

## SCHEDULING PROTOCOL (SP)

### SP 1 OBJECTIVES, DEFINITIONS AND SCOPE

#### SP 1.1 Objectives

The objectives of this Protocol are:

- (a) to process the scheduling input data (submitted to the ISO under the Ancillary Service Requirements Protocol (ASRP), the Demand Forecasting Protocol (DFP), and the Schedules and Bids Protocol (SBP)) in order to develop Final Schedules for the Day-Ahead and Hour-Ahead Markets (real time management of the ISO Controlled Grid is addressed in the Dispatch Protocol (DP));
- (b) to provide for the scheduling of the use of transmission service rights under Existing Contracts;
- (c) to assist the ISO in purchasing Ancillary Services; and
- (d) to manage Congestion.

#### SP 1.2 Definitions

##### SP 1.2.1 Master Definitions Supplement

~~Unless the context otherwise requires, a~~Any word or expression defined in the Master Definitions Supplement to the ISO Tariff shall have the same meaning where used in this Protocol. A reference to a Section or an Appendix is to a Section or an Appendix of the ISO Tariff. References to SP are to this Protocol or to the stated paragraph of this Protocol.

##### SP 1.2.2 Special Definitions for this Protocol

In this Protocol, the following words and expressions shall have the meanings set opposite them:

“**ISO Home Page**” means the ISO internet home page at <http://www.caiso.com/iso> or such other internet address as the ISO shall publish from time to time.

##### SP 1.2.3 Rules of Interpretation

- (a) Unless the context otherwise requires, if the provisions of this Protocol and the ISO Tariff conflict, the ISO Tariff will prevail to the extent of the inconsistency. ~~If the provisions of this SP and an Existing Operating Agreement conflict, the provisions of the Existing Operating Agreement will prevail.~~ The provisions of the ISO Tariff have been summarized or repeated in this Protocol only to aid understanding.

- (b) A reference in this Protocol to a given agreement, ISO Protocol or instrument shall be a reference to that agreement or instrument as modified, amended, supplemented or restated through the date as of which such reference is made.
- (c) The captions and headings in this Protocol are inserted solely to facilitate reference and shall have no bearing upon the interpretation of any of the terms and conditions of this Protocol.
- (d) This Protocol shall be effective as of the ISO Operations Date.
- (e) References to time are references to the prevailing Pacific time.

**SP 1.3            Scope**

**SP 1.3.1        Scope of Application to Parties**

The SP applies to the following entities:

- (a) Scheduling Coordinators (SCs);
- (b) Utility Distribution Companies (UDCs);
- (c) Participating Transmission Owners (PTOs);
- (d) interfacing Control Area operators in accordance with Inter-Control Area agreements entered into with the ISO, [to the extent the agreement between the Connected Entity and the ISO so provides](#); and
- (e) the Independent System Operator (ISO).

**SP 1.3.2        Liability of ISO**

Any liability of the ISO arising out of or in relation to this Protocol shall be subject to Section 14 of the ISO Tariff as if references to the ISO Tariff were references to this Protocol.

**SP 2             INTERFACE REQUIREMENTS**

The WEnet interface requirements and associated information requirements are described in the SBP.

**SP 3             TIME LINES**

- (a) Consistent with Section 2.2.12.1 [and 2.5.2.2](#) of the ISO Tariff, the ISO may implement any temporary variation or waiver of timing requirements contained in this SP (including the omission of any step) if any of the following criteria are met:
  - (i) the ISO receives Schedules that require delay in performing Day-Ahead Market or Hour-Ahead Market evaluations, such as in the case of the ISO receiving

- Inter-Scheduling Coordinator Energy Trades that do not balance;
- (ii) the ISO requires additional time to fulfill its responsibilities pursuant to Section 2.2.2 of the ISO Tariff;
  - (iii) problems with data or the processing of data cause a delay in receiving or issuing Schedules or publishing information on the WENet;
  - (iv) problems with telecommunications or computing infrastructure cause a delay in receiving or issuing Schedules or publishing information on the WENet; or
  - (v) such waiver or variation of timing requirements is reasonably necessary to preserve System Reliability, prevent an imminent or threatened System Emergency or to retain Operational Control over the ISO Controlled Grid during an actual System Emergency.
- (b) If the ISO temporarily implements a waiver or variation of such timing requirements (including the omission of any step) consistent with Section 2.2.12.1 of the ISO Tariff and SP 3(a), the ISO will publish the following information on WENet as soon as practicable:
- (i) the exact timing requirements affected;
  - (ii) details of any substituted timing requirements;
  - (iii) an estimate of the period for which this waiver or variation will apply; and
  - (iv) reasons for the temporary waiver or variation.
- (c) If, despite the variation of any time requirement or the omission of any step, the ISO either fails to receive sufficient Schedules to operate the Day-Ahead Market or is unable to perform Congestion Management in the Day-Ahead Market, the ISO may abort the Day-Ahead Market and require all Schedules to be submitted, and Congestion Management to be performed, in the Hour-Ahead Market.
- (d) If, despite the variation of any time requirement or omission of any step, the ISO either fails to receive sufficient Schedules to operate the Hour-Ahead Market or is unable to perform Congestion Management in the Hour-Ahead Market, the ISO may abort the Hour-Ahead Market and function in real time.
- (e) The incorporation of the scheduling of the use of rights under Existing Contracts into the ISO's Day-Ahead, Hour-Ahead and real time processes is additionally described in SP 7 and in the SBP.

**SP 3.1           Balanced Schedules**

**SP 3.1.1       Types of Balanced Schedules**

A Schedule shall be treated as a Balanced Schedule when the SC's aggregate Generation and external imports (adjusted for Transmission Losses) and Inter-Scheduling Coordinator Energy Trades (whether purchases or sales), equal the SC's aggregate Demand forecast, including external exports, with respect to all entities for which the SC schedules. On an interim basis, the ISO may assist SCs in matching Inter-Scheduling Coordinator Energy Trades.

**SP 3.1.2       Preferred Schedules**

The Preferred Schedule is the initial Schedule submitted by a SC in the Day-Ahead Market or Hour-Ahead Market. A Preferred Schedule shall be a Balanced Schedule submitted to the ISO by each SC on a daily and/or hourly basis.

**SP 3.1.3       Seven-Day Advance Schedules**

SCs may submit Balanced Schedules for up to seven (7) Trading Days at a time, representing the SC's Preferred Schedule for each Day-Ahead Market and/or Hour-Ahead Market. These advance Schedules can be overwritten by new Preferred Schedules at any time prior to the deadline for submitting Day-Ahead Schedules and Hour-Ahead Schedules, as described in the SP. If not overwritten by the SC, a Schedule submitted in advance of this deadline for submission will become the SC's Preferred Schedule at the deadline for submitting Day-Ahead Schedules and/or Hour-Ahead Schedules. There is no validation of Schedules submitted in advance of the deadline for submitting Preferred Schedules. As part of the scheduling and validation process, the ISO will calculate and publish, via WENet, the GMMs applicable to the Day-Ahead and Hour-Ahead Markets eight (8) days ahead of the Trading Day to which they relate, as described in SP 4.

**SP 3.1.4       Suggested Adjusted Schedules**

If the sum of SCs' Preferred Schedules would cause Congestion across any Inter-Zonal Interface, the ISO shall issue Suggested Adjusted Schedules to all SCs in the Day-Ahead Market only. These Suggested Adjusted Schedules will not apply to uses of transmission owned by non-participating transmission owners nor to uses of either Existing Rights or Non-Converted Rights under Existing Contracts. A modification flag, set by the ISO, will indicate whether the scheduled output in a Settlement Period has been modified as a result of Congestion Management. The ISO will publish as public information, via the WENet, estimated Usage Charges for Energy transfers between Zones.

**SP 3.1.5 Revised Schedules**

Following receipt of a Suggested Adjusted Schedule, a SC may submit to the ISO a Revised Schedule, which shall be a Balanced Schedule, [and which shall seek to reduce or eliminate Congestion](#). There are no Revised Schedules in the Hour-Ahead Market.

**SP 3.1.6 Final Schedules**

If the ISO notifies a SC that there will be no Congestion on the ISO Controlled Grid based on the Preferred Schedules submitted by all SCs, the Preferred Schedule shall become that SC's Final Schedule. If the ISO has adjusted the SC's Preferred Schedule to match Inter-Scheduling Coordinator Energy Trades then the adjusted Preferred Schedule shall become that SC's Final Schedule. If the ISO notifies a SC that there will be no Congestion on the ISO Controlled Grid based on the Revised Schedules submitted by all SCs, the Revised Schedule shall become that SC's Final Schedule. If the ISO has adjusted the SC's Revised Schedule to match Inter-Scheduling Coordinator Energy Trades then the adjusted Revised Schedule shall become that SC's Final Schedule. If there is Congestion based on the Revised Schedules or mismatches in Inter-Scheduling Coordinator Energy Trades, the ISO shall adjust the Revised Schedules and issue Final Schedules. The SCs will be notified, via WEnet, that their Schedules have become final. The ISO will also publish a final set of Usage Charges for Energy transfers between Zones, applicable to all SCs.

**SP 3.2 Day-Ahead Market**

The Day-Ahead Market is a forward market for Energy and Ancillary Services. The Day-Ahead Market operates individually for each Settlement Period of the Trading Day. The Day-Ahead Market starts at 6:00 pm two days ahead of the Trading Day and ends at 1:00 pm on the day ahead of the Trading Day, at which time the ISO issues the Final Day-Ahead Schedules.

**SP 3.2.1 By 6:00 pm, Two Days Ahead**

By 6:00 pm two days ahead of the Trading Day (for example, by 6:00 pm on Monday for the Wednesday Trading Day), the ISO will publish, via WEnet, the following information for each Settlement Period of the Trading Day:

- (a) a forecast of conditions on the ISO Controlled Grid, including transmission line and other transmission facility Outages;
- (b) a forecast of Generation Meter Multipliers (GMMs), as developed in accordance with SP 4, at each Generator location and Scheduling Point;
- (c) a forecast of system Demands by Zone;

- (d) an estimate of the Ancillary Services requirements for the ISO Control Area (see the ASRP for the details on these requirements);
- (e) a forecast of Loop Flows over interfaces with other Control Areas;
- (f) a forecast of the potential for Congestion conditions;
- (g) a forecast of total and Available Transfer Capacity over certain rated transmission paths and Inter-Zonal Interfaces.
- (h) [a description of any temporary adjustments to Ancillary Service standards that the ISO has determined by that time to make, in accordance with Section 2.5.2.2.](#)

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**SP 3.2.9 By 1:00 pm, Day Ahead**

By 1:00 pm on the day ahead of the Trading Day (for example, by 1:00 pm on Tuesday for the Wednesday Trading Day) and for each Settlement Period of that Trading Day:

- (h) the ISO will complete the second iteration, if necessary, of the Inter-Zonal Congestion Management process described in SP 10;
- (i) the ISO will provide, via WEnet, Final Day-Ahead Schedules to all SCs which, depending on the existence of Inter-Zonal Congestion, could be:
  - (i) the Preferred Day-Ahead Schedules (when no Congestion was found at 11:00 am and no mismatched Inter-Scheduling Coordinator Energy Trades);
  - (ii) the Revised Day-Ahead Schedules (when no Congestion was found at 1:00 pm and no mismatched Inter-Scheduling Coordinator Energy Trades);
  - (iii) modified Revised Day-Ahead Schedules for those SCs which had their Revised Day-Ahead Schedules for Energy modified for Inter-Zonal Congestion or mismatches in Inter-Scheduling Coordinator Energy Trades; or
  - (iv) modified Preferred Day-Ahead Schedules for those SCs which had their Preferred Schedule for Energy modified for Inter-Scheduling Coordinator Energy Trade mismatches;
- (j) the ISO will publish on WEnet the Day-Ahead Usage Charge rate (in \$/MWh of scheduled flow) for Energy transfer between Zones, if any;

- (k) the ISO will provide, via WEnet, as part of the Final Day-Ahead Schedules, schedules for Ancillary Services to the SCs which either:
  - (i) submitted Ancillary Services bids and which, as a result, have been selected to supply Ancillary Services; or
  - (ii) submitted schedules to self-provide Ancillary Services and which schedules have been validated by the ISO; and
  - (iii) specified Inter-Scheduling Coordinator Ancillary Service Trades which have been validated by the ISO; and
  
- (l) the ISO will coordinate with adjacent Control Areas on the net schedules between the ISO Control Area and such other Control Areas. If the ISO and the operator of an adjacent Control Area have different records with respect to the net schedules, individual SC intertie schedules will be examined. If the other Control Area's records are determined to be correct, the ISO will notify the affected SC. [If the other Control Area Operator's records are in error, no changes will be required by the ISO or affected SCs.](#) The affected SC is required to correct its schedule in the Hour-Ahead Market.

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## **SP 7.2 Allocation of Forecasted Total Transfer Capabilities**

### **SP 7.2.1 Categories of Transmission Capacity**

As used in this SP, references to new firm uses shall mean any use of ISO transmission service, except for uses associated with Existing Rights and Non-Converted Rights under Existing Contracts. Prior to the start of the Day-Ahead scheduling process, for each Inter-Zonal Interface, the ISO will allocate the forecasted total transfer capability of the Interface to four categories. This allocation will represent the ISO's best estimates at the time, and is not intended to affect any rights provided under Existing Contracts, except as provided in SP 7.4. The ISO's forecast of total transfer capability for each Inter-Zonal Interface will depend on prevailing conditions for the relevant Trading Day, including, but not limited to, the effects of parallel path (unscheduled) flows and/or other limiting operational conditions. This information will be posted on WEnet by the ISO in accordance with SP 3.2.1. In accordance with Section 2.4.4.5.1.4 of the ISO Tariff, the four categories are as follows:

- (m) transmission capacity that must be reserved for firm Existing Rights and firm Non-Converted Rights;

- (n) transmission capacity that may be allocated for use as ISO transmission service (i.e., “new firm uses”);
- (o) transmission capacity that may be allocated by the ISO for conditional firm Existing Rights and conditional firm Non-Converted Rights; and
- (p) transmission capacity that may remain for any other uses, such as non-firm Existing Rights and non-firm Non-Converted Rights for which the Responsible PTO has no discretion over whether or not to provide such non-firm service.

### **SP 7.2.2 Prioritization of Transmission Uses**

The following rules are designed to enable the ISO to honor Existing Contracts in accordance with Sections 2.4.3 and 2.4.4 of the ISO Tariff, ~~except as may be limited by the operation of SP 7.4~~. Regardless of the success of the application of such rules, it is intended that the rights under Existing Contracts will be honored as contemplated by the ISO Tariff ~~except as may be limited by the operation of SP 7.4~~. In each of the categories described in SP 7.2.1, the terms and conditions of service may differ among transmission contracts. These differences will be described by each Responsible PTO in the instructions submitted to the ISO in advance of the scheduling process in accordance with the SBP. In addition, Generation, Inter-Scheduling Coordinator Energy Trade imports or external imports in one Zone must be matched by an equal magnitude of Demand, Inter-Scheduling Coordinator Energy Trade exports or external exports in an adjacent Zone (see SP 7.2.3 for a summary of allowable linkages). Scheduling and curtailment priorities associated with each category will be defined by SCs through the use of Adjustment Bids submitted as part of their Schedules as described in the following (see the SBP for a more general description of the use of Adjustment Bids to establish priorities within Existing Contracts and to establish priorities for Reliability Must-Run Generation):

- (q) Transmission capacity for Schedules will be made available to holders of firm Existing Rights and firm Non-Converted Rights in accordance with this SP and the terms and conditions of their Existing Contracts. In the event that the firm uses of these rights must be curtailed, they will be curtailed on the basis of “high priced Adjustment Bids”. So as not to be curtailed before any other scheduled use of Congested Inter-Zonal Interface capacity, these high priced Adjustment Bids must fall within a range to be specified by the ISO (for example, a difference of \$9,000/MWh to \$10,000/MWh for Demand or external exports and a difference of -\$9,000/MWh to -\$10,000/MWh for Generation or external imports). This range will be reserved strictly for use in association with the prioritization of firm Existing Rights and firm Non-Converted Rights to use available Inter-Zonal Interface transmission capacity. These high priced Adjustment Bids are only for the ISO’s use, in the context of Congestion Management, in



recognizing the various levels of priority that may exist among the scheduled uses of firm transmission service. These high priced Adjustment Bids will not affect any other rights under Existing Contracts. To the extent that the MW amount exceeds the MW amount specified in the Existing Contract, the excess scheduled amount will be treated as a new firm use of ISO transmission services as described in (b) below. Note that, in some instances, for a particular Inter-Zonal Interface, there may be multiple SCs submitting Schedules under several different Existing Contracts on behalf of several Existing Contract rights holders. In these circumstances, and to the extent the rights holders desire to coordinate the prioritization of their firm uses of the Inter-Zonal Interface (i.e., attribute high priced Adjustment Bids, within the specified range, to each Schedule), their SCs will make the arrangements among themselves ahead of the ISO's scheduling process. In the absence of an Adjustment Bid, the ISO will treat the scheduled use of transmission service as a "price-taker" of ISO transmission service subject to Usage Charges.

- (r) ISO transmission service (i.e., "new firm uses") will be priced in accordance with the ISO Tariff. Usage Charges associated with the ISO's Congestion Management procedures, as described in SP 10, will be based on Adjustment Bids which do not fall within either of the ranges specified in (a) above or (c) below. In the absence of an Adjustment Bid, the ISO will treat the scheduled "new firm use" of ISO transmission service as a price taker paying the Usage Charge established by the highest valued use of transmission capacity between the relevant Zones.
- (s) Transmission capacity will be made available to holders of conditional firm Existing Rights and conditional firm Non-Converted Rights in a manner similar to that done prior to the ISO Operations Date; that is, allocated, as available, based on the agreed priority. The levels of priority will be expressed in the Schedules in terms of "near-zero priced Adjustment Bids". Adjustment Bids with the lowest near-zero price will be treated with the lowest priority. These near-zero priced Adjustment Bids must fall within a range to be specified by the ISO (for example, a difference of \$0.001/MWh to \$0.009/MWh). This range will be reserved strictly for use in association with the prioritization of conditional firm Existing Rights and conditional firm Non-Converted Rights to use available Inter-Zonal Interface transmission capacity. These near-zero priced Adjustment Bids are only for the ISO's use, in the context of Congestion Management, in recognizing the various levels of priority that may exist among the scheduled uses of conditional firm transmission service. These near-zero priced Adjustment Bids are not intended to affect any other rights under Existing Contracts, nor are they intended to subordinate the ISO's scheduling of firm uses. To the extent that the MW amount

exceeds the MW amount specified in the Existing Contract, the excess scheduled amount will be treated as a new firm use of ISO transmission services as described in (b) above. Note that, in some instances, for a particular Inter-Zonal Interface, there may be multiple SCs submitting Schedules under several different Existing Contracts on behalf of several Existing Contract rights holders. In these circumstances, and to the extent the rights holders desire to coordinate the prioritization of their conditional firm uses of the Inter-Zonal Interface (i.e., attribute near-zero priced Adjustment Bids, within the specified range, to each Schedule), their SCs will make the arrangements among themselves ahead of the ISO's scheduling process. In the absence of an Adjustment Bid, the ISO will treat the scheduled use of transmission service as a "price-taker" of ISO transmission services subject to Usage Charges.

- (t) Transmission capacity will be made available to holders of non-firm Existing Rights and non-firm Non-Converted Rights in a manner similar to that done prior to the ISO Operations Date; that is, treated as the lowest valued use of available transmission capacity. Non-firm uses of transmission capacity under Existing Contracts will be indicated in Schedules submitted by SCs as \$0.00/MWh Adjustment Bids.

**SP 7.2.3 Allowable Existing Contract Linkages**

As indicated in SP 7.2.2, Generation, Inter-Scheduling Coordinator Energy Trade imports or external imports in one Zone must be matched by an equal magnitude of Demand, Inter-Scheduling Coordinator Energy Trade exports or external exports in the same Zone or in an adjacent Zone. [The table below summarizes the allowable linkages.](#)

Generation	Demand
Generation	External Export
Generation	Inter-SC Energy Trade Export
External Import	Demand
External Import	External Export
External Import	Inter-SC Energy Trade Export
Inter-SC Energy Trade Export	Demand
Inter-SC Energy Trade Export	External Export
Inter-SC Energy Trade Export	Inter-SC Energy Trade Export
Inter-SC Ancillary Service Trade	Inter-SC Ancillary Service Trade

