

California Independent System Operator Corporation
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6. Communications

6.1 Methods Of Communications

6.1.1 Full-Time Communications Facility Requirement

Each Scheduling Coordinator, Utility Distribution Company, Participating TO, Participating Generator, Balancing Authority (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operator must provide a communications facility manned twenty-four (24) hours a day, seven (7) days a week capable of receiving Dispatch Instructions issued by the CAISO.

6.1.2 Information Transfer From Scheduling Coordinator To CAISO

Unless otherwise agreed by the CAISO, Scheduling Coordinators who wish to submit Bids into CAISO Markets for Energy or Ancillary Services to the CAISO must submit the information to the CAISO's secure communication system. Scheduling Coordinators that wish to submit Dynamic Schedules or Bids for Ancillary Services to the CAISO must also comply with the applicable requirements of Sections 4.5.4.3, 8.4.5 and 8.4.7.2.1.

6.1.3 Submitting Information To The Secure Communication System

For Scheduling Coordinators submitting information to the CAISO's secure communication system, each such Scheduling Coordinator shall establish a network connection with the CAISO's secure communication system. Link initialization procedures shall be necessary to establish a connection to the CAISO's secure communication system. In order to log in, each Scheduling Coordinator will be furnished a digital certificate by the CAISO.

6.1.3.1 The CAISO will make available data templates and validation rules information that provides a description of the templates which will be utilized to enter data into the CAISO's secure communication system.

6.1.4 Information Transfer From CAISO To Scheduling Coordinator

Unless otherwise agreed between a Scheduling Coordinator and the CAISO, the CAISO shall furnish scheduling information to Scheduling Coordinators by electronic transfer as described in Section 6. If electronic data transfer is not available, the information may be furnished by

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facsimile. If it is not possible to communicate with the Scheduling Coordinator using the primary means of communication, an alternate means of communication shall be selected by the CAISO.

6.1.5 Information To Be Provided By Connected Entities To CAISO

Each Connected Entity shall provide to the CAISO:

- (a) A single and an alternative telephone number and a single and an alternative facsimile number by which the CAISO may contact twenty-four (24) hours a day a representative of the Connected Entity in, or in relation to, a System Emergency; and
- (b) The names or titles of the Connected Entity's representatives who may be contacted at such telephone and facsimile numbers.

6.1.5.1 Each representative specified pursuant to this Section 6.1.5 shall be a person having appropriate experience, qualification, authority, responsibility and accountability within the Connected Entity to act as the primary contact for the CAISO in the event of a System Emergency.

6.1.5.2 The details required under this Section 6.1.5 shall at all times be maintained up to date and the Connected Entity shall notify the CAISO of any changes promptly and as far in advance as possible.

6.2 CAISO'S Secure Communication System

6.2.1 Scheduling Coordinators

6.2.1.1 Scheduling Coordinators shall arrange access to the CAISO's secure communication system. Scheduling Coordinators shall maintain a secure electronic communication system for receiving Dispatch Instructions that is approved by the CAISO.

6.2.1.2 Details of the technical aspects of the CAISO's secure communication system, including information on how to change mechanisms and back-up procedures for individual Scheduling Coordinator failures, will be made available by the CAISO to Scheduling Coordinators on request.

It is assumed that each Scheduling Coordinator has made application for and signed a Scheduling Coordinator Agreement. As such, each Scheduling Coordinator will already be

familiar with and have arranged the mechanism, including security arrangements, by which it will initially communicate with the CAISO.

6.2.1.3 Individually Assigned Login Accounts

The CAISO will provide an interface for data exchange between the CAISO and Scheduling Coordinators who shall each have individually assigned login accounts via digital certificates. Through the use of the security provisions of CAISO's secure communication system, data will be provided by the CAISO to Scheduling Coordinators on a confidential basis (such as Day-Ahead Schedules and resource-specific pricing data resulting from the enforcement of a natural gas constraint as specified in Section 27.11 for individual Scheduling Coordinators). Other CAISO data that is not confidential (such as CAISO Demand Forecasts) will be published on the public access reporting system of the CAISO Website and be available to anyone.

6.2.1.4 Failure or Corruption of the CAISO's Secure Communication System

The CAISO shall, in consultation with Scheduling Coordinators, make provision for procedures to be implemented in the event of a total or partial failure of the CAISO's secure communication system or the material corruption of data on the CAISO's secure communication system. The CAISO shall ensure that such alternative communications systems are tested periodically.

6.2.1.5 Confidentiality

All information posted on the CAISO's secure communication system shall be subject to the confidentiality obligations contained in Section 20.

6.2.1.6 Standards of Conduct

The CAISO and all Market Participants shall comply with their obligations, to the extent applicable, under the standards of conduct set out in 18 C.F.R. §37.

6.2.2 Public Market Information

6.2.2.1 Non-Discriminatory Access to Information

The CAISO shall provide non-discriminatory access to information concerning the status of the CAISO Controlled Grid or facilities that affect the CAISO Controlled Grid by posting that information on the CAISO Website, or other similar computer communications device, or by telephone or facsimile in the event of computer systems failure.

6.2.2.2 Open Access Same-Time Information System

The CAISO shall provide a public access information reporting system, Open Access Same-Time Information System (OASIS), to deliver market operations and grid management information to accommodate users other than Market Participants. OASIS will be accessible to the public via a link on the CAISO Website.

6.3 Communication Of Dispatch Instructions

Normal verbal and electronic communication of Dispatch Instructions between the CAISO and Generators, Participating Loads, Distributed Energy Resource Providers, or Demand Response Providers will be via the relevant Scheduling Coordinator.

6.3.1 SC Responsibility For Communications To Generator Or Load

Each Scheduling Coordinator must immediately pass on to the Generator, Participating Load, Distributed Energy Resource Provider, or Demand Response Provider concerned any communication for the Generator, Participating Load, or Demand Response Provider which it receives from the CAISO.

Communication delays by the Scheduling Coordinator may result in Uninstructed Deviation Penalties or other adjustments pursuant to this CAISO Tariff. The CAISO may, with the prior permission of the Scheduling Coordinator concerned, communicate with and give Dispatch Instructions to the operators of Generating Units, Participating Loads, Distributed Energy Resource Providers, and to Demand Response Providers, directly without having to communicate through their appointed Scheduling Coordinator. In situations of deteriorating system conditions or emergency, the CAISO reserves the right to communicate directly with the Generator(s), Distributed Energy Resource Providers, and Demand Response Providers as required to ensure System Reliability.

6.3.2 Recording Of Dispatch Instructions

The CAISO shall maintain records of all electronic, fax and verbal communications related to a Dispatch Instruction. The CAISO shall maintain a paper or electronic copy of all Dispatch Instructions delivered by fax and all Dispatch Instructions delivered electronically. The CAISO shall record all voice conversations that occur related to Dispatch Instructions on the Dispatch

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Instruction communication equipment. These records, copies and recordings may be used by the CAISO to audit the Dispatch Instruction, and to verify the response of the Market Participant concerned to the Dispatch Instruction.

6.3.3 Contents Of Dispatch Instructions

Dispatch Instructions shall include, but are not limited to, the following information:

- (a) specific resource being dispatched;
- (b) specific MW value of the resource being dispatched;
- (c) specific type of instruction (action required);
- (d) time the resource is required to begin initiating the Dispatch Instruction;
- (e) time the resource is required to achieve the Dispatch Instruction;
- (f) time of notification of the Dispatch Instruction; and
- (g) any other information which the CAISO considers relevant.

6.4 Communication Of Operating Orders

The CAISO shall use normal verbal and electronic communication to issue operating orders to the Connected Entity.

6.5 CAISO Communications

The CAISO will provide a secure communication system to publish confidential information and communicate with Scheduling Coordinators, and OASIS to publish public information. All prices released by the CAISO either as published on its Open Access Same-Time Information System (OASIS) or provision of prices directly to Market Participants are subject to price corrections and changes pursuant to Section 35.

6.5.1 Communication With Market And CRR Participants And Public

6.5.1.1 Market Participants With Non-Disclosure Agreements

6.5.1.1.1 Annually, the CAISO shall provide information that will include, but is not limited to, the following:

- (a) CRR Full Network Model;
- (b) Transmission Constraints and Transmission Interface definitions;

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- (c) Load Distribution Factors for each CRR Allocation and CRR Auction that is published prior to the CRR Allocation and CRR Auction; and
- (d) Nominations and/or parameters to be used for modeling in each annual CRR Allocation and CRR Auction processes: Transmission Ownership Rights, Existing Contracts and Converted Rights expected usage, and Merchant Transmission CRRs.

6.5.1.1.2 Monthly, the CAISO shall provide information that will include, but is not limited to, the following:

- (a) CRR Full Network Model;
- (b) Transmission Constraints and Transmission Interface definitions;
- (c) Load Distribution Factors for each CRR Allocation and CRR Auction that is published prior to the CRR Allocation or CRR Auction; and
- (d) Nominations and/or parameters to be used for modeling in each monthly CRR Allocation and CRR Auction processes: Transmission Ownership Rights, Existing Contracts and Converted Rights expected usage, and Merchant Transmission CRRs.

6.5.1.2 CRR Participants Without Non-Disclosure Agreements

6.5.1.2.1 Annually, the CAISO shall provide CRR information specific to that CRR Holder or Candidate CRR Holder as it relates to participation in the annual CRR Allocation or CRR Auction.

6.5.1.2.2 Monthly, the CAISO shall provide CRR information specific to that CRR Holder or Candidate CRR Holder as it relates to participation in the monthly CRR Allocation or CRR Auction.

6.5.1.3 Public Market Information

6.5.1.3.1 Annually, the CAISO shall publish the following information including, but not limited to:

- (a) Market Clearing Prices for all Aggregated PNodes used in the CRR Auction clearing for on-peak and off-peak;
- (b) CRR Holdings by CRR Holder (including):
 - (i) CRR Source name(s);

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- (ii) CRR Sink name(s);
- (iii) CRR quantity (MW) for each CRR Source(s) and CRR Sink(s);
- (iv) CRR start and end dates;
- (v) Time of use specifications for the CRR(s); and
- (vi) Whether the CRR is a CRR Option or CRR Obligation.

6.5.1.3.2 Monthly, the CAISO shall publish the following information including, but not limited to:

- (a) Market Clearing Prices for all Aggregated PNodes used in the CRR Auction clearing for on-peak and off-peak;
- (b) CRR Holdings by CRR Holder (including):
 - (i) CRR Source name(s);
 - (ii) CRR Sink name(s);
 - (iii) CRR quantity (MW) for each CRR Source(s) and CRR Sink(s);
 - (iv) CRR start and end dates;
 - (v) Time of use specifications for the CRR(s); and
 - (vi) Whether the CRR is a CRR Option or a CRR Obligation.

6.5.1.3.3 Seasonally, the CAISO shall publish the following information including, but not limited to:

- (a) Set of LDFs that represent typical seasonal on-peak and off-peak values, not used for Settlements, before the new season.

6.5.1.4 Requirements to Obtain the CRR Full Network Model

To permit participants to review and use the Confidential Information disclosed by the CAISO solely in connection with review and analysis of the CAISO Markets, the CAISO shall distribute the CRR Full Network Model only to those Market Participants and non-Market Participants that satisfy the following requirements and the related procedures set forth in the Business Practice Manual.

- (a) A Market Participant that is a member of the WECC and that requests the CRR Full Network Model: (i) shall execute the Non-Disclosure Agreement for CRR Full Network Model Distribution that is posted on the

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CAISO Website and (ii) shall provide to the CAISO a non-disclosure statement, the form of which is attached as an exhibit to the Non-Disclosure Agreement executed by the Market Participant, executed by each employee and consultant of the Market Participant who will have access to the CRR Full Network Model.

- (b) A Market Participant that is not a member of the WECC and that requests the CRR Full Network Model: (i) shall execute the Non-Disclosure Agreement for CRR Full Network Model Distribution that is posted on the CAISO Website, (ii) shall provide to the CAISO a fully executed WECC Non-Member Confidentiality Agreement for WECC Data, and (iii) shall provide to the CAISO a non-disclosure statement, the form of which is attached as an exhibit to the Non-Disclosure Agreement executed by the Market Participant, executed by each employee and consultant of the Market Participant who will have access to the CRR Full Network Model.
- (c) A non-Market Participant that is a member of the WECC and that requests the CRR Full Network Model: (i) shall reasonably demonstrate a legitimate business or governmental interest in the CAISO Markets, (ii) shall execute the Non-Disclosure Agreement for CRR Full Network Model Distribution that is posted on the CAISO Website, and (iii) shall provide to the CAISO a non-disclosure statement, the form of which is attached as an exhibit to the Non-Disclosure Agreement executed by the non-Market Participant, executed by each employee and consultant of the non-Market Participant who will have access to the CRR Full Network Model.
- (d) A non-Market Participant that is not a member of the WECC and that requests the CRR Full Network Model: (i) shall reasonably demonstrate a legitimate business or governmental interest in the CAISO Markets, (ii)

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shall execute the Non-Disclosure Agreement for CRR Full Network Model Distribution that is posted on the CAISO Website, (iii) shall provide to the CAISO a fully executed WECC Non-Member Confidentiality Agreement for WECC Data, and (iv) shall provide to the CAISO a non-disclosure statement, the form of which is attached as an exhibit to the Non-Disclosure Agreement executed by the non-Market Participant, executed by each employee and consultant of the non-Market Participant who will have access to the CRR Full Network Model.

6.5.1.5 Non-Disclosure Agreement

The CAISO's Non-Disclosure Agreement for CRR Full Network Model Distribution shall be posted on the CAISO Website. This Non-Disclosure Agreement shall provide for the CAISO to receive the costs of litigation, including attorneys' fees, related to the Non-Disclosure Agreement if the CAISO prevails in litigation. Recipients of the CRR Full Network Model may use the CRR Full Network Model and related studies in pleadings to the FERC provided they request confidential treatment of all information subject to the Non-Disclosure Agreement.

6.5.1.6 Obligation to Report Violations of Section 6.5.1.4

Each Market Participant, non-Market Participant, employee of a Market Participant, employee of a non-Market Participant, consultant, and employee of a consultant to whom the CAISO distributes the CRR Full Network Model shall be obligated to immediately report to the CAISO any violation of the requirements of Section 6.5.1.4.

6.5.2 Communications Prior To The Day-Ahead Market

6.5.2.1 Communications Regarding the State of the CAISO Controlled Grid

The CAISO shall use OASIS to provide public information to Market Participants regarding the CAISO Controlled Grid or facilities that affect the CAISO Controlled Grid. Such information may include but is not limited to:

- (a) Future planned Outages of transmission facilities;
- (b) Total Transfer Capability (TTC); and

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- (c) Available Transfer Capability (ATC) for WECC paths and Transmission Interfaces with external Balancing Authority Areas.

6.5.2.2 Communications With Scheduling Coordinators

6.5.2.2.1 Bid Adder Eligibility

6.5.2.2.1.1 By the 20th of each month, the CAISO will notify Scheduling Coordinators of Bid Adder eligibility, applicable Bid Adder value for the following month, and Frequently Mitigated Units that are eligible for a Bid Adder.

6.5.2.2.1.2 Scheduling Coordinators shall have one week to review Bid Adder information and provide comment back to the CAISO by the 27th of each month.

6.5.2.2.2 Day-Ahead Market Bid Submittal

Seven (7) days prior to any Trading Day, Scheduling Coordinators can begin submitting Bids for the DAM for that Trading Day

6.5.2.2.3 Advisory Day-Ahead Market Results

The CAISO may provide to the responsible Scheduling Coordinator the MWh amounts scheduled in the preliminary RUC process the CAISO conducts two (2) days prior to the Trading Day, that is based on Bids and forecasts of system conditions as available in the CAISO Market systems at the time the CAISO conducts the preliminary RUC process. This information is for advisory purposes only and is not financially binding.

6.5.2.3 Public Market Information

6.5.2.3.1 Demand Forecasts

6.5.2.3.1.1 Beginning seven (7) days prior to the target Day-Ahead Market, and updated as necessary, the CAISO will publish the CAISO Forecast of CAISO Demand.

6.5.2.3.1.2 By 6:00 p.m. the day prior to the target Day-Ahead Market, the CAISO will publish the updated CAISO Forecast of CAISO Demand.

6.5.2.3.2 Network and System Conditions

By 6:00 p.m. the day prior to the target Day-Ahead Market, the CAISO will publish known network and system conditions, including but not limited to TTC and ATC, the total capacity of inter-Balancing Authority Area Transmission Interfaces, and the available capacity.

6.5.2.3.3 Ancillary Services Requirements

By 6:00 p.m. the day prior to the target Day-Ahead Market, the CAISO will publish forecasted Ancillary Services requirements and regional constraints by AS Region.

6.5.2.3.4 Greenhouse Gas Price Indices

The CAISO will publish daily greenhouse gas price indices when available.

6.5.2.3.5 Extremely Long-Start Unit Commitment

The CAISO will communicate commitment instructions to Scheduling Coordinators for Extremely Long-Start Resources by 3:00 p.m. two (2) days in advance of the Operating Day through a secure communication system.

6.5.2.3.6 Virtual Bid Reference Prices

The CAISO will publish Virtual Bid Reference Prices prior to the applicable reference period for the Virtual Bid Reference Prices.

6.5.3 Day-Ahead Market Communications

6.5.3.1 Communications With Scheduling Coordinators

6.5.3.1.1 Prior to 6:00 a.m., the CAISO will continuously screen Inter-SC Trades of Energy for the DAM submitted by Scheduling Coordinators and will provide feedback to the Scheduling Coordinators about the consistency and validity of these Inter-SC Trades based on information available to the CAISO.

6.5.3.1.2 Between 6:00 a.m. and the end of the Day-Ahead Inter-SC Trade Period, the CAISO performs the validation of Inter-SC Trades of Energy for the DAM and will notify the participants of the status of these Inter-SC Trades.

6.5.3.1.3 Between 5:00 a.m. and 10:00 a.m., the CAISO will provide feedback to Scheduling Coordinators about their validated ETC and TOR quantities, and calculated Default Energy Bids curves provided by Independent Entities, and in addition, the RMR Proxy Bids for Energy and the Minimum Load and Start-Up Cost Bid curves for RMR Units, as provided by Independent Entities.

6.5.3.1.4 After the close of the DAM bidding at 10:00 a.m., the CAISO will send a message to the Scheduling Coordinators regarding the outcome of the Bid validation.

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6.5.3.1.5 By 1:00 p.m., the CAISO will publish the result of the DAM and the resource will be flagged if it is being dispatched under its RMR Contract. Any such Dispatch shall be deemed an RMR Dispatch Notice under the RMR Contract.

6.5.3.1.6 After the results of the DAM are published by 1:00 p.m., the CAISO performs the Inter-SC Trade of Energy post-market validation and communicates the results back to the applicable Scheduling Coordinator.

6.5.3.1.7 The results of the Day-Ahead Market will be published by 1:00 p.m. and will include:

- (a) Unit Commitment status for resources committed in the IFM;
- (b) Day-Ahead Schedules and prices;
- (c) Day-Ahead AS Awards and prices;
- (d) RUC Awards and RUC Capacity and resource-specific RUC Prices;
- (e) RUC Start-Up Instructions;
- (f) Start-Up Instructions resulting from the ELC Process;
- (g) Post-market summary of Day-Ahead and Real-Time Energy Schedules, Ancillary Service Awards, RMR Dispatches, and CCR results of RMR Units;
- (h) Day-Ahead final resource Bid mitigation results; and
- (i) Day-Ahead finally qualified Load following capacity.

6.5.3.1.8 All Expected Energy results will be published at one (1) day after the Trading Day and will include post-market Energy accounting results for Settlement calculations.

6.5.3.2 Public Market Information

6.5.3.2.1 Before 10:00 a.m. one (1) day before the Operating Day the CAISO will publish updated Outage information regarding the transmission system on OASIS. The updated Outage information will include planned and actual Outage events per Transmission Interface, including Outage description, Outage start time and end time, and rating of the curtailed line.

6.5.3.2.2 The results of the Day-Ahead Market will be published on OASIS by 1:00 p.m. and will include:

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- (a) Total Day-Ahead Schedules (MWh) for total Supply and Demand by TAC Area and for the entire CAISO Balancing Authority Area;
- (b) Total Day-Ahead Schedules (MWh) of imports and exports by Transmission Interface;
- (c) Total Day-Ahead AS Awards by AS Region and AS type;
- (d) RUC Prices by PNode and APNodes, RUC Forecast Demand for each RUC Zone, hourly RUC Capacity from Generation, and hourly RUC Capacity from imports for each TAC Area and the entire CAISO Balancing Authority Area;
- (e) Day-Ahead LMP for Energy for each PNode and APNode, including the Energy, MCC and MCL components;
- (f) Day-Ahead ASMP by AS Region and AS type;
- (g) Day-Ahead mitigation indicator;
- (h) CAISO Forecast of CAISO Demand for each TAC Area and the entire CAISO Balancing Authority Area;
- (i) Shadow Prices of binding Transmission Constraints and an indication of whether the Transmission Constraints were binding because of the base operating conditions or a Contingency, and if caused by a Contingency, the identity of the specific Contingency; and
- (j) Total Day-Ahead system Marginal Losses in MWh and Marginal Cost of Losses for each Trading Hour of the next Trading Day.

6.5.3.2.3 After the results of the Day-Ahead Market are published pursuant to Section 6.5.3.2.2, the CAISO will publish on OASIS a daily market report that includes a summary of aggregate information regarding MWh and dollar amounts of submitted and cleared physical quantities and Virtual Awards.

6.5.3.2.4 External Unscheduled Flow Metric

Three Business Days after the applicable Trading Day the CAISO will post the aggregate accuracy metric calculated as specified in Section 27.5.1.2. If the CAISO must suspend the

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consideration of external unscheduled flow in the Day-Ahead Market, the CAISO will notify Market Participants as soon as practicable prior to implementing the suspension. The CAISO will also notify Market Participants as soon as practicable prior to reinstating its consideration of external unscheduled flow in the Day-Ahead Market.

6.5.4 RTM Communications Before The Trading Hour

The RTM is intended to open at 1:00 p.m. the day before the target Operating Day to coincide with the posting of results from the DAM, which may be delayed for reasons specified in Section 31.6. Scheduling Coordinators can submit Bids into the RTM as of the time such results are posted.

6.5.4.1 Communications With Scheduling Coordinators

6.5.4.1.1 Before one hundred thirty-five (135) minutes before the Trading Hour, the CAISO will continuously screen Inter-SC Trades of Energy for the RTM, Inter-SC Trades of Ancillary Services, and Inter-SC Trades of IFM Load Uplift Obligations submitted by Scheduling Coordinators and will communicate with the Scheduling Coordinators about the consistency and validity of these Inter-SC Trades based on information available to the CAISO.

6.5.4.1.2 Between one hundred thirty-five (135) minutes before the Trading Hour and forty-five (45) minutes before the Trading Hour, the CAISO will perform the pre-market validation check for Inter-SC Trades for the RTM and Inter-SC Trades of Ancillary Services and will provide feedback to the Scheduling Coordinators about the validity of these Inter-SC Trades based on information available to the CAISO.

6.5.4.1.3 At approximately seventy-five (75) minutes before the Trading Hour, the CAISO will send a message to the Scheduling Coordinators regarding the outcome of the Bid validation.

6.5.4.1.4 In between two hundred seventy (270) minutes before the Trading Hour and the top of the Trading Hour, the CAISO will issue RTM Start-Up Instructions for Short Start Units consistent with the resource's Start-Up Time.

6.5.4.1.5 No later than forty-five (45) minutes before the Trading Hour, on an hourly basis, the CAISO will publish via the secure communication system results of the HASP processes.

6.5.4.1.6 [Not Used]

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6.5.4.1.7 At approximately thirty (30) minutes before the Trading Hour, the CAISO performs the Inter-SC Trade of Energy post-market validation and sends the results back to the applicable Scheduling Coordinators.

6.5.4.1.8 After thirty (30) minutes before the Trading Hour, on an hourly basis, the CAISO will publish via the secure communication system the following:

- (a) Advisory Resource-Specific Settlement Interval LMPs, and
- (b) Resource-Specific ASMPs.

6.5.4.2 Public Market Information

6.5.4.2.1 By one hundred five (105) minutes before the Trading Hour the CAISO will publish information regarding Outages on the transmission system on OASIS that will be used for Congestion Management, HASP Block Intertie Schedules and HASP Advisory Schedules that involve an Intertie transaction.

6.5.4.2.2 No later than forty (40) minutes before the Trading Hour, on an hourly basis, the CAISO will publish on OASIS the following:

- (a) Total HASP Block Intertie Schedules and HASP Advisory Schedules that involve an Intertie transaction for imports and exports by TAC Area and for the entire CAISO Balancing Authority Area;
- (b) HASP advisory LMPs by PNode and APNode;
- (c) HASP Shadow Prices of binding Transmission Constraints and an indication of whether the constraints were binding because of the base operating conditions or contingencies and if caused by a contingency, the identity of the specific contingency; and
- (d) Total HASP system Marginal Losses in MWh for the next Operating Hour.

6.5.4.2.3 The CAISO will publish the natural gas price index used for the Real-Time Market when available.

6.5.5 Real-Time Market Communications During the Trading Hour

The CAISO shall issue Dispatch Instructions to Scheduling Coordinators determined pursuant to the RTM throughout any given day.

6.5.5.1 Communications with Scheduling Coordinators

Communications between the CAISO and Scheduling Coordinators shall take place via the CAISO's secure communication system to a dedicated terminal at the Scheduling Coordinator's scheduling center. If there is a failure of electronic communications with a Scheduling Coordinator, then, at the CAISO's discretion, the Scheduling Coordinator may communicate by facsimile. Communication by facsimile requires verbal approval by the CAISO.

6.5.5.1.1 Every fifteen (15) minutes, the CAISO will communicate via the secure communication system Start-Up and Shut-Down Instructions and Real-Time AS Awards to internal resources (which include Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area).

6.5.5.1.2 Every five (5) minutes for Target T+10, the CAISO will send Dispatch Instructions via the secure communication system. The Dispatch Instruction will be flagged if a resource is being dispatched under its RMR Contract.

6.5.5.2 Public Market Information

6.5.5.2.1 Every hour the CAISO shall post via OASIS information regarding the status of the RTM. This information shall include but is not limited to the following:

- (a) Mitigation indicator.

6.5.5.2.2 Every fifteen (15) minutes the CAISO shall post via OASIS information regarding the status of the RTM. This information shall include but is not limited to the following:

- (a) Total Real-Time AS Awards by AS Region and AS type
- (b) Real-Time ASMPs by AS Region and AS type; and
- (c) FMM LMP.

6.5.5.2.3 [NOT USED]

6.5.5.2.4 Every five (5) minutes the CAISO shall post via OASIS information regarding the status of the RTM. This information shall include but is not limited to the following:

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- (a) CAISO Forecast of CAISO Demand;
- (b) Total Real-Time dispatched Energy and Demand on a 24-hour delayed basis;
- (c) Real-Time Dispatch Interval LMP;
- (d) Real-Time system losses;
- (e) Actual Operating Reserve; and
- (f) The Real-Time shadow price of binding Transmission Constraints and an indication of whether the constraints were binding because of the base operating conditions or contingencies and if caused by a contingency, the identity of the specific contingency.

6.5.6 Market Bid Information

6.5.6.1 Public Market Information

6.5.6.1.1 Day-Ahead and Real-Time Market Bids

The following information shall be published on OASIS ninety (90) days following the applicable Trading Day, with the exclusion of the information that is specific to Scheduling Coordinators:

- (a) AS market Bids;
- (b) Energy market Bids, including Virtual Bids separately identified as such;
and
- (c) RUC market Bids.

6.5.6.1.2 Start-Up and Minimum Load Costs

Within seven (7) days after the Trading Day, the CAISO will publish via OASIS all Start-Up Costs and Minimum Load Costs for CAISO committed resources.

6.5.6.1.3 CRR Auction Bids

The CAISO will publish Monthly CRR Auction bids ninety (90) days after the close of the applicable monthly CRR Auctions, with the exclusion of the information that is specific to CRR Holders or Candidate CRR Holders. The CAISO will publish Seasonal CRR Auction bids, in

quarterly increments after the expiration of each set of Seasonal CRRs, with the exclusion of the information that is specific to CRR Holders or Candidate CRR Holders.

6.5.7 Monthly Report on Conforming Transmission Constraints

The CAISO will post on its website a monthly report or incorporate into a monthly report on the degree of adjustments to Transmission Constraints made pursuant to Section 27.5.6. To the extent that in any given month the CAISO does not post on its website such reports, the CAISO will provide the report in the subsequent month. If it is not reasonably feasible to provide such the monthly report two months after the applicable month of the report, the information for the missed month will not be provided.

6.5.8 Virtual Award Information

The CAISO will post on OASIS the net cleared quantities of Virtual Awards at each Eligible PNode or Eligible Aggregated PNode by the close of the Real-Time Market for each Trading Day.

6.5.9 Transmission Flowgate Constraint Information

The CAISO will post on OASIS all transmission flowgate Constraints with the corresponding Shadow Prices.

6.5.10 Protected Communications with Market Participants

6.5.10.1 Protected Data

The CAISO will provide to parties that have signed a Non-Disclosure Agreement in accordance with Section 6.5.10, the following Protected Data:

6.5.10.1.1 Transmission Constraints Enforcement List

After the results of the Day-Ahead Market are posted, the CAISO will provide the daily post-Day-Ahead Market Transmission Constraints Enforcement List, which consists of the list of Transmission Constraints, including Contingencies and Nomograms that are enforced and not enforced in that day's Day-Ahead Market. Subsequently and prior to the next Day-Ahead Market, the CAISO will provide to parties the pre-Day-Ahead Market Transmission Constraints Enforcement List, which consists of the daily list of information for the Transmission Constraints, including Contingencies and Nomograms, the CAISO plans to enforce or not enforce for the next day's Day-Ahead Market. To the extent that the CAISO does not make either of these two

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reports available on any given Operating Day, the CAISO will instead provide within the next thirty (30) days only the list of Transmission Constraints, including Contingencies and Nomograms, that were enforced or not enforced for the applicable Day-Ahead Market, after which the information will not be provided.

6.5.10.1.2 Load Distribution Factors

Three (3) days after the applicable Trading Day, the CAISO will provide the actual Load Distribution Factors used in the Integrated Forward Market for the applicable Trading Day. The CAISO will provide the Load Distribution Factors for each of the Default LAPs' underlying Pricing Nodes for all Pricing Nodes that are identified by the responsible Utility Distribution Company as Pricing Nodes at which there is more than just a single customer. For Pricing Nodes that the responsible Utility Distribution Company has not identified as Pricing Nodes at which there is more than just a single customer, the ISO will publish the respective Load Distribution Factors in a single aggregated location capturing all such nodes. To the extent that the CAISO fails to provide this report on any given Operating Day, the CAISO will endeavor to provide this report within the next thirty (30) days for the applicable Integrated Forward Market, after which the information will not be provided.

6.5.10.1.3 Power Transfer Distribution Factors

Three (3) days after the applicable Trading Day, the CAISO will provide the Integrated Forward Market, HASP and Real-Time Dispatch Power Transfer Distribution Factors for each binding Transmission Constraint in the respective markets. To the extent that the CAISO fails to provide this report on any given Operating Day, the CAISO will endeavor to provide this report for any given successful Integrated Forward Market, HASP and Real-Time Dispatch run within the next thirty (30) days, after which the information will not be provided.

6.5.10.1.4 Transmission Constraints Limits

Three (3) days after the applicable Trading Day, the CAISO will provide a report on the limits associated with all Transmission Constraints, including Nomograms, branch groups, and individual transmission facilities, under both base case and contingencies, that are enforced in the Integrated Forward Market, FMM and Real-Time Dispatch, and that based on the flows in the

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respective market runs are approaching the limits. To the extent that the CAISO fails to provide this report on any given Operating Day, the CAISO will endeavor to provide this report within the next thirty (30) days for any given successful Integrated Forward Market, FMM and Real-Time Dispatch run, after which the information will not be provided.

6.5.10.1.5 Intertie Flow Information

After the results of the Day-Ahead Market are posted, the CAISO will provide: 1) the hourly unscheduled flow at each Intertie considered in the Day-Ahead Market; and 2) a summary of whether the CAISO enforced physical flow constraints on the Interties pursuant to Section 31.8.2, and if it did not, a short description of the reasons for non-enforcement. After the results of the Real-Time Market are posted, the CAISO will provide the unscheduled flow at each Intertie considered in the Real-Time Market. At the same time that the CAISO posts the information specified in Section 6.5.3.2.4, the CAISO will also provide the accuracy metric by Intertie for each Trading Hour as Protected Data. To the extent that the CAISO fails to provide any of these reports on any given Operating Day, the CAISO will endeavor to provide any of these reports within the next thirty (30) days for the applicable Day-Ahead Market and Real-Time Market, after which the information will not be provided.

6.5.10.2 Requirements to Obtain the Protected Data

The CAISO shall provide the Protected Data only to those Market Participants and non-Market Participants that satisfy the following requirements.

- (a) To obtain access to the Protected Data, a Market Participant that is a member of the WECC that requests the Protected Data must: (i) execute and submit to the CAISO the Non-Disclosure Agreement for Protected Data that is posted on the CAISO Website; and (ii) provide to the CAISO a non-disclosure statement, the form of which is attached as an exhibit to the Non-Disclosure Agreement executed by the Market Participant, executed by each employee and consultant of the Market Participant who will have access to the Protected Data.
- (b) To obtain access to the Protected Data, a Market Participant that is not a

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- member of the WECC that requests the Protected Data must: (i) execute and submit to the CAISO the Non-Disclosure Agreement for Protected Data that is posted on the CAISO Website, (ii) provide to the CAISO a fully executed WECC Non-Member Confidentiality Agreement for WECC Data, and (iii) provide to the CAISO a non-disclosure statement, the form of which is attached as an exhibit to the Non-Disclosure Agreement executed by the non-WECC Market Participant, executed by each employee and consultant of the non-WECC Market Participant who will have access to the Protected Data.
- (c) To obtain access to the Protected Data a non-Market Participant that is a member of the WECC that requests the Protected Data must: (i) reasonably demonstrate a legitimate business or governmental interest in the CAISO Markets, (ii) execute the Non-Disclosure Agreement for Protected Data posted on the CAISO Website, and (iii) provide to the CAISO a non-disclosure statement, the form of which is attached as an exhibit to the Non-Disclosure Agreement executed by the non-Market Participant, executed by each employee and consultant of the non-Market Participant who will have access to the Protected Data.
- (d) To obtain access to the Protected Data, a non-Market Participant that is not a member of the WECC that requests the Protected Data must: (i) reasonably demonstrate a legitimate business or governmental interest in the CAISO Markets, (ii) execute the Non-Disclosure Agreement for Protected Data that is posted on the CAISO Website, (iii) provide to the CAISO a fully executed WECC Non-Member Confidentiality Agreement for WECC Data, and (iv) provide to the CAISO a non-disclosure statement, the form of which is attached as an exhibit to the Non-Disclosure Agreement executed by the non-Market Participant, executed by each employee and consultant of the non-Market Participant who will

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have access to the Protected Data.

- (e) To obtain access to the Protected Data specified in Section 6.5.10.1.5, all Market Participants or non-Market Participants that otherwise qualify to obtain the Protected Data pursuant to the requirements in this Section 6.5.10.2, must also certify in writing to the CAISO that the Market Participant or non-Market Participant has executed the WECC Universal Non-Disclosure Agreement.

6.5.10.3 Obligation to Report Violations of Section 6.5.10

Each Market Participant, non-Market Participant, employee of a Market Participant, employee of a non-Market Participant, consultant, and employee of a consultant to whom the CAISO distributes the Protected Data shall be obligated to immediately report to the CAISO any violation of the requirements of Section 6.5.10.

6.5.11 Aggregate Generation Outage Data

Each day prior to the applicable Integrated Forward Market, the CAISO will publish Generation outage data for each Existing Zone Trading Hub aggregated by fuel category, for example thermal, hydro or renewable, to the extent such disclosure is consistent with the confidentiality requirements in Section 20. The report will be for the current Trading Day and for twenty-nine (29) days that follow the current Trading Day. To the extent that the CAISO fails to provide this report on any given Operating Day, the CAISO will endeavor to provide this report within the next thirty (30) days for any given successful Integrated Forward Market run, after which the information will not be provided.

6.5.12 Wind and Solar Forecast and Output

On the day prior to the applicable Day-Ahead Market, the CAISO will post an aggregated Day-Ahead forecast of the expected hourly output of Eligible Intermittent Resources. Approximately 90 minutes before the applicable Trading Hour, the CAISO will post an hourly aggregate forecast of the expected output of Eligible Intermittent Resources. Each day, the CAISO will post for the prior Trading Day by the Trading Hour the actual aggregated hourly output of the Eligible Intermittent Resources. The forecast and actual output will be provided at an hourly aggregated

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level by the Existing Zone Trading Hubs. To the extent that the CAISO fails to provide this report on any given Operating Day, the CAISO will endeavor to provide this report for any given Trading Day within the next thirty (30) days, after which the information will not be provided.

6.5.13 Suspension of Publication

The CAISO may delay or suspend any data releases specified in Section 6.5 if the CAISO has determined that the publication of such data results in anti-competitive or detrimental impacts to market efficiency.