

Stakeholder Comments

Frequency Response Draft Tariff Language

| Submitted by | Company | Date Submitted |
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Southern California Edison (SCE) presents comments followed by suggested edits on the California Independent System Operator’s (CAISO) March 17, 2016 Draft Tariff Language¹.

Section 11.34.2 Validation

In section (a), the CAISO should add specific language that it will provide supporting details to substantiate the total invoiced amount, including quantity, price, terms and conditions of the procured product, preferably on the same invoice instead of some outside notice.

Section 11.35.1 Charge Allocation Basis and Section 11.35.2 Calculation and Assessment

The CAISO proposes to calculate Transferred Frequency Response rate as the total procurement cost divided by Metered Demand. The Metered Demand as referenced in Section 11.20.4 is the sum of annual NERC/WECC Metered Demand for all Scheduling Coordinator for the calendar year two years prior to the NERC/WECC Charge Assessment Year. This seems to be a lag in charging for a product procured forward based on past metered demand quantity from prior years. What is the typical duration of the Transferred Frequency Response service? How frequently will the CAISO be procuring it?

This concludes SCE’s comments. Below, SCE presents specific, proposed edits within the CAISO proposed draft tariff language.

¹ http://www.caiso.com/Documents/DraftTariffLanguage_FrequencyResponse.docx

Draft Frequency Response Tariff Redlines

4.6.4 Identification Of Generating Units

Each Participating Generator shall provide data identifying each of its Generating Units and such information regarding the capacity and the operating characteristics of the Generating Unit as may be reasonably requested from time to time by the CAISO. [Each Participating Generator shall provide information on its governor setting and certify that it has not inhibited the real power response of any Generating Unit by any means that would override the governor response except as necessary to address physical operational constraints for reasons that include ambient temperature limitations, outages of mechanical equipment or environmental regulations. In the event there is a need to inhibit the real power response of any Generating Unit, the Participating Generators shall provide a written description of this limitation with its certification.](#) All information provided to the CAISO regarding the operational and technical constraints in the Master File shall be accurate and actually based on physical characteristics of the resources except for the Pump Ramping Conversion Factor, which is configurable.

4.6.5 NERC and WECC Requirements

4.6.5.1 Participating Generator Performance Standard

Participating Generators shall, in relation to each of their Generating Units, meet all Applicable Reliability Criteria, including any standards regarding governor response capabilities, use of power system stabilizers, voltage control capabilities and hourly Energy delivery.

[Participating Generators with governor controls that are synchronized to the CAISO Controlled Grid must respond immediately and automatically outside a deadband in proportion to frequency deviations through the action of a governor, as long as the resource is not inhibited in any way by CAISO dispatch.](#)

[Participating Generators shall set the governor droop for each Generating Unit with governor controls no higher than 4 percent droop for combustion turbines and 5 percent droop for other technology types; with a deadband no larger than +/- 0.036 Hz. Participating Generators will not inhibit the real power response of their Generating Units with governor controls by any means that would override the governor response except as necessary to address physical operational constraints for reasons that include ambient](#)

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temperature limitations, outages of mechanical equipment or environmental regulations. For each Generating Unit with governor controls, Participating Generators shall coordinate all plant control systems, locally or remotely controlled, so that they include frequency bias to ensure that each Generating Unit can respond immediately and automatically in proportion to **and the direction of** frequency deviations.

Unless otherwise agreed by the CAISO, a Generating Unit must be capable of operating at capacity registered in the CAISO Controlled Grid interconnection data, and shall follow the voltage schedules issued by the PTO or, from time to time, the CAISO from time to time. ▲

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11.34 Invoice Charges for Specific Purpose

This section covers common elements requirements of invoice charges for specific purposes.

11.34.1 Responsibility to Pay Charges

- (a) The CAISO will invoice Scheduling Coordinators for all legitimate costs that are invoiced to the CAISO for a specific purpose.
- (b) Each Scheduling Coordinator shall be obligated to pay the CAISO the charges the Scheduling Coordinator is invoiced by the CAISO in accordance with Section 11.34.
- (c) The CAISO's calculation of collateral requirements and other credit requirements under the CAISO Tariff shall include an adjustment for the Scheduling Coordinator's allocable share of the charge, if applicable, except that the Estimated Aggregated Liability calculated for the Scheduling Coordinator shall not include extrapolated amounts for the charge under Section 12.1.3.1.1(d).

11.34.2 Validation

(a) Each Scheduling Coordinator shall have the opportunity to review the terms of the invoice for the charge and shall be deemed to have validated that invoice unless it raises a dispute within five (5) Business Days of the date of issuance.

(b) Once validated, an invoice for the charge shall be binding on the Scheduling Coordinator to which it relates.

11.34.3 Disputes and Corrections

(a) Scheduling Coordinators shall be prohibited from disputing any charge invoiced under this Section, except on grounds that an error in the invoice is due to a mere typographical or other ministerial error by the CAISO.

(b) Any dispute of an invoice on the grounds specified in Section 11.34.3 (a) shall be submitted and processed in accordance with the dispute procedure for the specific charge set forth in the Business Practice Manual.

(c) If the CAISO determines that an invoice contains a typographical or other ministerial error, and the resolution of the dispute makes correction necessary, the CAISO will issue a corrected invoice within 15 Business Days of the date the initial invoice was issued.

(d) Each Scheduling Coordinator that receives an invoice for a charge under this Section shall pay any net debit and shall be entitled to receive any net credit specified on a corrected invoice. Payment of any net debit shall be due within 10 business days of the date the corrected invoice was issued.

11.34.4 Payment Default

(a) In the event a Scheduling Coordinator defaults on the payment of all or any portion of the charge invoiced under this Section, the CAISO shall have the right under Section 11.29.13.3 to enforce the financial security provided by the defaulting Scheduling

Coordinator, and to take any such other action under Sections 11.29.12 or 11.29.13, as necessary, to obtain payment for the default amount.

(b) To the extent all or any portion of the default amount remains unpaid, the CAISO:

(1) may at its discretion issue an invoice for the unpaid portion of the specific charge; and

(2) if such invoice is issued for a payment default, shall allocate responsibility for the unpaid amount to Scheduling Coordinators using the same allocation basis for the charge but excluding the CAISO Debtor that has not paid the payment default amount, based on the most recent data of the allocation basis for the charge.

(c) Scheduling Coordinators shall make timely payment to the CAISO within 15 Business Days of the date the default invoices were issued pursuant to Section 11.34.4

11.34.5 Modification to Schedule.

Notwithstanding the provisions in Section 11.34, the CAISO may issue a Market Notice informing Scheduling Coordinators that the CAISO will implement a temporary modification to the billing and payment schedule for the charge and setting forth the reasons for such modification, in which case the modified schedule described in that Market Notice shall govern.

11.35 Invoice Charges for Transferred Frequency Response

The provisions of section 11.34 and its subsections, except as stipulated in this section, shall apply to invoiced charges for all legitimate costs invoiced to the CAISO by a Balancing Authority under a contract for Transferred Frequency Response.

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11.35.1 Charge Allocation Basis

Each Scheduling Coordinator's responsibility for the Transferred Frequency Response charges shall be allocated based on the most recent Scheduling Coordinator's NERC/WECC Metered Demand determined under Section 11.20.4.

11.35.2 Calculation and Assessment

(a) Within five (5) Business Days after receiving an invoice for legitimate Transferred Frequency Response costs, the CAISO shall issue a market notice setting forth the Transferred Frequency Response rate, which shall be calculated using the total charges invoiced to the CAISO divided by the most recent total NERC/WECC Metered Demand determined under Section 11.20.4.

(b) The CAISO shall calculate the Transferred Frequency Response charges allocable to each Scheduling Coordinator by using the Transferred Frequency Response rate determined under Section 11.35.2(a), multiplied by the most recent NERC/WECC Metered Demand for that Scheduling Coordinator determined under Section 11.20.4.

(c) Within 10 Business Days after receiving the invoice for legitimate Transferred Frequency Response costs, the CAISO shall issue an invoice to each Scheduling Coordinator for its allocable share of the costs determined under Section 11.35.2(b).

(d) Scheduling Coordinators shall make timely payment to the CAISO within fifteen (15) Business Days of the date the invoices were issued pursuant to Section 11.35.2 (c).

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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~~ shall 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, as necessary to maintain NERC and WECC reliability standards, including any requirements of the NRC.~~ 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~~ 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 Point. 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.

42 Adequacy Of Facilities To Meet Applicable Reliability Criteria-Operating & Planning Reserve

42.2 Transferred Frequency Response

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42.2.1 Procurement of Transferred Frequency Response

If the CAISO concludes that it may be unable to provide sufficient frequency response consistent with Applicable Reliability Criteria, the CAISO may, acting in accordance with Good Utility Practice, take such steps as it considers necessary to ensure compliance. These steps may include the negotiation of contracts for Transferred Frequency Response. To the extent time permits, the CAISO will solicit bids for contracts for Transferred Frequency Response with Balancing Authorities. The CAISO shall select the bids that permit the CAISO to satisfy Applicable Reliability Criteria at the lowest cost.

42.2.2 Allocation of Transferred Frequency Response Costs Incurred by CAISO

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The costs incurred by the CAISO for any contract entered into under Section 42.2.1 are recovered from Scheduling Coordinators pursuant to Section 11.35.

Transferred Frequency Response

A frequency response performance obligation offset expressed in MW/0.1 Hz that a receiving balancing authority may acquire from another balancing authority or a delivering balancing authority may provide to another balancing authority pursuant to a contract to transfer an amount of frequency response requirements under Applicable Reliability Criteria. Transferred Frequency Response is reported on applicable NERC/WECC forms, and applied consistently to each reported frequency disturbance event. Transferred Frequency Response may reflect an aggregate amount from contracts with multiple balancing authorities.

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Appendix K Ancillary Service Requirements Protocol (ASRP)

PART B

CERTIFICATION FOR SPINNING RESERVE

B 1 An Ancillary Service Provider wishing to provide Spinning Reserve as an Ancillary Service from a resource whether pursuant to a CAISO award or as part of a self-provision arrangement must meet the following requirements in order to be certified by the CAISO to provide Spinning Reserve service:

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

B 1.2 the resource must respond immediately and automatically in proportion to frequency deviations through the action of a governor or other control system in accordance with the following requirements:

Minimum Governor Performance:

- a. 5 percent droop (4 percent droop in the case of combustion turbines);
- b. +/- 0.036 Hz deadband; and
- c. Power output changes in one second for any frequency deviation outside of the deadband;
- d. Participating Generators will not inhibit the real power response of their Generating Units with governor controls by any means that would override the governor response except as necessary to address physical operational constraints for reasons that include ambient temperature limitations, outages of mechanical equipment or environmental regulations; and
- e. For each Generating Unit with governor controls, Participating Generators shall coordinate all plant control systems, locally or remotely controlled, so that they include frequency bias to ensure that each Generating Unit can respond immediately and automatically in proportion to and the direction of frequency deviations.

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Minimum Frequency Responsive Device Performance:

- a. If frequency is less than or equal to 59.92 Hz, the resource must reach ten (10) percent of its awarded spinning capacity within eight (8) seconds; and
- b. The resources must change the power it delivers or consumes in one (1) second if system frequency is less than or equal to 59.92 Hz

- B 1.3** the operator of the resource must have a means of receiving Dispatch Instructions to initiate an increase or decrease in real power (MW) within one (1) minute of the CAISO Control Center determination that Energy from Spinning Reserve capacity must be dispatched;
- B 1.4** the resource must be able to increase or decrease its real power (MW) by the maximum amount of Spinning Reserve to be offered within ten (10) minutes and be capable of maintaining its real power for thirty (30) minutes from the time the resource reaches its award capacity;
- B 1.5** CAISO approved voice communications services must be in place to provide both primary and alternate voice communication between the CAISO Control Center and the operator controlling the resource; and
- B 1.6** The communication system and the resource must pass a qualification test to demonstrate the overall ability to meet the performance requirements of the ASRP for Spinning Reserve.
- B 2** An Ancillary Service Provider wishing to be considered for certification for Spinning Reserve service by the CAISO must make a written request to the CAISO, giving details of the technical capability of the resource concerned and identifying the Scheduling Coordinator through whom the Ancillary Service Provider intends to offer Spinning Reserve service. The Ancillary Service Provider shall at the same time send a copy of its request to that Scheduling Coordinator. Technical review request forms will be available from the CAISO.
- B 3** No later than one week after receipt of the request, the CAISO shall provide the Ancillary Service Provider with a listing of acceptable communication options and interface equipment options for Spinning Reserve. The CAISO shall send a copy of the listing to the Ancillary Service Provider's Scheduling Coordinator.
- B 4** The Ancillary Service Provider may elect to implement any of the approved options defined by the CAISO, and, if it wishes to proceed with its request for certification, shall give written notice to the CAISO of its selected communication option, with a copy to its Scheduling Coordinator.
- B 5** When it receives the Ancillary Service Provider notice, the CAISO shall notify the Ancillary Service Provider and the Scheduling Coordinator in writing no later than two weeks after receipt of the notice confirming receipt of the notice and issuing provisional approval of the selected options. Upon receipt of the CAISO acknowledgment, the Ancillary Service Provider may proceed as indicated below to secure the necessary facilities and capabilities required.
- B 6** The Ancillary Service Provider may also propose alternatives that it believes may provide an equivalent level of control for consideration by the CAISO. Such proposals shall be in writing and contain sufficient detail for the CAISO to make a determination of

suitability. The CAISO may request additional information, if required, to assist in its evaluation of the proposal.

- B 7** The CAISO shall respond by accepting the alternative proposal, rejecting the alternative proposal, or suggesting modifications to the alternative proposal. Such acceptance, rejection, or suggested revision must be provided not later than six weeks after the proposal is received by the CAISO. The Ancillary Service Provider and the CAISO shall keep the Scheduling Coordinator informed of this process by each sending to the Scheduling Coordinator a copy of any written communication which it sends to the other.
- B 8** Upon agreement as to the method of communication and control to be used by the resource, the CAISO shall provisionally approve the Ancillary Service Provider's proposal in writing providing a copy to the resource's Scheduling Coordinator at the same time. The Ancillary Service Provider may then proceed to procure and install the equipment and make arrangements for the required communication.
- B 9** Design, acquisition, and installation of the resource's equipment shall be under the control of the respective Ancillary Service Provider. The CAISO shall bear no cost responsibility or functional responsibility for such equipment. The CAISO shall be responsible for the design, acquisition and installation of any necessary modifications to its own equipment at its own cost.
- B 10** The Ancillary Service Provider shall perform its own testing of its equipment to ensure that the control system performs to meet the CAISO requirements.
- B 11** When it is satisfied that its plant, equipment and communication systems meet the CAISO's requirements, the Ancillary Service Provider shall request in writing that the CAISO conduct a certification test with a suggested primary date and time and at least two alternative dates and times. The CAISO shall, within two Business Days of receipt of the request, accept a proposed time if possible or suggest at least three alternatives to the Ancillary Service Provider. If the CAISO responds by suggesting alternatives, the Ancillary Service Provider shall, within two Business Days of receipt of the CAISO's response, respond in turn by accepting a proposed alternative if possible or suggesting at least three alternatives, and this procedure shall continue until agreement is reached on the date and time of the test. The Ancillary Service Provider shall inform its Scheduling Coordinator of the agreed date and time of the test.
- B 12** Testing shall be performed under the direction of the CAISO. Such tests shall include, but not be limited to, the following:
 - B 12.1** confirmation of control communication path performance for Dispatch Instruction;
 - B 12.2** confirmation of primary and secondary voice circuits for receipt of Dispatch Instructions;
 - B 12.3** confirmation of the resource performance to include changing the resource's real power over the range of Spinning Reserve proposed from minimum to maximum, and at different rates of change from the minimum to the maximum permitted by the design of the resource; and
 - B 12.4** testing the resource's governor or other control system performance characteristics by simulating frequency excursions outside the allowed deadband and measuring the response of the resource.
- B 13** Upon successful completion of the test the CAISO shall certify the resource as being permitted to provide Spinning Reserve as an Ancillary Service Provider and shall provide

a copy of the certificate to the Scheduling Coordinator at the same time. The Scheduling Coordinator shall request the CAISO to update its database to reflect the ability of the resource to provide Spinning Reserve.

- B 14** The Scheduling Coordinator may bid Spinning Reserve from the certified resource into the CAISO Markets starting with the Day-Ahead Market for the hour ending 0100 on the Second Trading Day after the CAISO's database reflects the resource's certificate.
- B 15** The certification to provide Spinning Reserve shall remain in force until withdrawn by the Scheduling Coordinator or the Ancillary Service Provider by written notice to the CAISO to take effect at the time notified in the notice, which must be the end of a Trading Day.
- B 16** The certification may be revoked by the CAISO only under provisions of the CAISO Tariff.