAISO Markets Processes that comprise the RTM;
- (9) The RTM optimization may result in resources being shut down consistent with their Bids and operating characteristics provided that: (a) the resource does not need to be on-line to provide Energy, (b) the resource is able to start up within the applicable time periods of the processes that comprise the RTM, (c) the Generating Unit is not providing Regulation or Spinning Reserve, and (d) Generating Units online providing Non-Spinning Reserve



may be shut down if they can be brought up within ten (10) minutes as such resources are needed to be online to provide Non-Spinning Reserves;

- (10) For resources that are both providing Regulation and have submitted Energy Bids for the RTM, Dispatch Instructions will be based on the Regulation Ramp Rate of the resource rather than the Operational Ramp Rate if the Dispatch Operating TargetPoint remains within the Regulating Range. The Regulating Range will limit the Ramping of Dispatch Instructions issued to resources that are providing Regulation;
- (11) For Multi-Stage Generating Resources the CAISO will issue Dispatch Instructions by Resource ID and Configuration ID;
- (12) The CAISO may issue Transition Instructions to instruct resources to transition from one MSG Configuration to another over the forward-looking time period for the RTM based on submitted Bids, Transition Costs and Minimum Load Costs, as appropriate for the MSG Configurations involved in the MSG Transition, consistent with Transition Matrix and operating characteristics of these MSG Configurations. The RTM optimization will factor in limitations on Minimum Run Time and Minimum Down Time defined for each MSG configuration and Minimum Run Time and Minimum Down Time at the Generating Unit.

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#### **34.10 Dispatch of Energy from Ancillary Services**

The CAISO may issue Dispatch Instructions to Participating Generators, Participating Loads, Proxy Demand Resources, (via communication with the Scheduling Coordinators of Demand Response Providers) System Units and System Resources contracted to provide Ancillary Services (either procured through the CAISO Markets, Self-Provided by Scheduling Coordinators, or dispatched in accordance with the RMR Contract) for the Supply of Energy. During normal operating conditions, the CAISO may Dispatch those Participating Generators, Participating Loads, Proxy Demand Resources, System Units and System Resources that have contracted to provide Spinning and Non-Spinning Reserve, except for those reserves designated as Contingency Only, in conjunction with the normal Dispatch of Energy.

Contingency Only reserves are Operating Reserve capacity that have been designated, either by the Scheduling Coordinator or the CAISO, as available to supply Energy in the Real-Time only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency. During normal operating conditions, the CAISO may also elect to designate any reserve not previously identified as Contingency Only by Scheduling Coordinator as Contingency Only reserves. In the event of an unplanned Outage, a Contingency or a threatened or actual System Emergency, the CAISO may dispatch Contingency Only reserves. If Contingency Only reserves are dispatched through the RTCD, which as described in Section 34.5.2 only Dispatches in the event of a Contingency, such Dispatch and pricing will be based on the original Energy Bids. If Contingency Only reserves are dispatched in response to a System Emergency that has occurred because the CAISO has run out of Economic Bids when no Contingency event has occurred, the RTED will Dispatch such Contingency Only reserves using maximum Bid prices as provided in Section 39.6.1 as the Energy Bids for such reserves and will set prices accordingly. If a Participating Generator, Participating Load, System Unit or System Resource that is supplying Operating Reserve is dispatched to provide Energy, the CAISO shall replace the Operating Reserve as necessary to maintain NERC and WECC reliability standards, including any requirements of the NRC. If the CAISO uses Operating Reserve to meet Real-Time Energy requirements, and if the CAISO needs Operating Reserves to satisfy NERC and WECC reliability standards, including any requirements of the NRC, the CAISO shall restore the Operating Reserves to the extent necessary to meet NERC and WECC reliability standards, including any requirements of the NRC through either the procurement of additional Operating Reserve in the RTM or the Dispatch of other Energy Bids in SCED to allow the resources that were providing Energy from the Operating Reserve to return to their Dispatch Operating TargetPoint. The Energy Bid Curve is not used by the AGC system when Dispatching Energy from Regulation. For Regulation Up capacity, the upper portion of the resource capacity from its Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve. For a resource providing Regulation Up or Operating Reserves the remaining Energy Bid Curve shall be allocated to any RTM AS Awards in the following order from higher to lower capacity where applicable: (a) Spinning Reserve; and (b) Non-Spinning Reserve. For resources providing Regulation Up, the applicable upper Regulation Limit shall be used as the basis of allocation if it is lower than the upper portion of the Energy Bid Curve. The

remaining portion of the Energy Bid Curve, if there is any, shall constitute a Bid for RTM Energy. For Regulation Down capacity, the lower portion of the resource capacity from its applicable Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve.

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### **34.13.1 Response Required by Resources to Dispatch Instructions**

Resources must:

- (a) unless otherwise stated in the Dispatch Instruction, comply with a Dispatch Instruction immediately upon receipt;
- (b) respond to all Dispatch Instructions in accordance with Good Utility Practice;
- (c) meet voltage criteria in accordance with the provisions in the CAISO Tariff;
- (d) meet any applicable Operational Ramp Rates;
- (e) respond to Dispatch Instructions for Ancillary Services within the required time periods and (in the case of Participating Generators providing Regulation) respond to AGC from the EMS; ~~and~~
- (f) if a time frame is stated in a Dispatch Instruction, respond to a Dispatch Instruction within the stated time frame; and
- (g) not intentionally generate above or below Dispatch Operating Target.

Notwithstanding the requirements to comply with and respond to Dispatch Instructions, when an Eligible Intermittent Resource's Dispatch Operating Target is equal to its forecasted output, it may produce to its capability. An Eligible Intermittent Resource in the process of developing a CAISO forecast pursuant to Section 3.1 of Appendix Q may produce to its capability when its Dispatch Operating Target is equal to its scheduled output.

In any event, the CAISO may issue an Operating Target if necessary to maintain system reliability consistent with Sections 7.6 or 7.7. Upon receiving such an Operating Instruction, an Eligible Intermittent Resource must not generate in excess of its Dispatch Operating Target until the Operating Instruction expires, except when physically impossible. When such an Operating Instruction is in effect, Eligible

Intermittent Resources should follow a linear ramp between Dispatch Operating Targets, except when physically impossible.

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### **34.13.2 Failure to Conform to Dispatch Instructions**

In the event that, in carrying out the Dispatch Instruction, an unforeseen problem arises (relating to plant operations or equipment, personnel or the public safety), the recipient of the Dispatch Instruction must notify the CAISO or, in the case of a Generator, the relevant Scheduling Coordinator immediately. The relevant Scheduling Coordinator shall notify the CAISO of the problem immediately. If a resource is unavailable or incapable of responding to a Dispatch Instruction, or fails to respond to a Dispatch Instruction in accordance with its terms, the resource shall be considered to be non-conforming to the Dispatch Instruction unless the resource has notified the CAISO of an event that prevents it from performing its obligations within thirty (30) minutes of the onset of such event through a submission in the CAISO's outage management system pursuant to Section 9. Notification of non-compliance via the Automated Dispatch System (ADS) will not supplant nor serve as the official notification mechanism to the CAISO. If the resource is considered to be non-conforming as described above, the Scheduling Coordinator for the resource concerned shall be subject to Uninstructed Imbalance Energy as specified in Section 11.5.2. This applies whether any Ancillary Services concerned are contracted or Self-Provided. For a Non-Dynamic System Resource Dispatch Instruction prior to the Trading Hour, the Scheduling Coordinator shall inform the CAISO of its ability to conform to a Dispatch Instruction via ADS. The Non-Dynamic System Resource has the option to accept, partially accept, or decline the Dispatch Instruction, but in any case must respond within the timeframe specified in a Business Practice Manual. The Non-Dynamic System Resource can change its response within the indicated timeframe. If a Non-Dynamic System Resource does not respond within the indicated timeframe, the Dispatch Instruction will be considered accepted.

When a resource demonstrates that it is not following Dispatch Instructions, the RTM will no longer assume that the resource will ramp from its current output level. The RTM assumes the resource to be

“non-compliant” if it is deviating its five (5)-minute Ramping capability for more than N intervals by a magnitude determined by the CAISO based on its determination that it is necessary to improve the calculation of the expected imbalance energy as further defined in the BPM. When a resource is identified as “non-compliant,” RTM will set the Dispatch eO~~perating~~ tI~~target~~ for that resource equal to its actual output in the Market Clearing software such that the persistent error does not cause excessive AGC action and consequently require CAISO to take additional action to comply with reliability requirements. Such a resource will be considered to have returned to compliance when the resource’s State Estimator or telemetry value (whichever is applicable) is within the above specified criteria. During the time when the resource is “non-compliant,” the last applicable Dispatch target shall be communicated to the Scheduling Coordinator as the Dispatch eO~~perating~~ tI~~target~~. The last applicable Dispatch target may be (i) the last Dispatch eO~~perating~~ tI~~target~~ within the current Trading Hour that was instructed prior to the resource becoming “non-compliant;” or (ii) the Day-Ahead Schedule; or (iii) awarded Self-Schedule Hourly Block depending on whether the resource submitted a Bid and the length of time the resource was “non-compliant;” or (iv) for a Dynamic System Resource or a Pseudo-Tie Generating Unit that is an Eligible Intermittent Resource, the most recently available telemetry for the actual output. During the time the resource is deemed to be “non-compliant” the CAISO will suspend the resource’s eligibility for Ancillary Services and Uncertainty Awards.

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### **34.17.1 Resource Constraints**

The SCED shall enforce the following resource physical constraints:

- (a) Minimum and maximum operating resource limits. Outages and limitations due to transmission clearances shall be reflected in these limits. The more restrictive operating or regulating limit shall be used for resources providing Regulation so that the SCED shall not Dispatch them outside their Regulating Range.
- (b) Forbidden Operating Regions. When ramping in the Forbidden Operating Region, the implicit ramp rate will be used as determined based on the time it takes for the resource

to cross its Forbidden Operating Region. A resource can only be ramped through a Forbidden Operating Region after being dispatched into a Forbidden Operating Region. The CAISO will not Dispatch a resource within its Forbidden Operating Regions in the Real-Time Market, except that the CAISO may Dispatch the resource through the Forbidden Operating Region in the direction that the resource entered the Forbidden Operating Region at the maximum applicable Ramp Rate over consecutive Dispatch Intervals. A resource with a Forbidden Operating Region cannot provide Ancillary Services in a particular fifteen (15) minute Dispatch Interval unless that resource can complete its transit through the relevant Forbidden Operating Region within that particular Dispatch Interval.

- (c) Operational Ramp Rates and Start-Up Times. The submitted Operational Ramp Rate for resources shall be used as the basis for all Dispatch Instructions, provided that the Dispatch Operating TargetPoint for resources that are providing Regulation remains within their applicable Regulating Range. The Regulating Range will limit the Ramping of Dispatch Instructions issued to resources that are providing Regulation. The Ramp Rate for Non-Dynamic System Resources cleared in the FMM will not be observed. Rather, the ramp of the Non-Dynamic System Resource will respect inter-Balancing Authority Area Ramping conventions established by WECC. Ramp Rates for Dynamic System Resources will be observed like Participating Generators in the RTD. Each Energy Bid shall be Dispatched only up to the amount of imbalance energy that can be provided within the Dispatch Interval based on the applicable Operational Ramp Rate. The Dispatch Instruction shall consider the relevant Start-Up Time as, if the resource is off-line, the relevant Operational Ramp Rate function, and any other resource constraints or prior commitments such as Schedule changes across hours and previous Dispatch Instructions. The Start-Up Time shall be determined from the Start-Up Time function and when the resource was last shut down. The Start-Up Time shall not apply if the corresponding resource is on-line or expected to start.

- (d) Maximum number of daily Start-Ups. The SCED shall not cause a resource to exceed its daily maximum number of Start-Ups.
- (e) Minimum Run Time and Down Time. The SCED shall not start up off-line resources before their Minimum Down Time expires and shall not shut down on-line resources before their Minimum Run Time expires. For Multi-Stage Generating Resources these requirements shall be observed both for the Generating Unit and MSG Configuration.
- (f) Operating (Spinning and Non-Spinning) Reserve. The SCED shall Dispatch Spinning and Non-Spinning Reserve subject to the limitations set forth in Section 34.18.2.
- (g) Non-Dynamic System Resources. If Dispatched, each Non-Dynamic System Resource flagged for hourly pre-dispatch in the next Trading Hour shall be Dispatched to operate at a constant level over the entire Trading Hour. The HASP shall perform the hourly pre-dispatch for each Trading Hour once prior to the Operating Hour. The hourly pre-dispatch shall not subsequently be revised by the SCED and the resulting HASP Block Intertie Schedules are financially binding and are settled pursuant to Section 11.5.
- (h) Daily Energy use limitation to the extent that Energy limitation is expressed in a resource's Bid. If the Energy Limits are violated for purposes of Exceptional Dispatches for System Reliability, the Bid will be settled as provided in Section 11.5.6.1.

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### **34.30.2.3 Eligibility to Set the Real-Time LMP**

All Generating Units, Participating Loads, Proxy Demand Resources, Reliability Demand Response Resources (other than those Reliability Demand Response Resources addressed below in this Section 34.19.2.3), Dynamic System Resources, System Units, or COGs subject to the provisions in Section 27.7, with Bids, including Generated Bids, that are unconstrained due to Ramp Rates or other temporal constraints are eligible to set the LMP, provided that (a) a Generating Unit or a Dynamic Resource-Specific System Resource is Dispatched between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) a Participating Load, a Proxy Demand Resource, a Reliability

Demand Response Resource, a Dynamic System Resource that is not a Resource-Specific System Resource, or a System Unit is Dispatched between zero (0) MW and the highest MW value within its submitted Economic Bid range or Generated Bid. A Reliability Demand Response Resource that is dispatched in Real-Time by an entity other than the CAISO in order to mitigate a local transmission or distribution system emergency pursuant to applicable state or local programs, contracts, or regulatory requirements not set forth in the CAISO Tariff, or to perform a test, will not be eligible to set the LMP. If a resource is Dispatched below its Minimum Operating Limit or above the highest MW value in its Economic Bid range or Generated Bid, or the CAISO enforces a resource-specific constraint on the resource due to an RMR or Exceptional Dispatch, the resource will not be eligible to set the LMP. Resources identified as MSS Load following resources are not eligible to set the LMP. A resource constrained at an upper or lower operating limit or dispatched for a quantity of Energy such that its full Ramping capability is constraining the ability of the resource to be dispatched for additional Energy in target interval, cannot be marginal (i.e., it is constrained by the Ramping capability) and thus is not eligible to set the Dispatch Interval LMP. Non-Dynamic System Resources are not eligible to set the Dispatch Interval LMP. Dynamic System Resources are eligible to set the Dispatch Interval LMP. A Constrained Output Generator that has the ability to be committed or shut off within applicable time periods that comprise the RTM will be eligible to set the Dispatch Interval LMP if any portion of its Energy is necessary to serve Demand. Dispatches of Regulation resources by EMS in response to AGC will not set the RTM LMP. Dispatches of Regulation resources to a Dispatch Operating TargetPoint by RTM SCED will be eligible to set the RTM LMP.

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### **37.2.1 Comply with Operating InstructionsOrders**

#### **37.2.1 Compliance with Orders Generally**

##### **37.2.1.1 Expected Conduct**

Market Participants must comply with eOperating Instructionsorders issued by the CAISO as authorized under the CAISO Tariff. ~~For purposes of enforcement under this Section 37.2, an operating order shall~~



~~be an order(s) from the CAISO directing a Market Participant to undertake, a single, clearly specified action (e.g., the operation of a specific device, or change in status of a particular Generating Unit) that is intended by the ISO to resolve a specific operating condition.~~ Deviation from an ADS Dispatch Instruction shall not constitute a violation of this Section 37.2.1.1. A Market Participant's failure to obey an ~~e~~Operating ~~Instruction~~~~order~~ containing multiple instructions to address a specific operating condition will result in a single violation of Section 37.2. If some limitation prevents the Market Participant from fulfilling the action requested by the CAISO then the Market Participant must promptly and directly communicate the nature of any such limitation to the CAISO, pursuant to Section 4.2.1.

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## Appendix A

### Master Definition Supplement

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#### - Dispatch Instruction

An instruction by the CAISO for an action with respect to specific equipment, or to a resource for increasing or decreasing its Energy Supply or Demand ~~from the Day-Ahead Schedule, RUC Schedule, and Day-Ahead AS Award~~ to a specified Dispatch Operating TargetPoint pertaining to Real-Time operations.

\* \* \* \* \*

#### - Dispatch Operating Point

The expected trajectory of the resource as it ramps from one Dispatch Operating Target to the next operating point of a resource that has received a Dispatch Instruction. ~~The resource is expected to operate at the Dispatch Operating Point after completing the Dispatch Instruction,~~ taking into account any relevant Ramp Rate and time delays. Energy expected to be produced or consumed above or below the Day-Ahead Schedule in response to a Dispatch Instruction constitutes FMM Instructed Imbalance Energy or RTD Instructed Imbalance Energy. For resources that have not received a Dispatch Instruction, the Dispatch Operating Point defaults to the corresponding Day-Ahead Schedule.

\* \* \* \* \*

**- Dispatch Operating Target**

The expected operating point of a resource that has received a Dispatch Instruction, which is the optimal Dispatch of a resource as calculated by CAISO based on telemetry and representing a single point on the Dispatch Operating Point trajectory in the middle of the Dispatch Interval. The resource is expected to operate at the Dispatch Operating Target after completing the Dispatch Instruction, taking into account any relevant Ramp Rates and time delays.

\* \* \* \* \*

**- Operating Instruction**

A command by operating personnel responsible for the Real-time operation of the interconnected Bulk Electric System to change or preserve the state, status, output, or input of an Element of the Bulk Electric System or Facility of the Bulk Electric System or the facilities of a Participating Generator. An Operating Instruction will be communicated consistent with the practices described in NERC Reliability Standard COM-002-4.

\* \* \* \* \*

**Appendix B.3 Net Scheduled Participating Generator Agreement**

**ARTICLE IV**

**GENERAL TERMS AND CONDITIONS**

\* \* \* \* \*

**4.2.5 Limitations on CAISO Dispatch Instructions and Operating Order Instructions.** The CAISO will not knowingly issue a Dispatch Instruction or ~~operating order~~ Operating Instruction that: (1) requires the Participating Generator to reduce its Generation below the delineated minimum operating limit, other than in a System Emergency; (2) conflicts with operating instructions limitations provided by the Participating Generator; or (3) results in damage to the Participating Generator's equipment, provided that any such equipment limitation has been provided to the CAISO and incorporated in the Participating Generator's instructions limitations to the CAISO. If the Participating Generator: (1) receives a Schedule which requires operation below the minimum operating limit, and (2) deviates from that Schedule to continue to operate at the minimum operating limit, it will not be subject to any penalties or sanctions as a result of operating at the minimum operating limit. The Participating Generator's consequences for deviating from Schedules in Real-Time will be governed by the CAISO Tariff.

\* \* \* \* \*

## Appendix M

### Dynamic Scheduling Protocol (DSP)

\* \* \* \* \*

#### 1.5 OPERATING AND SCHEDULING REQUIREMENTS

\* \* \* \* \*

**1.5.7** Notwithstanding any Dispatches of the System Resource in accordance with the CAISO Tariff, the CAISO shall have the right to issue Dispatch Instructions or eOperating Instructionsorders as defined in Section 37.2.1.1 of the CAISO Tariff to the System Resource either directly or through the Host Balancing Authority Area for emergency or contingency reasons, or to ensure the CAISO's compliance with operating requirements based on WECC or NERC requirements and policies (e.g., WECC's Unscheduled Flow Reduction Procedure). However, such Dispatch Instructions or eOperating Instructionsorders may be issued only within the range of the CAISO-accepted Energy and Ancillary Services, Bids for a given Operating Hour (or the applicable "sub-hour" interval).

**1.5.8** If there is no Dynamic Schedule in the CAISO's Day-Ahead Market or RTM, the dynamic signal must be at "zero" ("0") except when in response to CAISO's Dispatch Instructions associated with accepted Ancillary Services or Energy Bids.

**1.5.9** The Scheduling Coordinator for the Dynamic System Resource must have the ability to override the associated Dynamic Schedule in order to respond to the Dispatch Instructions or eOperating Instructionsorders of the CAISO or the Host Balancing Authority.

\* \* \* \* \*

#### 2.5 OPERATING AND SCHEDULING REQUIREMENTS

\* \* \* \* \*

**2.5.5** Notwithstanding any Dispatches of the Generating Unit in accordance with the CAISO Tariff, the CAISO shall have the right to issue Dispatch Instructions or eOperating Instructionsorders as defined in Section 37.2.1.1 of the CAISO Tariff to the Generating Unit either directly or through the receiving Balancing Authority Area for emergency or contingency reasons, or to ensure the CAISO's compliance with operating requirements based on WECC or NERC requirements and policies (e.g., WECC's Unscheduled Flow Reduction Procedure). However, such Dispatch Instructions or eOperating Instructionsorders may be issued only within the range of the CAISO-accepted Energy Bids for a given Operating Hour (or the applicable "sub-hour" interval).

**2.5.6** If there is no Dynamic Schedule in the CAISO's Day-Ahead Market or RTM, the dynamic signal must be at "zero" ("0").

**2.5.7** The Scheduling Coordinator for a Dynamic Schedule of an export of Energy from a Generating Unit must have the ability to override the associated Dynamic Schedule in order to respond to the Dispatch Instructions or eOperating Instructionsorders of the CAISO or the Host Balancing Authority.

\* \* \* \* \*

## Appendix N

### Pseudo-Tie Protocol

\* \* \* \* \*

#### 1.2 CAISO Operating, Technical, and Business Requirements

\* \* \* \* \*

**1.2.1.3** A Pseudo-Tie Generating Unit shall operate under the terms of the CAISO Tariff applicable to the Generating Units of Participating Generators in the CAISO Balancing Authority Area except as expressly provided, including requirements to promptly follow CAISO Dispatch Instructions, Exceptional Dispatch Instructions, ~~e~~Operating ~~Instruction~~orders as defined in ~~Section 37.2.1.1 of~~ the CAISO Tariff, and other instructions, without limitation, pursuant to Sections 7.6 and 7.7 of the CAISO Tariff and any CAISO Operating Procedure established specifically for the Pseudo-Tie, including in the event of an overload condition at the associated pre-determined CAISO Intertie.

\* \* \* \* \*

**1.2.2.3** If there is no Scheduled Generation in the DAM or Real-Time markets, a Pseudo-Tie Generating Unit shall not generate except when issued an Exceptional Dispatch or ~~e~~Operating ~~Instruction~~order as defined in ~~Section 37.2.1.1 of~~ the CAISO Tariff ~~from the CAISO~~.

\* \* \* \* \*

#### 2.2 Operating, Technical, and Business Requirements

##### 2.2.1 Operating Requirements

\* \* \* \* \*

**2.2.1.10** The output of a Pseudo-Tie generating unit may be subject to real-time curtailments and ~~e~~Operating ~~Instruction~~orders as defined in ~~Section 37.2.1.1 of~~ the CAISO Tariff as directed by the CAISO in accordance with Good Utility Practices.

\* \* \* \* \*

**Appendix V**

**Large Generator Interconnection Agreement**

\* \* \* \* \*

**Article 13. EMERGENCIES**

\* \* \* \* \*

**13.5 CAISO and Participating TO Authority.**

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, ~~and~~ (iii) limit or prevent damage, and (iv) expedite restoration of service.

The Participating TO and the CAISO shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or the Interconnection Customer's Interconnection Facilities. The Participating TO or the CAISO may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing the Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing the Interconnection Customer to assist with black start (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of the CAISO's Dispatch Instructions and Operating Instructions and Participating TO's dispatch instructions or operating instruction~~Operating Instructions~~ concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

\* \* \* \* \*

**Appendix Z**

**LGIA for Interconnection Requests Processed Under the GIP**

\* \* \* \* \*

**ARTICLE 13. EMERGENCIES**

\* \* \* \* \*

**13.5 CAISO and Participating TO Authority.**

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, ~~and~~ (iii) limit or prevent damage, and (iv) expedite restoration of service.

The Participating TO and the CAISO shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or the Interconnection Customer's Interconnection Facilities. The Participating TO or the CAISO may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing the Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing the Interconnection Customer to assist with black start (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of the CAISO's Dispatch Instructions and Operating Instructions and Participating TO's dispatch instructions or operating instruction~~Operating Instruction~~ concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

\* \* \* \* \*

**Appendix BB**

**Standard Large Generator Interconnection Agreement**

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**ARTICLE 13. EMERGENCIES**

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**13.5 CAISO and Participating TO Authority.**

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, ~~and~~ (iii) limit or prevent damage, and (iv) expedite restoration of service.

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**Appendix CC**

**Large Generator Interconnection Agreement for  
Interconnection Requests in a Queue Cluster Window**

\* \* \* \* \*

**13.5 CAISO and Participating TO Authority.**

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, ~~and~~ (iii) limit or prevent damage, and (iv) expedite restoration of service.

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\* \* \* \* \*



## Appendix EE

### Large Generator Interconnection Agreement for Interconnection Requests Processed under the Generator Interconnection and Deliverability Allocation Procedures

\* \* \* \* \*

#### 13.5 CAISO and Participating TO Authority.

**13.5.1 General.** The CAISO and Participating TO may take whatever actions or inactions, including issuance of dispatch instructions, with regard to the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System they deem necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the CAISO Controlled Grid or the Participating TO's Interconnection Facilities or Distribution System, ~~and~~ (iii) limit or prevent damage, and (iv) expedite restoration of service.

The Participating TO and the CAISO shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or the Interconnection Customer's Interconnection Facilities. The Participating TO or the CAISO may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing the Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing the Interconnection Customer to assist with black start (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of the CAISO's Dispatch Instructions and Operating Instructions and Participating TO's dispatch instructions or ~~operating instruction~~Operating Instructions concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

**Attachment C – July 2018 Board of Governors Materials**  
**Dispatch Operating Target Clarification Amendment**  
**California Independent System Operator Corporation**



California ISO

# Briefing on Dispatch Operating Target (DOT) Tariff Clarifications

Don Tretheway

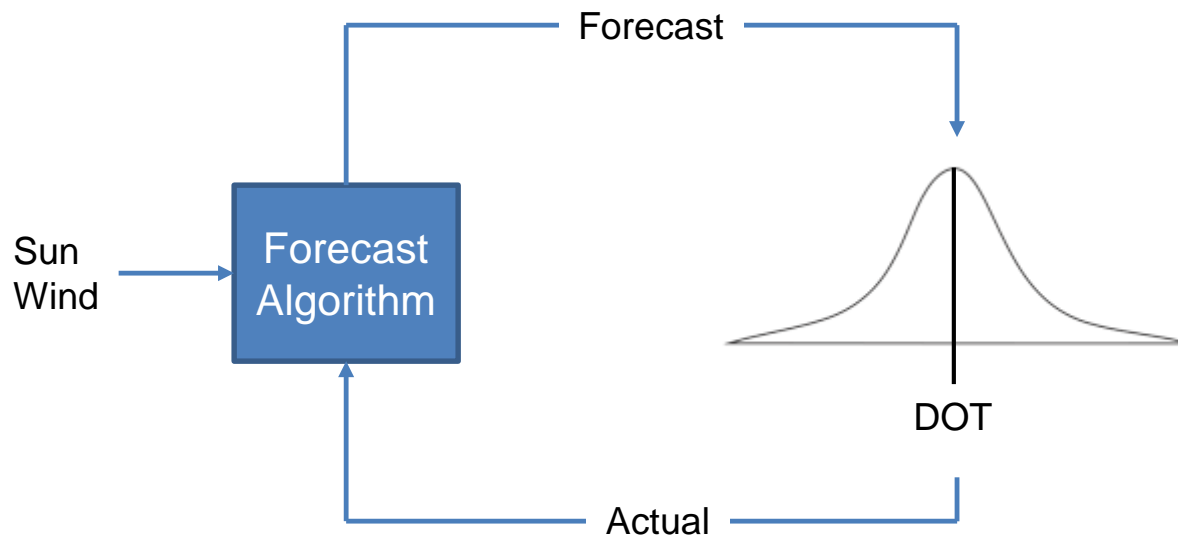
Senior Advisor, Market Design Policy

July 26, 2018

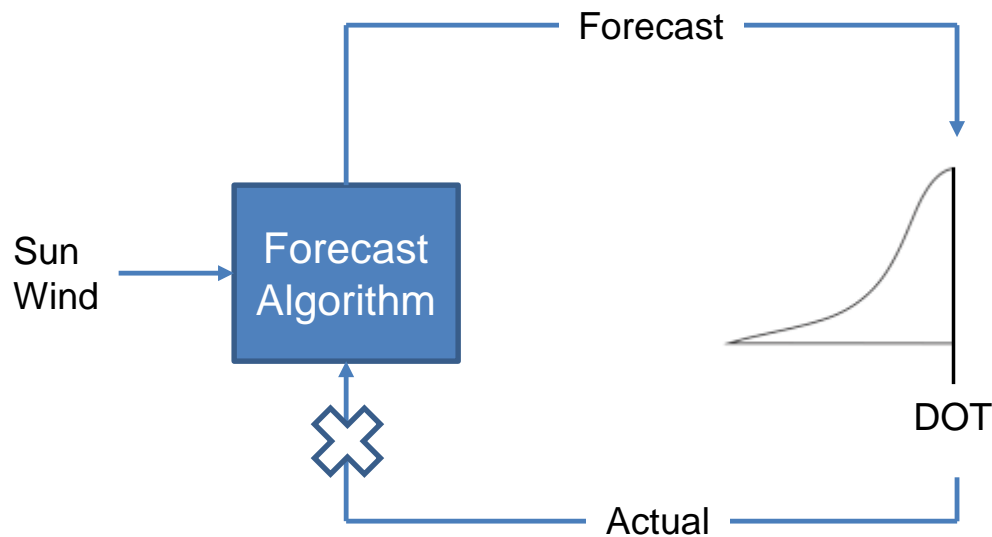
## Tariff requires all resources to follow DOT; however, an exception is needed for eligible intermittent resources

- If an eligible intermittent resource (EIR) always followed its DOT, no positive forecast error is observed
- After FERC Order 764 design changes went live, clarified in BPM that EIRs can generate as capable unless decremental dispatch is sent
- There are operating conditions that require an EIR to not exceed its DOT even without a decremental dispatch
  - This will require an Operating Instruction

# Allowing EIRs to generate as capable improves forecast over time because of feedback loop



If EIR follows its DOT, the actual output can only be lower than forecast

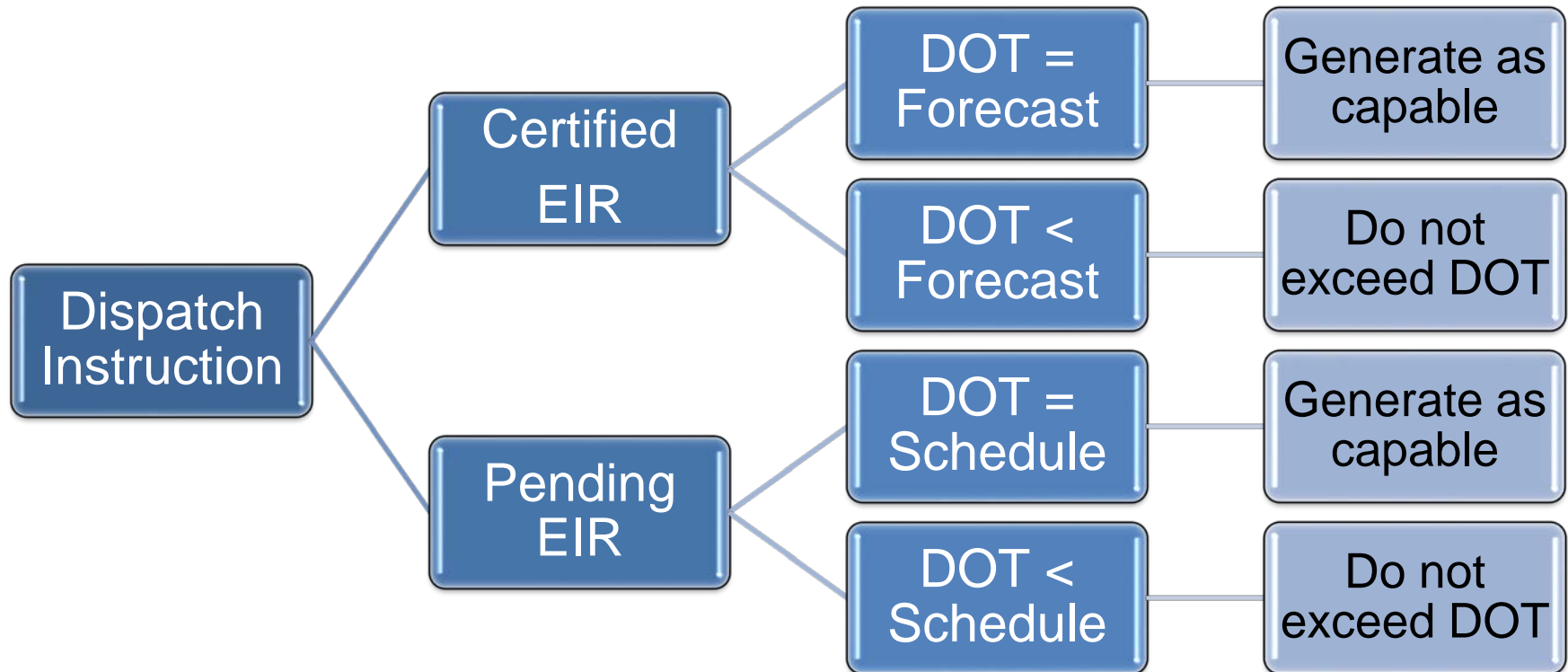


Need to exclude these intervals from the forecast algorithm

## Consistent with the FERC Order 764 policy, Management is providing additional clarity in tariff

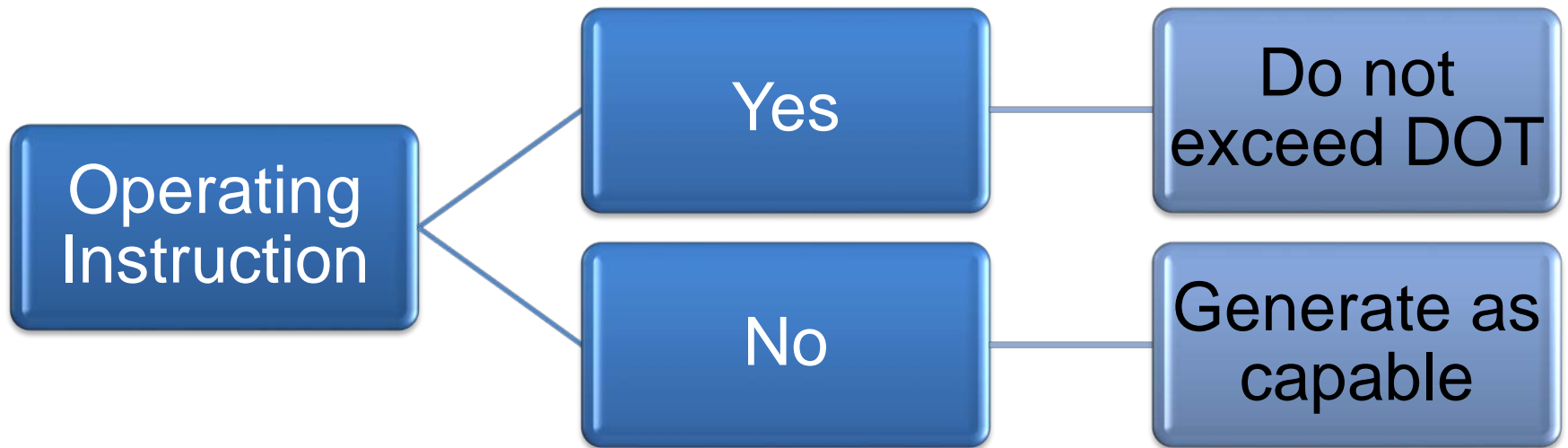
- Add a rule that explicitly allows EIRs to generate as capable unless told otherwise
  - All other resources must continue to follow DOT
- Provide consistency with NERC standards in the use of Dispatch Instruction and Operating Instruction
  - Dispatch Instruction: Result of real-time market optimization
  - Operating Instruction: Command by real-time operating personnel

# Under normal system conditions, market dispatch is able to control supply/demand balance





Under challenging local or system conditions, additional needed control of resources can trigger an operating instruction



# Compliance risk of deviations from instructions differs

- Dispatch Instruction
  - Subject to referral to FERC if strategic deviations are observed
- Operating Instruction
  - Code of conduct violation for CAISO resources

## In summary, the tariff changes provide additional clarity for eligible intermittent resources

- Consistent with FERC Order 764 policy changes implemented in 2014 that enabled economic bidding by EIRs
- Include tariff provisions to allow EIRs to generate as capable versus BPM language only
- Clearer distinction between dispatch instruction and operating instruction